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EXPLORING CONFUSING ISSUES IN INDUSTRIAL MARKET SEGMENTATION: AN EMPIRICAL STUDY IN THE UK TEXTILES INDUSTRY

By

CHIEN-KUN LIN

A Doctoral Thesis

Submitted in fulfilment of the requirement

for the award of

The Degree of Doctor of Philosophy of the

Loughborough University

February, 1998

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ABSTRACT

Exploring Confusing Issues in Industrial Market Segmentation: An Empirical Study in The UK Textiles Industry

With increasing attention on segmentation, more and more bases for segmenting markets have been suggested in the past few decades. However, no studies on segmentation issues in the textiles industry have been found. This study explored the segmentation strategies and bases used in the textiles industry by collecting data using an empirical survey of the UK textiles industry. This empirical study also investigated confusing issues affecting successful implementation of a segmentation strategy in the textiles industry so that it can provide guidelines and a framework for marketing practitioners and for future research.

A postal questionnaire survey was designed and mailed to 280 British textiles companies. There were 101 usable responses (36.1%). Five critical research questions were examined in this study:

(1) Do UK textiles companies implement a market segmentation strategy?
From this survey less than 40% of UK textiles companies currently implements a market segmentation strategy.

(2) What are the confusing issues hindering marketing managers from implementing a segmentation strategy in the UK textiles industry?
From this survey five critical confusing issues have been found:
(a) a failure to understand properly the scope and relevance of segmentation
(b) a lack of support from senior management
(c) extra costs incurred by segmentation
(d) resistance from other functional groups
(e) an unstable membership of segments over time

(3) Does the implementation of a segmentation strategy depend on a company's demographics?
From this survey there is no evidence that demographics affect the implementation of a segmentation strategy.

(4) Do the segmentation bases used depend on a company's demographics?
From this survey there is no evidence that demographics affect the usage of segmentation bases.

(5) Do the segmentation bases and strategies vary over time?
From this survey there is evidence that the segmentation bases and strategies vary over time. In particular, more companies expect to segment in the future.

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Thirdly, I would like to thank Professor Ronnier Luo, Dr. Peter Kilduff, and Dr. C. A. Shaw, who have given their time and expertise in enlightening me about the textiles industry in the UK. In particular, Dr. Kilduff, Director of the Textile Intelligence Centre in Leeds University, gave his enthusiastic assistance in the stage of pretesting questionnaires. Also, I would like to express my deep thanks to my best friend, Dr. Tom Lin, for his never-ending encouragement and recommendations.

Fourthly, I am grateful for the Overseas Research Scholarship awarded to me by the UK Government. I am also indebted to Dr. Samuel Yin (Ruentex Group Chief Executive Officer), and Mr. Peter Huang (Deputy Chairman of Ruentex Industries Ltd), who supported me not only financially but also spiritually. I also would like to acknowledge the 120 executives in the UK textiles industry. Without their co-operation in answering my questionnaires (both pilot testing and formal survey) the empirical survey of this work would not have been possible. Also, the help and support from the staff at Loughborough University Business School are much appreciated, particularly to Mr. Phil Blake and Mr. Mark Curtis.

Finally, I owe the greatest debt to my wife, Linda Huang, for her never ending support and considerations.

BACKGROUND TO RESEARCH

Before this study started three years ago, the author (Chien-Kun Lin, BSc, MBA) was an Assistant General Manager in Ruentex Industries in Taiwan. He received his master's degree in Business Administration at the National Taiwan University of Technology.

Ruentex Industries, the first company to manufacture and export gingham in Taiwan, was founded in 1973. As the Taiwanese economy grew and through investing profit from the business, Ruentex industries continuously expanded its factories, installed computerised systems and new equipment, and has now become Asia's largest gingham manufacturer. As one of the few new MBAs in Taiwan in the early 1980's, the author had the opportunity to serve the company and to fulfil his dearest wish - to become a distinguished professional manager. By working hard and achieving a very satisfactory performance, the author was promoted swiftly in the company - progressively from the position of Section Chief up to Assistant General Manager - in charge of all seven Ruentex factories in Taiwan. During this period, the author significantly improved the company's productivity and won the highest reputation for environmental protection. He was also invited to give speeches about his successful experience of management of a textiles company at the Annual National Textiles Conference from 1991 to 1993. Because of these performances and contributions, the author was selected as an Outstanding Youth Engineer in Textiles by the Textiles Engineering Association of R. O. C. (Republic of China in Taiwan) in 1993.

Due to his long service in the same company, the author's working experience included management in the areas of production, personnel, R & D, public relations, capital assets, industrial purchasing, and engineering. As the head of the factories, the author had responsibility for allocating company resources properly to meet the demands of the marketing department as it responded to customer needs. Given that the allocation of resources is always a trade-off whatever marketing strategies are chosen, conflict between production managers and marketers is inevitable. In tackling this difficult situation, the author had to work hard to reconcile production policy with marketing considerations. When doing this, the author found

that the marketing strategies, and in particular the segmentation strategy, were never made clear. Confusing issues, such as what a segmentation strategy means, if the market needs to be segmented, and what kind of bases are most useful, were debated from time to time. Furthermore, meeting with other Taiwanese textiles manufacturers at the Annual National Conference, the author realised that these confusing issues were not only faced by the specific company for which he worked but by the majority of industrial companies.

Apart from the background in the Taiwanese textiles industry, the author became further informed on the UK textiles industry via friends and associates. Firstly, Professor Ronnier Luo, Director of the Design Research Centre at Derby University, contributed his experience in the UK textiles industry and nominated the author to become a member of the two most important UK textiles organisations: The Textile Institute, and Society of Dyers and Colourists. As a member, the author was offered several recent professional journals, which he used to enhance his knowledge of the UK textiles industry. Being a member of the two organisations also had the benefit of a significantly higher response rate from fellow members, both in the pilot test and in the formal survey. Secondly, Dr. Peter Kilduff, Director of the Textile Intelligence Centre at Leeds University, provided the author with the insights gained from his distinguished experience in tackling business issues faced by textiles managers and his research knowledge based on reviewing the UK textiles industry. Dr Kilduff also helped the author to conduct the successful pilot survey. Thirdly, through interviews with several textiles managers, the author was told of the needs that textiles firms have to be kept informed about realistic marketing strategies, such as segmentation strategy, so that they can strengthen their competitive position.

Encouraged by these matters, the author proposed this study to explore these confusing issues in the UK textiles industry, and to bridge the gap between academics and marketing practitioners.

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CHAPTER ONE INTRODUCTION

1.1 Overview of the UK textiles industry

The textiles industry is vital as it supplies the basic human need of clothing. The textiles industry is also important as it supplies needs in almost every other industry including, for example, the furniture industry, the motor industry and the clothing industry. The variety of products and multiplicity of end-users for the UK textiles industry is illustrated by the fact that there are eight main categories and a number of very small product groups used by KOMPASS to cover the variety or raw materials used, methods of production and end users of the products (KOMPASS, 1996).

As a result of the industrial revolution, the UK used to be one of the leading manufacturers of textiles in the world. Historically, the textiles industry has been one of the main UK manufacturing industries. For example, in 1870 the UK textiles industry accounted for 9 % of the country's gross national product (Briscoe, 1971, p. 1). The UK textiles industry experienced continuous growth until 1973 when foreign competition began to seriously affect the industry. The effect of this competition reached its peak during the period 1979 to 1983 when the UK textiles industry experienced "the worst recession in living memory" (Jackson and Kilduff, 1991, p. 179).

Although the UK textiles industry has recovered since the depths of the 1979 to 1983 recession, a complete recovery of the UK textiles industry has not been achieved (Jackson and Kilduff, 1991, p. 182). Hawkyard and McShane (1991, p. 469) stress that if the UK textiles industry is to survive and compete successfully with low-wage countries, then it must efficiently provide a better quality product. In addition, the trend in fashion towards more casual clothing has operated to the disadvantage of the UK wool textiles industry (Jackson and Kilduff, 1991, p. 186).

1.2 Strategic choices of firms in the textiles industry

During the past few decades, increasing international competition and changing consumer requirements have brought pressures for companies who want to succeed in the textiles industry. Over this period, textiles firms have been forced to adopt many alternative strategies for improving their performances.

Firstly, in the 1960s diversification into growth sectors and vertical integration were perceived as the twin panaceas for the textiles industry's ills (Jackson and Kilduff, 1991, p. 186). Secondly, in order to cater for diversity in consumer needs in the 1970s, a strategy which focused on variety and fashion was emphasised by the textiles firms. Thirdly, textiles firms were concerned with survival in the 1980s and their strategy was to broaden their product range by diversifying into new markets or market segmentation. Fourthly, it has been suggested that information technology (I.T.) will become a critical weapon in the battle of survival in the 1990s (Jackson and Kilduff, 1991, p. 193). Lastly, for the high cost companies in the textiles industry, Kincade et al (1993, p. 147) suggest that the time-based strategy of Quick Response (QR) can create a new advantage.

1.3 Segmentation strategies in the textiles industry

Each strategy for improving the performance of textiles firms requires considerable investment of company resources. A strategy, such as vertical integration, which needs a huge capital investment will not be affordable by the majority of small companies. Further, textiles companies are facing so many ambiguous strategies suggested by academics that they can not easily choose between them. As a result, they persist with the traditional strategies- such as mass production- rather than adopt a strategy they feel is risky. This is because once the strategies they choose fail to overcome the problems they are facing, the costs of what are likely to be unaffordable for them.

One of the most common strategies is market segmentation where firms identify their customers' characteristics (including needs) and choose one or more as their target market, positioning their products in the selected segments. Market segmentation aims to meet the desires of consumers or users through more precise satisfaction of their varying demands. Mahajan and Jain (1978) refer to market segmentation as a form of research analysis directed at the identification of, and the allocation of resources among, market segments. Kotler (1991) emphasises that companies are increasingly embracing target marketing. Target marketing calls for three major steps: market segmentation, market targeting, and product positioning. It seems that the need for segmentation as a strategy is rarely questioned, although the process for attaining segments remains less straightforward (Moriarty and Reibstein, 1986, p. 463). Academic segmentation research has been one of the most advanced areas of research in marketing (Wind, 1978, p. 317). Nevertheless, no studies on segmentation issues in the textiles industry have been found. As a result, unlike the previous studies, which examined the textiles industry mainly on technological and/or macro-economical aspects, this study attempts to explore the performances of segmentation strategy used in this industry by using the data collected from an empirical survey of the UK textiles companies.

1.4 Dynamic issues of marketing strategy

As Dickens said in a Christmas Carol, "I will live in the Past, the Present, and the Future. The Spirits of all Three shall strive within me. I will not shut out the lessons that they teach." Like men's courses, a company's course will also foreshadow certain ends, to which, if persevered in, they must lead; but if the courses be departed from, the ends will change as well. Tracing the growth process of companies, one may find that many of them have withdrawn from their markets because an out-of-date, or invalid strategy was sustained, while other companies are still prospering due to an up-to-date, or valid strategy being adopted.

In fact, market revolution varies across industries and every industry has its own business cycle. Moreover, even within an industry, companies' performances differ greatly in terms of

sales growth, stability, and profitability. Indeed there are still companies who suffer considerable losses even in a period of prosperity, while other companies make significant profits at the same time. In contrast, most companies fail to achieve an acceptable return from their business during a period of recession, while some companies achieve extraordinary success during the same period of recession. It is believed that the seeds of failure or success can be traced back to their business strategies of the past and the present. Therefore, to remember the experience of the past (good or bad), to examine the situation of the present, and to plan a scheme for the future, should be worthwhile for companies who intend to succeed in their markets. Based on these thoughts about changes over time, this study collected data from UK textiles firms covering three different periods, the past, the present and the future.

1.5 The research objectives

The confusing issues mentioned above, which exist in the real world, probably hinder managers in general from implementing an optimum segmentation strategy. This study aims to explore those issues and to provide some possible solutions for them. The objectives of this research, therefore, can be described as follows:

(1) To examine the extent to which the UK textiles companies implement the strategy of market segmentation.

(2) To recognise the confusing issues which hinder companies in the textiles industry from implementing segmentation strategies successfully.

(3) To examine the extent to which the implementation of a segmentation strategy depend on a company's demographics.

(4) To examine the extent to which the segmentation bases used depend on a company's demographics.

(5) To examine the extent to which the segmentation bases and strategies vary over time.

The hypotheses used to study these questions are developed in Chapter 4.

1.6 Organisation of the thesis

Chapter 1 of the thesis serves as the introduction to the entire study. It provides a brief overview of the UK textiles industry, strategic choices of firms in the textiles industry, segmentation strategies in the textiles industry, dynamic issues of marketing strategy, and the major objectives of the study.

Chapter 2 reviews the market segmentation literature. This chapter also includes details of previous research in industrial market segmentation.

Chapter 3 provides an overview of the literature of alternative views on market segmentation. This chapter describes the reasons why some academics are against the use of a segmentation strategy. This study has classified these reasons into four main categories: ambiguous cognition in market segmentation, dynamic issues of market segmentation, stability of grouping techniques, and implementation barriers to segmentation strategy.

Chapter 4 discusses the research hypotheses which were developed from the findings of the previous studies and from data collected from the preliminary interviews and the pilot survey.

Chapter 5 describes the research methodology employed in this study. A three-phase methodology was used in this research and this is discussed in this chapter along with the conceptual framework for the hypotheses, and the issues of data collection and analysis.

Chapter 6 presents the results of the analysis of the data collected from the structured questionnaires. The hypotheses are analysed statistically by employing analysis of variance (ANOVA), factor analysis, and cluster analysis. Based on the results, useful segmentation bases for the textiles industry in the past, present, and future are outlined. The dynamic issues and practical barriers in implementing a segmentation strategy are also identified.

Chapter 7 describes the results of a simulation study. The simulation study has been included in order to help validate the segmentation study and in order to explore factor analysis, cluster analysis and tandem analysis (using cluster analysis on the scores obtained from factor analysis).

Chapter 8 provides the summary and conclusions. The implications of the study and suggestions for future research are also presented in this chapter.

CHAPTER TWO LITERATURE REVIEW

2.1 Introduction

Market segmentation is generally recognised as a dominant concept in marketing literature and practice (Wind, 1978, p. 317). However, it is also generally recognised that there is no one best way to segment markets, as each way has merits and limitations depending on the product-market being considered and the managerial objectives for segmentation (Grover and Srinivasan, 1987, p. 139). To prepare the ground for the research of market segmentation for the textiles market, a variety of literature is reviewed in this study, including market segmentation (both consumer and industrial market), marketing research, the possible segmentation bases for textiles industry, and analysis techniques. This chapter provides a literature review mainly on the general concept of market segmentation. A special review on the alternative views of segmentation will be presented in chapter 3. The possible segmentation bases for textiles industry will be discussed in chapter 4. The methodology of market research will be presented in chapter 5. The analysis techniques used most often for market segmentation, including factor analysis, cluster analysis, and ANOVA will be described in chapter 6 and chapter 7.

The remainder of this chapter is divided into seven sections. The first section defines the key terms used in this study. The second section provides an overview of market segmentation. The third section outlines models and bases for segmenting consumer markets. The fourth section describes the key features of industrial markets. The fifth section outlines approaches and bases for segmenting industrial markets. The sixth section gives several examples of segmenting industrial markets. Finally several issues in industrial market segmentation are described.

2.2 Definitions of terms

There are numerous definitions of market segmentation and a variety of related terms have been used inconsistently by different authors in the context of market segmentation. This section is devoted to giving definitions for the terms used in this thesis, including market segmentation, segmentation base, segmentation model, segmentation approach, consumer market, and industrial market.

Market segmentation: The process of dividing a potential market into distinct groups of customers- each group containing customers with similar needs- selecting one or more segments to enter, and then establishing a viable competitive positioning of the firm and its offering in each selected market. This definition is based on the three steps of target marketing proposed by Kotler (1997, p. 249). Other different definitions of market segmentation are discussed in the next chapter.

Segmentation base: A variable that can be used to divide a total market into segments is called a segmentation base. Aside from the term "base" adopted by this study, a variety of terms which mean the same thing as segmentation base have been found in the literature, including basis (Dhalla and Mahatoo, 1976, p. 34; Frank, 1967, p.27; Wind, 1978, p. 319; Young et al, 1978, p. 406), construct (Plummer, 1974, p. 33), criterion (Dhalla and Mahatoo, 1976, p. 34), dimension (McCarthy and Perreault, 1993, p. 93), method (Haley, 1968, p. 30; Thomas, 1980, p. 27; Young et al, 1978, p. 406), mode (Yankelovich, 1964, p. 85), and technique (Young et al, 1978, p. 406). Note that several authors have used different terms to show the same meaning (e.g. Young et al, 1978, p. 406; Dhalla and Mahatoo, 1976, p. 34). For the purpose of consistency, this study uses the term "base". This is partly because the term "base" is used more frequently (Dibb et al, 1994, p. 77; Engel et al, 1993, p. 321; Kotler, 1997, p. 257; Schiffman and Kanuk, 1994, p. 52; Weinstein, 1987, p. 44) and partly because it is easy to understand.

Segmentation model: The method which can be used to segment a market is called a segmentation model. According to Wind (1978, p. 321), the methods used for segmenting a market can be classified into four major types of models, namely *a priori* segmentation model, cluster-based segmentation model, flexible segmentation model, and componential segmentation model. These models are also discussed in section 2.3.

Segmentation approach: The method which is used to determine the order in which bases for segmenting a market are chosen is called segmentation approach. According to Plank (1985, p. 81), the selection of bases can be classified into three approaches, namely unordered base selection, two-step base selection, and multi-step base selection.

Consumer market: The market where the goods are bought for final use by individuals or households, who are referred to as "end users" or "ultimate consumers", is called the consumer market (Schiffman and Kanuk, 1994, p. 6).

Industrial market: The market where the goods are bought not for final use but for the purpose of conducting an organisation's affairs and the buyers are not individuals or households, but organisations, such as business firms, governmental agencies, hospitals, educational institutions, and religious and political organisations, is called the industrial market.

2.3 Overview of market segmentation

In this section market segmentation is introduced and the range of applications is described. The objectives and advantages of market segmentation are also described in this section.

Segmentation is based upon developments on the demand side of the market and represents a rational and more precise adjustment of product and marketing effort to consumer or user

requirements. In other words, market segmentation regards a heterogeneous market as a number of smaller homogeneous markets in response to differing product preferences among important market segments (Smith, 1956, p. 6). Since the term "market segmentation" was first coined and defined by Wendell Smith, increasing attention has been given to this concept.

Market segmentation has not only been applied in the consumer markets (e.g. Plummer, 1974; Starr and Rubinson, 1978; Webber, 1989), but also in the industrial markets (e.g. Cardozo, 1980; Choffray and Lilien, 1980; Doyle and Saunders, 1985). Within the industrial markets, its applications are not only limited to the manufacturing industries (e.g. basic industry: Bennion, 1987; mature industry: Rangan et al, 1992; high-tech industry: Hlavacek and Ames, 1986), but also included the service industries (e.g. banking: Meadows and Dibb, 1996; tourism: Mueller, 1991). As a result of this wide usage, the basic purpose and definition of market segmentation has had many different explanations. According to Plank (1985, p. 80), there were two separate schools of thought in defining the term "market segmentation". The first school of thought on market segmentation took a strategic orientation (e.g. Smith, 1956). The second school of thought regarded market segmentation as an analytical tool because it used a number of sophisticated quantitative techniques (e.g. Kotler, 1997). Further, Dickson and Ginter (1987) found confusion and lack of precision in the use of the term "market segmentation" in a review of 16 contemporary marketing textbooks. This confusion and lack of precision is one of the reasons why researchers have different opinions about the value of using market segmentation. A number of different definitions of the term "market segmentation" will be discussed in the next chapter.

Given that the strategy of market segmentation has been widely applied, companies must have had a variety of reasons for using the strategy. Beane and Ennis (1987) observed that the two major reasons for segmenting a market were:

(1) To look for new product opportunities or areas which may be receptive to the current product repositioning.
(2) To create improved advertising messages by gaining a better understanding of one's customers.

Apart from the general reasons mentioned above which support the use of market segmentation, the following specific advantages of market segmentation were proposed by Yankelovich (1964).

(1) To direct the appropriate amounts of promotional attention and money to the most potentially profitable segments of a firm's market.
(2) To design a product line that truly parallels the demands of the market instead of one that bulks in some areas and ignores or scants other potentially quite profitable segments.
(3) To catch the first sign of a major trend in a swiftly changing market and thus give the firm time to prepare to take advantage of it.
(4) To determine the appeals that will be most effective in the company's advertising: and, where several different appeals are significantly effective, quantify the segments of the market responsive to each.
(5) To choose advertising media more wisely and determine the proportion of budget that should be allocated to each medium in the light of anticipated impact.
(6) To correct the timing of advertising and promotional efforts so that they are massed in the weeks, months, and seasons when selling resistance is least and responsiveness is likely to be at its maximum.
(7) To understand otherwise seemingly meaningless demographic market information and apply it in scores of new and effective ways.

To achieve these advantages, Kotler (1997, p. 269) states that the segments must be measurable, substantial, accessible, differentiable, and actionable. The meanings of these requirements can be described as follows:

Measurable:	The size, purchasing power, and characteristics of the segments can be measured.
Substantial:	The segments are large and profitable enough to serve.
Accessible:	The segments can be effectively reached and served.
Differentiable:	The segments are conceptually distinguishable and respond differently to different marketing-mix elements and programs.
Actionable:	Effective programs can be formulated for attracting and serving the segments.

2.4 Models and bases for segmenting consumer markets

Consumer markets can be described as the markets where the goods are bought for final use by individuals or households, who are referred to as "end users" or "ultimate consumers" (Schiffman and Kanuk, 1994, p. 6). Segmenting consumer markets, therefore, requires knowledge of the needs and wants of specific groups of consumers, so that specialised goods or services can be developed and promoted to satisfy their needs. This section describes the models and bases for segmenting consumer markets.

Just as there are a variety of explanations and definitions in market segmentation, so there are also a variety of models to segmenting consumer markets. Green (1977, p. 61) classified the traditional methods for identifying segments into two categories, namely *a priori* and *post hoc*, and he then proposed a new way to segment markets, called componential segmentation. Later, Wind (1978, p. 321) distinguished four major types of models which can be used to segment a market. These segmentation models are *a priori*, cluster-based designs, flexible, and componential, and are based on different sets of assumptions. According to Wind (1978), the characteristics of the various segmentation approaches can be described as follows:

> *A priori* segmentation models have had as the dependent variable either product-specific variables or general customer characteristics. Clustering-based segmentation models are different from *a priori* models only with respect to the way the basis for segmentation is selected, i.e., instead of an *a priori* selection of a dependent variable, in the clustering-based approach the number and type of segments are not known in advance and are determined from the clustering of respondents on their similarities on some selected set of variables. In contrast to *a priori* segmentation and clustering-based segmentation, the flexible segmentation model offers a dynamic approach, which is based on the integration of the results of a conjoint analysis study and a computer simulation of consumer choice behaviour. The componential segmentation model is an ingenious extension of conjoint analysis and orthogonal arrays to cover not only product features but also person features.

Although a variety of models are available for grouping individuals or households into homogeneous categories, the bases used for segmenting the market are the key factor in segmentation studies. As Moriarty and Reibstein (1986, p. 463) observed, the focus of the

majority of segmentation studies has been on determining the appropriate bases for forming market segments. From the historical point of view, geographic segmentation is regarded as the first type of segmentation used (Haley, 1968, p. 30). This is partly because of the limited capital investment by small companies, and partly because of the historical difficulties in transport. As the transport systems improved and more and more brands became national (even international), the second major base for segmentation - demographic - became popular. Nevertheless, the traditional demographic methods, which segmented markets by age, gender, and income level, can not provide as much direction for marketing strategy as management requires. Yankelovich (1964) proposed several new bases for market segmentation, including buyer attitudes, buyer motivation, buyer values, patterns of usage, aesthetic preferences, and degree of susceptibility. As more and more researchers have contributed in this area, the variety of bases for segmenting consumer markets has become too many to classify simply. As a result, a variety of classifications of these bases have been suggested by different authors, and bases have even been classified into different groups by the same author at different times. For example, Kotler has classified the base "social class" both into the category of "demographic" (1997, p. 257) and also into the category of "psychographic" (1991, p. 269). This study has reviewed several of the most popular marketing textbooks and has summarised some of the typical classifications in the following table, Table 2.1.

Table 2.1 A summary of bases for segmenting consumer markets

Author	Category	Variable
Frank, Massy, and Wind (1972)	1. Customer general characteristics	demographic factors, socio-economic factors, personality traits, life style
	2. Situation-specific events	consumption patterns, brand loyalty patterns, buying situations, attitudes, perceptions and preferences
Hooley and Saunders (1993)	1. Background customer characteristics	demographics, socioeconomics, psychographics, stage of consumer life cycle, ACORN and related classificatory system, personality, life cycle.
	2. Customer attitudes	benefits sought, perceptions and preferences
	3. Customer behaviour	purchasing behaviour, consumption behaviour, communication behaviour, response to elements of the marketing mix.
Norgan (1994)	1. Product characteristics	functional type, aesthetic, and quality.
	2. User characteristics	geographic, demographic, psychographic, usership, attitudes, benefits sought
	3. Use or Purchase situation	purpose
Dibb et al (1994)	1. Basic customer characteristics	demographics, socio-economics, geographic location, and personality, motives and lifestyle
	2. Product related behavioural characteristics	purchase behaviour, purchase occasion, benefits sought, consumption behaviour and user status, and attitude to product
Jobber (1995)	1. Behavioural	benefits sought, purchase occasion, purchase behaviour, usage, perception, beliefs.
	2. Psychographic	life style, personality
	3. Profile	age, gender, life cycle, social class, terminal education age, income, geographic, geodemographic.
Kotler (1997)	1. Geographic	region, county size, city size, density, and climate.
	2. Demographic	age, family size, family life cycle, gender, income, occupation, education, religion, race, nationality, social class.
	3. Psychographic	lifestyle, personality
	4. Behavioural	occasions, benefits, user status, usage rate, loyalty status, buyer-readiness stage, attitude toward product.
Kotler, Armstrong, Saunders, and Wong (1996)	Except the base of "social class" is classified into the category of "psychographic" instead of "demographic", the classification is the same as Kotler (1997).	

Apart from the bases proposed by the authors mentioned above, some unusual bases have also been suggested recently, specifically:

1) Using astrology in market segmentation (Mitchell, 1995).

   Assuming that people's preferences are more or less related to their birth time, Mitchell suggested that the sun sign could be considered as a base for grouping consumers. He claimed that twelve sun (zodiac) signs would give twelve distinct segments and marketers could target one or more of them with different products or marketing mix in order to acquire higher payoffs. Although there was no empirical evidence to support his argument, segmenting a market by using astrology could provide a new thought for marketers.

2) Segmenting by consumer time shortage (Darian and Cohen, 1995).

   As human society has become more industrialised and commercialised, the degree of busyness of consumers has been considered as a potential indicator for marketers. In an empirical study of the convenience and fast food markets, Darian and Cohen (1995) suggested that time-poor consumers were willing to sacrifice flavour as well as health and low calorie benefits for convenience. In addition, the authors found that time-poor consumers desired not to have to plan ahead for food and desired to have little or no cleaning up after eating. As a result, the authors suggested that the difference in time shortage among consumers could provide an opportunity for food marketers to obtain a differential advantage by improving some product attributes.

These unusual bases together with the bases in Table 2.1 show that a wide variety of approaches and bases for segmenting consumer markets have been proposed by a wide variety of researchers.

2.5 Features of industrial markets

In contrast with the consumer markets, industrial markets are very different. The main difference between industrial and consumer goods is not based on differences in the products

or services themselves, but in the buyers, and in the uses to which the products and services are put. As Webster and Wind (1972, p.1) observed, the buyers of industrial goods are not individuals or households, but organisations, such as business firms, governmental agencies, hospitals, educational institutions, and religious and political organisations. Also, the uses of industrial goods are not for final use, but for the purpose of conducting the organisation's affairs. As far as industrial companies (i.e., business organisations) are concerned, they buy raw materials, components, equipment, and supplies to be used in manufacturing, maintenance, transportation, or other aspects of the companies' activities. Segmenting the markets of industrial organisations, therefore, requires the needs and wants of specific groups of firms to be discovered, so that specialised goods or services can be promoted and provided to satisfy their needs.

Generally speaking, industrial goods include raw materials (e.g. cotton), components (e.g. man-made fibres), supplies (e.g. dyestuff) , and capital equipment (e.g. dyeing machinery). Webster (1991) specifically classified industrial goods into nine categories: construction, heavy equipment, light equipment, components and subassemblies, raw materials, processed materials, maintenance, repair and operating supplies, and services. Accordingly, industrial customers consist of manufacturing firms, processing firms, and distributors. The purchasing decisions of industrial customers reflect their expectations of future demands for their goods and services. As a result, the concept of derived demand is an important feature of industrial marketing. In particular, to obtain a sensible industrial marketing strategy, marketers not only need to understand the nature of demands of their customers, but also those of their customers' customers.

2.6 Approaches and bases for segmenting industrial markets

Concerning the concept of industrial market segmentation, Frederick (1934) first noted:

> The first step in analysing an industrial market is to divide the whole market into its component parts. Any particular group of prospective or present users of a product to whom a concentrated advertising and sales appeal may be made should be considered as a component market. (Cited from Plank, 1985, p. 79)

Diversity or heterogeneity is the rule rather than the exception on both the supply and demand sides of real-world markets. The diversity on the supply side may result from technological and/or managerial gaps among suppliers, while the heterogeneity on the demand side may trace back to the initial purchasing purposes of industrial firms. Consequently, variations exist in the products of an industry, and not all industrial buyers have the same desire or the same ability to buy rationally. The facts that markets are heterogeneous and customers are different are the reasons for segmenting markets. Similarly, Johnson and Flodhammer (1980, p. 203) described three conditions for deciding whether market segmentation is appropriate for industrial firms. They are (1) products are heterogeneous, (2) products are applicable to a variety of industries, and (3) customers are heterogeneous. This section describes the approaches and bases for segmenting industrial markets.

With increasing attention on segmentation, more and more bases for segmenting markets have been suggested in the past few decades. Most segmentation studies, however, have been conducted for consumer markets. Although the concept of segmentation and most of the segmentation research methods suggested are equally applicable to industrial markets (Wind, 1978, p. 318), few applications of segmenting industrial markets have been reported in the marketing literature. Some of the exceptions are described in the next section.

In a comprehensive review of the research on industrial market segmentation, Plank (1985, p. 81) identified three types of approaches to segmenting industrial markets. The first approach was called unordered base selection that segmented a market without arranging the sequences in choosing segmentation bases. Prior to the pioneering work in market segmentation by Smith (1956), Frederick (1934) proposed five bases to divide the component market into different subgroups. These were industry, product use, company buying habits, channels of distribution possibilities, and geographic location. Several other bases for segmenting industrial markets have also been suggested, such as SIC (Standard Industrial Classification) codes (Hummel, 1960), buyers' attitudes (Yankelovich, 1964), buying situations (Robinson et al, 1967; Faris, 1967; Cardozo, 1980), purchasing strategies and information search (Cardozo, 1968), decision style of the purchasing agent (Wilson et al, 1971), intensity of product usage

(Assael and Ellis, 1976), economic value to the customer (Forbis and Mehta, 1981), and organisational type (Spekman, 1981).

The second approach was called two-step base selection that segmented a market by choosing bases on the basis of two steps: macrosegmentation and microsegmentation. The two-step segmentation approach was developed by Frank, Massy and Wind (1972), who suggested segmenting industrial markets by defining both macro segmentation bases and decision-making unit bases. Following the framework of Frank, Massy and Wind (1972), Wind and Cardozo (1974) defined macrosegments based on organisational characteristics and microsegments based on decision-making unit characteristics. The first step was to construct macrosegments by using industry (SIC codes), geographic location, or other observable characteristics. The macrosegments selected were then evaluated to determine if they exhibited distinct responses to the firm's marketing stimuli. If they did, the firm could stop and used the macrosegments as its target markets. On the other hand, the macrosegments might need to be further divided into microsegments on the basis of key decision-making characteristics such as perceived importance of the purchase or attitudes toward vendors.

The third approach was called multi-step base selection that segmented a market by choosing bases on the basis of multiple steps. The most famous multi-step segmentation approach was the nested approach developed by Shapiro and Bonoma (1984). It consisted of five nests where moving from the outer nest toward the inner, these segmentation bases were: demographics, operating variables, customer purchasing approaches, situational factors, and personal characteristics of the buyers. The authors stressed that the outer nests were the more easily observable bases and as the user moved inward the bases became progressively more subtle and thus harder to identify and interpret. Based on the concepts of the two-step approach and multi-step approach, Cheron and Kleinschmidt (1985) proposed a 4-step segmentation approach. In fact, the four steps became a circulation around a four-dimension matrix constructed by the segmentation procedures, namely *a priori*, *a posteriori*, macro-segmentation and micro-segmentation.

No matter what kind of approach was used, from the review of the articles published, the segmentation bases suggested have ranged from complex DMU (Decision Making Unit) characteristics and psychological discriminants to straightforward demographic variables such as SIC codes, company size, and geographical location. In terms of available bases for segmenting industrial markets, this study has reviewed several of the most popular textbooks on marketing and has summarised some of the typical classifications in the following table, Table 2.2.

Table 2.2 A summary of bases for segmenting industrial markets

Author	Category	Variable
Frank, Massy, and Wind (1972)	1. General organisational characteristics	demographics: size, SIC code, end use of product, geographical location organisational buying task, structure, and technology
	2. Situation-specific organisational characteristics	product usage, source loyalty, buying centre, buying situation, attitudes, perceptions and preferences, determinants of buying decisions and their importance
Hooley and Saunders (1993)	1. Background company characteristics	demographics: SIC code, geographic location, company size
	2. Attitudinal characteristics	benefits sought (refer to DMU)
	3. Behavioural characteristics	usage (heavy users).
Norgan (1994)	1. Initial stage	geographics, number of customers, company size, level of technology, buying process, buying criteria, buying quantities, prevailing attitudes, competition, customer's competitive position
	2. Further stage	benefits sought
Dibb et al (1994)	---	geographic location, type of organisation, customer size, use of product
Jobber (1995)	1. Macrosegmentation	organisational size, industry, geographic location.
	2. Microsegmentation	choice criteria, DMU structure, decision-making process, buying class, purchasing organisation, organisational innovativeness.
Kotler (1997)*	1. Demographic	industry, company size, location.
	2. Operating variables	technology, user/nonuser status, customer capabilities.
	3. Purchasing approaches	purchasing-function organisation, power structure, nature of existing relationships, general purchase policies, purchasing criteria.
	4. Situational factors	urgency, specific application, size of order.
	5. Personal characteristics	buyer-seller similarity, attitudes toward risk, loyalty.
Kotler, Armstrong, Saunders, and Wong (1996)	Same as Kotler (1997)	

* Kotler's classification is adapted from Thomas V. Bonoma and Benson P. Shapiro (1983).

2.7 Examples of segmenting industrial markets

The previous section summarised the variety of bases proposed for segmenting industrial markets. This section summarises a number of studies of industrial market segmentation.

Yankelovich (1964, p. 149) used three markets - adding machines, computers, and light trucks - as examples to show how to apply his approach, called *segmentation analysis*, and to explain the usefulness of segmentation in industrial markets. The adding machine market was segmented along product lines reflecting sharp differences in value (e.g. accuracy, reliability, long life , the maximum number of labour-saving, and time saving), and buyer's purpose (e.g. low purchase price). For the computer market, one approach suggested was to divide potential customers between those who believed they knew how to evaluate a computer and those who believed they did not. An alternative approach suggested was to segment the computer market by identifying the differences in prospects' attitudes toward the inevitability of progress. Similar to the computer example, the susceptibility to change and the self-confidence of purchasers were the two bases suggested for segmenting the light trucks market.

Wind and Cardozo (1974, p. 159) gave two examples - spray painting and finishing equipment, and high quality metal components - to illustrate that market segmentation can be a profitable strategy for industrial marketers. The method used was a so called two-step segmentation approach. The first example represented a simple situation where they used the single-step segmentation approach to divide the markets into macrosegments on the bases of SIC category, size of buying firm and location. The authors stressed that the success of the single-step segmentation approach was dependent on the decision-making behaviour being correlated positively with size, SIC category and location. In the second example the decision-making behaviour appeared not to be related to the size of the firm, and the two-step segmentation approach was necessary. The approach was to identify the macro-segments on the basis of SIC category and then to form the micro-segments within each SIC category by employing the segmentation base of buyer's purchasing strategy.

Doyle and Saunders (1985) developed a segmentation and positioning marketing strategy for a basic raw material producer switching into a speciality chemicals market. Their segmentation model has become one of the best known models in terms of combining factor analysis and cluster analysis to implement market segmentation. The application of this model is illustrated by using a true and rather typical case of a company diversifying into a speciality market. The approach of Doyle and Saunders was as follows. First of all, the authors were provided with some information about the technology and its application in an intensive session by management. Then primary data was collected on the two key categories of variables in the model - competitors and customers. Semi-structured interviews were also held during the process of collecting data. After the exploratory discussions and the interviews, six product specific variables affecting choice and four company variables were identified. Factor and cluster analyses were employed to determine if the ten choice criteria could be summarised into fewer criteria and whether the complex product applications could be grouped into segments. As a result, four meaningful factors were extracted from the original data, and the approach, clustering using the factors, led to a 12-cluster solution.

As a method of formulating microsegments in the two-step segmentation model proposed by Wind and Cardozo (1974), Choffray and Lilien (1978, 1980) suggested a decision matrix approach to the microsegmentation step using the basis of functional involvement in the different phases of the purchasing decision process. The decision matrix was used as a structured measurement instrument for collecting information about the composition of decision-making units within the firms studied. A range of characteristics of the decision-making units was taken as the basis for segmentation, including the average age of the decision participants, the number of people in the buying centre, and the pattern of involvement in the buying decision process. The pattern of involvement means the identification of those categories of individuals (managers, engineers, purchasing officers) who are involved in various phases of the decision-making process. Adopting the "pattern of involvement", the authors developed a "decision matrix" using a double-entry table where the rows listed the categories of decision participant and the columns listed the relevant stages in the decision process. The respondents indicated what percentage of the task-responsibilities

for each stage in the process belongs to each category of decision participant in their organisation. In order to illustrate how to apply the decision matrix, they cited one specific market - industrial cooling systems - as an example. In that case, the purchasing decision process was divided into five major phases, and the individuals involved in the decision process were grouped into eight categories. Combining the data from the decision participants and the decision phrases, they constructed their decision matrix. Ten companies then were identified by single linkage cluster analysis as potential outliers and these companies were eliminated from further analysis. The companies were outliers because of the excessive importance of the role of external or internal participants, or because of a lack of discrimination in completing the decision matrix. Four microsegments were identified, and in order to assess formally the relationship between microsegment membership and six characteristics of the organisations, a four group linear discriminant analysis was run. The six characteristics of the organisations included company size, number of separate plants, percentage of plant area requiring industrial cooling, company satisfaction with the current cooling system, perceived organisational consequences if a new cooling system proved less economical than projected, and perceived organisational consequences if a new cooling system proved less reliable than projected. It was suggested that this information would provide marketers with a better understanding of the purchasing process so that they could develop differentiated communications strategies in different segments.

Rangan, Moriarty and Swartz (1992, p. 72) argued that segmenting customers in mature industrial markets based on size, industry, or product benefits alone is rarely sufficient. The authors offered a framework for grouping industrial customers. First of all they collected data on 12 variables - 4 of them acquired from in-house documents and the others acquired from salesforce judgmental data- to capture the variations in potential buying behaviour in the company's national accounts. Then the authors performed a hierarchical cluster analysis based on the 12 variables. They used Ward's method of minimum variance to maximise homogeneity within clusters and heterogeneity between clusters. For determining the number of clusters, three statistics: the cubic clustering criterion, the pseudo F-statistic and the pseudo

t^2-statistic, were examined[1]. The authors also used discriminant analysis to test whether or not these variables were good indicators of cluster membership. Finally, four segments were identified, namely programmed buyers, relationship buyers, transaction buyers and bargain hunters. The authors suggested that these results could be used to help the company to redirect marketing resources to increase profit.

2.8 Issues in Industrial Market Segmentation

Most segmentation studies have been conducted for consumer goods (Wind, 1978, p. 318), rather than industrial goods and the theory and practice of segmentation research in industrial markets lags behind similar research in consumer markets (Choffray and Lilien, 1980; Moriarty and Reibstein, 1986; Wind, 1978). According to Dowling et al (1993, p. 33), this lag has several causes, including the lack of agreement about which bases should be used to segment markets (e.g. buyer needs), and which should be used to describe these segments (e.g. media usage). Other causes have also been suggested in the literature, including the heterogeneity of organisations, the complexity of buying decisions, and the difficulty of reaching business markets (Plank, 1985; Webster, 1991); the dependence of business marketing on other business functions such as manufacturing, R&D, inventory control, and engineering (Ames, 1970); and the difficulty business marketers have identifying bases useful for segmentation (Doyle and Saunders, 1985; Shapiro and Bonoma, 1984).

In summary, there are three basic issues in segmenting industrial markets, namely:

(1) Whether or not a market needs to be segmented

(2) How to segment a market (i.e. what kinds of approaches and bases should be employed for a given market.)

[1]According to the authors, in comparisons of 30 methods for estimating the number of clusters, the three statistics have been successful in identifying the appropriate number of underlying clusters.

(3) Implementation problems (e.g. how to collect the necessary data for identifying segments, how to analyse the data collected, and how to tackle the possible implementation barriers).

This section describes these issues in more detail and these issues lie at the heart of this thesis.

A number of papers have been published which address the issue of whether or not a market needs to be segmented. Young, Ott, and Feigin (1978, p. 411) argued that markets should not be segmented at all in the cases of (1) product categories with low sales volume, (2) products for which sales are skewed to a small group of heavy users, and (3) products where brands dominate the market. Mahajan and Jain (1978, p. 340) also gave an example which illustrates that it is not appropriate to segment the market in case of limited availability of resources. Garda (1981, p. 242) stressed that segmentation strategy in industrial markets is subject to three constraints: each segment should be large enough, each segment should be identifiable by measurable characteristics and each segment should be characterised by a distinctive set of customers buying factors. Obviously, the first issue (decision to segment) discussed in the previous studies have not been made clear. For example, the three situations mentioned by Young, Ott, and Feigin (1978) can just be seen as some of the extreme cases, which are unusual in the real world. Further, these special situations are very likely to change as the competition environment of business is changing all the time. As for the availability of resources proposed by Mahajan and Jain (1978), logically it seems a useful guideline for making the decision of segmenting a market or not. In practice, however, it is not a reasonable excuse to give up the strategy of market segmentation, if market segmentation is recognised as a useful strategy. For the three constraints mentioned by Garda (1981), they are also not practical enough because marketers have to judge subjectively what the three constraints mean in specific situations. For example, it is very likely that the definition of a large enough segment will vary with different firms. In summary the previous studies have not provided clear answers to the first issue because the situations and constraints they mentioned are actually difficult to define. Therefore, this study attempts to link the decision of whether to segment a market or not with company characteristics, such as product category, company

size, and turnover so that a general rule for guiding what kind of companies should segment their markets can be provided. Although some other conditions or constraints remain unsolved, this provides a further research direction for industrial market segmentation.

The second issue concerns how to segment a market. In practice there are a number of reasons why choosing the appropriate bases and approaches are issues in segmenting an industrial market.

The first reason is that marketers have become accustomed to using traditional segmentation bases, such as SIC codes, customer size, geographic location, and product usage. This is partly because these traditional bases are easy to use and partly because they can easily be used as an excuse or a reason to explain the failure or success of a business performance. As Wind and Cardozo (1974) observed, industrial marketers often chose "second choice" segmentation bases - such as the geographic location of potential customers and the quantity purchased - rather than the more useful bases - such as the characteristics of the decision-making units or buying centres - because the former is easier to analyse and data is more easily available. Further, the authors emphasised that industrial market segmentation was used mainly after the fact, to explain why a marketing programme did or did not work instead of being used to develop effective marketing programs. Clearly, although the traditional bases seem to be more popular, their usefulness has been questioned. For example, Moriarty and Reibsten (1986) examined whether or not traditional bases for industrial market segmentation, such as SIC codes and company size, produced segments that are homogeneous within and heterogeneous between in terms of benefits sought. They found that the answer was negative in the case of the acquisition of nonintelligent data terminals.

The second reason is that industrial firms often have complex purchasing decision processes that result in difficulty in using the so called more useful segmentation bases, such as the characteristics of the decision-making unit (DMU) or buying centre. Knowing that segmentation bases most useful for industrial market segmentation do not lend themselves easily to analysis, Choffray and Lilien (1980) proposed a decision matrix to help marketers to

use the DMU base properly. Nevertheless, the use of DMU base remains questionable. It has been found that extensive surveys of multiple members of complex DMU are impractical and arduous (Johnson and Flodhammer, 1980; Moriarty and Spekman, 1984). In addition, the procedure for using DMU base is time-consuming, costly, and may influence the very behaviour one is attempting to observe. Further, once surveyed, the DMU may not converge in its opinions (Phillips 1981; Silk and Kalwani, 1982). Therefore, in the current study DMU is only one of seven customer variables chosen as a possible segmentation base to examine the extent to which the textiles companies implement segmentation strategy using the customer specifics.

Thirdly, since customers' needs and competitors' activities are constantly changing, the choice of appropriate bases is unlikely to be static. It is very likely that a specific base is valid for segmenting a particular industry within a certain period of time but invalid when the circumstances are changed. For example, product quality or price may be a useful weapon for competition in the product's growth stage but may become a necessary attribute (the condition for survival not for competition) in its maturity. As Wind (1978, p. 319) comments, probably there is not one best segmentation basis for all possible situations. Given that the bases for segmenting industrial markets can range from the fairly simple to the extremely complex, guidance for marketers in choosing bases correctly in different situations should be very helpful. Unfortunately, this dynamic issue has been ignored by the previous studies. This study, therefore, attempts to discover a variety of bases which were used in the past and in the present, and will be used in the future so that guidelines can be given.

The third issue results from the process of implementing the segmentation strategy. The implementation issue of market segmentation is very important but is rarely studied. According to Webster (1978, p. 24), industrial marketing, due to its complexity, needs more modern management science tools than consumer marketing. Fortunately, industrial marketing managers appear to be much more capable of appreciating advanced statistical and computer based techniques than consumer marketing managers (Doyle and Saunders, 1985, p.32). This suggests that, using appropriate software, a number of advanced statistical

techniques, such as factor analysis, cluster analysis, discriminant analysis, and conjoint analysis could easily be used. Wittink, Vriens and Burhenne (1994, p. 47) have reviewed the commercial use of conjoint analysis; they stressed that much of the recent growth in the use of conjoint analysis may be attributed to the availability of appropriate software. However, very few articles have focused on the practical applications of these statistical techniques for segmenting industrial markets. One successful application was reported by Doyle and Saunders (1985), who emphasised the application of multivariate statistical procedures, including factor analysis and cluster analysis. They used factor analysis to reduce customers' choice criteria into a few dimensions. They then used these factors as input into cluster analysis to determine whether the complex product applications could be grouped into segments. These segments were then evaluated using statistical validation procedures. If such approaches are to be used, then specific statistical skills are needed by industrial marketers. On the other hand, these techniques can be used in a wrong way or misunderstood, for example Stewart (1981) considered the misapplication of factor analysis. Therefore, this study considers the techniques mentioned above and seeks to clarify the statistical problems.

Referring to work by McKinsey Company (international management consultants), Webster (1991) concluded that industrial marketers in general have difficulty developing and implementing niche marketing strategies. Sales volume and short-term profit pressures cause them to resist a critical appraisal of marketing approaches and to fail to develop long term strategic aims. Webster (1991) also commented that they place too much emphasis on the segmentation task itself and fail to consider fully strategies for implementing segmentation. In addition, probably due to not having a thorough understanding of how to segment markets, many companies end up with too few segments and therefore inadequate opportunities to achieve real competitive advantage, or too many segments and therefore confusion and misdirection. As McDonald (1991) observed, the contextual problems surrounding the process of marketing planning are so complex and so little understood that effective marketing planning rarely happens. Therefore, investigating the extent to which industrial companies implement the process of market segmentation is also included in this study.

Finally, several implementation barriers, which could hinder the success of a segmentation strategy, have also been mentioned in the literature, including

1) a failure to properly understand the scope and relevance of segmentation (Dickson and Ginter, 1987).
2) a lack of support from senior management (Engel, Fiorillo and Cayley, 1972)
3) the extra costs incurred by segmentation (Wensley and Dibb, 1994),
4) resistance from other functional groups (Jenkins and McDonald, 1994).

This study also investigates the extent to which these barriers exist in practice.

CHAPTER THREE ALTERNATIVE VIEWS ON SEGMENTATION

3.1 Introduction

As mentioned in chapter 2, since Wendell Smith (1956) first coined the term market segmentation, increasing attention has been given to this concept. The majority of researchers have focused their studies on finding segmentation bases, and developing analytical approaches. It seems that the need for segmentation as a strategy is rarely questioned. Nevertheless, there are a number of published papers which question the belief that segmentation inevitably leads to better decision making. This chapter explores these different opinions and focuses specifically on the studies questioning the usefulness of market segmentation.

To help understand the alternative views on segmentation, this study sorts them into four groups based on the specifics they have criticised. The four groups of alternative views on segmentation are ambiguous cognition in market segmentation, dynamic issues of segmentation studies, stability of grouping techniques, and implementation considerations of segmentation strategy. Each of these opinions is addressed in turn and some critical comments are provided both from other authors and from the author himself.

3.2 Ambiguous cognition in market segmentation

This section is devoted to a review of the way in which the term market segmentation is ambiguously used and to give a formal definition of the term market segmentation which is used in this study. The concept of market segmentation as opposed to product differentiation is described first. A variety of definitions proposed by different authors are then discussed. This is followed by a discussion of three similar terms, product segmentation, brand segmentation, and benefit segmentation, which lead to the problem of ambiguous cognition in market segmentation. Finally, the issues are summarised and the formal definition used in this study is given.

3.2.1 The context of market segmentation

According to its originator, market segmentation is an alternative marketing strategy to product differentiation (Smith, 1956, p. 4). In particular, according to Smith, market segmentation is customer oriented. It is based upon developments on the demand side of the market and represents a rational and more precise adjustment of product and marketing effort to consumer or user requirements. That is, market segmentation aims to identify customer subgroups of the market so as to produce a strong market position in the segments that are targeted. On the other hand, product differentiation is product oriented. Product differentiation is concerned with the bending of demand to the available supply. Hence product differentiation attempts to identify subgroups of competing products so as to alter the shape of the price-quantity demand curve facing the individual supplier through the use of advertising and promotion. Nevertheless, all authors do not adopt this distinction and this results in confusing definitions related to the two terms.

The confusing use of the two terms is well illustrated by a review of 16 marketing textbooks (Dickson and Ginter, 1987, p.1) which found that five of the texts described product differentiation as an alternative to market segmentation and 11 of them described it as a complement or means of implementing market segmentation. In general, there seem to be two separate schools of thought (Plank, 1985). The first school of thought regards market segmentation as a strategic orientation (e.g., Smith, 1956). The second school of thought defines market segmentation as an analytical tool used to research markets in a meaningful way before target marketing is used to evaluate, select, and concentrate on those segments the firm feels it can serve (e.g., Kotler, 1997). According to Kotler, target marketing requires marketers to take three major steps. The first is market segmentation, the act of identifying and profiling distinct groups of buyers who might require separate products and/or marketing mixes. The second step is called market targeting, the act of selecting one or more market segments to enter. The third step is called market positioning, the act of establishing and communicating the product's key distinctive benefits in the market

Apart from the two main schools of thought, several authors argue that market segmentation not only groups buyers based on their similarities, but also allocates the resources to them. For example, Schiffman and Kanuk (1994, p.24) defined market segmentation as follows:

> The process of dividing a potential market into distinct subsets of consumers with common needs or characteristics and selecting one or more segments to target with a distinct marketing mix.

This definition defines market segmentation as more than just an analytic technique. Similarly, Mahajan and Jain (1978, p. 340), emphasised that market segmentation will be meaningless if a firm segments the market without considering its available resources. There appear to be substantial risks in separating these two aspects of dividing a market and considering the resources available. Johnson and Flodhammer (1980) also express a similar viewpoint as follows:

> Segmentation is more of a strategic problem of resource allocation than of measuring and statistical analysis.

3.2.2 Product segmentation

The confusing use of the term market segmentation is exacerbated by the use of new terminology, such as "product segmentation" and "brand segmentation". Barnett (1969) proposed "product segmentation" as an alternative technique for market segmentation. According to Barnett, the major difference between the two techniques is that market segmentation concentrates on differences among people who comprise markets whereas product segmentation concentrates on differences among products which comprise markets and compete with each other. In examining the traditional segmentation techniques (i. e. identifying the subgroups within a market by using one or more "people" characteristics such as demographic, sociographic, or personality variables), Barnett claims that efforts to use people characteristics to identify groups of consumers with homogenous purchase behaviour are not successful because consumers do not co-operate. Instead, he stressed the concept of "product segmentation" which promises to have greater operational value to marketing

managers than traditional market segmentation. On the basis of his concept, people differentiate among the various brands in a market according to their perception of the brands' real or imagined characteristics. That is, people choose the brands whose characteristics they prefer. Accordingly, he highlighted two applications that product segmentation can provide to marketing managers, namely improving the marketing programme for an existing product, and developing a new product. As far as the two applications are concerned, product segmentation is basically the same as market segmentation, in spite of Barnett's attempts to differentiate the two terms. His new term should be seen as just another sort of base for identifying subgroups in a market or an implementation of market segmentation. In simple terms, the new base attempts to segment markets according to buyer's benefits sought on a given product, Haley (1968) called this benefit segmentation.

3.2.3 Brand segmentation

Brand segmentation is another controversial concept. According to Hammond, Ehrenberg and Goodhardt (1993, p. 440), brand segmentation refers to brands which are competitive and easily substitutable, but which nonetheless appeal to different parts of the market. As for product segmentation, they did not give a clear definition, but gave examples instead. The examples were that dog food is mostly bought by dog owners, and petrol is bought by motorists. They argued that product segmentation is essentially the means to identify what constitutes the market for a firm's product category. This thought is clearly different from Barnett (1969) stated earlier.

Further problems are introduced when the concept of market segmentation is extended to embrace the idea of segmenting a market on a brand-by-brand basis which can be thought of as a type of product segmentation. Analysing panel data across products, brands, and periods, Collins (1971, p. 156) found that there is usually little 'segmentation' in the sense of one brand appealing to one segment of consumers and another brand appealing to another segment. Originally, he expected to find evidence that market segmentation (or something like it) occurred. However, he found that most brands do not operate within a definable

segment of customers. According to Collins, there are two possible reasons which could explain this result. Firstly, the variation in requirements is too minor in comparison with some basic demand to influence brand-selection. Secondly, the variation in requirements is irrelevant to brand-choice. Accordingly, he suggested that in general, one cannot think of a market as being divisible into a series of discrete and homogeneous segments of behaviour. If this is true, the best strategy for the majority of brands will be to sell their products to the mass-market, not targeting any particular group of buyers within the market. Therefore, Collins emphasised that the mass marketing seems to be what the larger brands did, while the segmentation concept would still demand that small brands do operate within isolatable market segments.

However, several authors have noted that small brands suffer from fewer buyers who are less loyal. For example, Cannon, Ehrenberg and Goodhardt (1970) concluded that the larger a brand's market share, the greater will be the relative 'loyalty' of its buyers. Using the Target Group Index data base, Raj (1985) showed that brands with a large share of users have proportionately more loyal buyers. As a result, brands that seek to improve their market positions have to be successful, both in terms of getting brand users and in developing their loyalty. Obviously, this is an arduous task! Ehrenberg, Goodhardt and Barwise (1990) and Ehrenberg (1990) further emphasised that a small brand typically has the worst of both worlds: compared with major brands, it has fewer buyers who are usually less loyal. They buy the brand less often and they like it less. They argued that this kind of "double jeopardy" exists normally, and claim that no striking exceptions have been reported. Uncles and Ehrenberg (1990) provided an example which showed that the loyalty of airlines tends to be highly divided among different oil companies, and there is no sign of any market segmentation. In other words, they emphasised that despite the complexities of the market, the competitive picture is very simple: there is virtually no special clustering of particular oil companies (i. e., 'brands') as exceptionally competitive. They also demonstrated that the degree of competitive overlap between pairs of suppliers in this market shows no major clusters but is mainly linked to market share. They specifically pointed out that this

phenomenon also exists in a range of markets for undifferentiated industrial products such as industrial components, office furniture, chemical additives, paper and packaging.

In summary, brand segmentation can also be seen as another name for product segmentation, because it attempts to identify subgroups of products in a given market that is based on product characteristics. Brand loyalty being used as a basis for segmenting a market but one can not judge whether or not market segments exist from a single basis. Instead, as mentioned in the previous chapter, a number of segmentation bases should be examined before any conclusion is reached. As Wind (1978, p. 319) has noted, any attempt to use a single basis for segmentation (such as psychographic, brand preference, or product usage) for all marketing decisions may result in incorrect marketing decisions as well as a waste of resources.

3.2.4 Conclusions and definition

It is essential to note that market segmentation is different from product (or brand) segmentation. To clarify the concept, this study gives an example as follows. It is assumed that two most important needs (benefits), B1 and B2, are sought by the customers in a given market. On the basis of the benefits sought, the customers can be identified into three distinctive groups, which can be illustrated as Figure 3.1. This is the first step of target marketing that Kotler (1997) called market segmentation. Segment B1, B2 and B3 stands for distinctive group of people who seek for benefit 1, benefit 2, and both benefit 1 and benefit 2, respectively. The second and third steps of target marketing are called market targeting and market positioning, respectively. The well-targeted and well-positioned situation is portrayed diagrammatically in Figure 3.2, where brand 1, brand 2, and brand 3 correctly cater for the needs of segment B1, B2 and B3, respectively. On the contrary, Figure 3.3 shows a case, where the people's benefits sought are not satisfied by the firm's offerings. That is, it has been targeted and positioned badly. Obviously, the problem is not segmentation but targeting and positioning of brands.

Figure 3.1 Segmentation by benefits sought

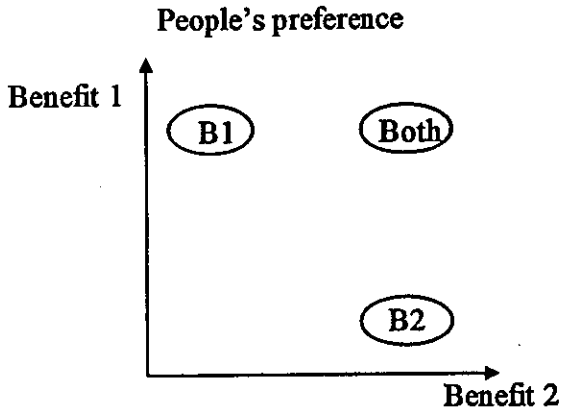


Figure 3.2 Well-targeted and well-positioned

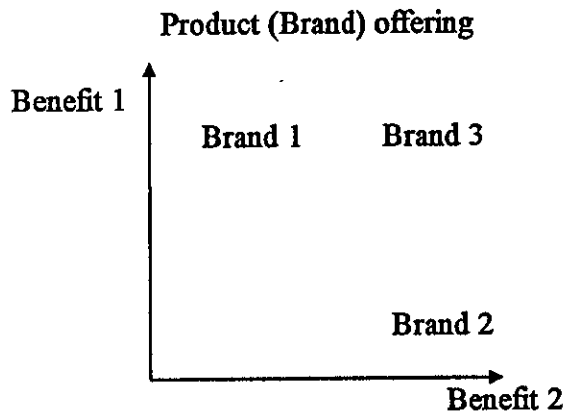
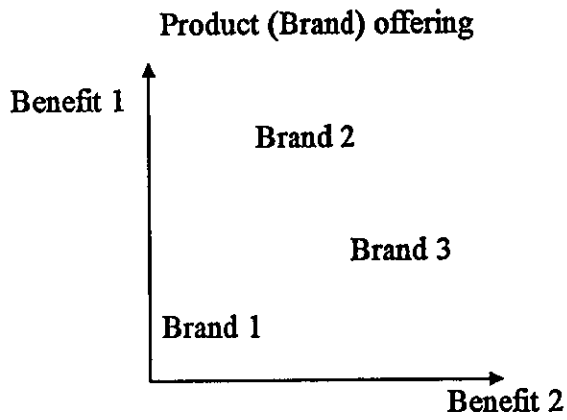


Figure 3.3 Bad-targeted and bad-positioned



Considering the fact that companies are increasingly embracing target marketing (Kotler, 1997, p. 249) and the fact that segmenting a market without considering the available resources is meaningless (Mahajan and Jain, 1978, p. 340), this study has adopted the following definition of market segmentation, based on the three steps of target marketing proposed by Kotler, as follows:

> The process of dividing a potential market into distinct groups of customers- each group containing customers with similar needs-, selecting one or more segments to enter, and then establishing a viable competitive positioning of the firm and its offering in each selected market.

That is, the definition of market segmentation used in this study is a broader one, which contains the narrower definition of market segmentation (dividing a potential market into distinct groups of customers), as well as market targeting (selecting one or more segments to enter), and market positioning (establishing a viable competitive positioning of the firm and its offering in each selected market).

3.3 Dynamic issues of market segmentation

This section considers the dynamic issues of market segmentation. It includes a description of the origins of dynamic issues in market segmentation, the arguments of different authors on these issues, and some critical comments on these issues.

3.3.1 Origins of dynamic issues in market segmentation

As stated in chapter 2, there are many ways to segment a market but not all segmentations are effective. Kotler (1997, p. 269) presents five requirements for market segments to be useful, these are measurable, substantial, accessible, differentiable, and actionable. An additional important criterion which measures the extent to which identified market segments are stable over time is neglected by most segmentation studies. An exception is the work of Calantone and Sawyer (1978). In examining the internal consistency and stability over time of identified benefit segments in a retail banking market, they found that after two years, the chance of a

household being classified into a segment other than in its previous segment was more than 50%. Based on this evidence of individual change, they concluded that the dynamic issue of market segmentation needed further research.

3.3.2 Arguments of dynamic issues in market segmentation

In response to this conclusion about the dynamic perspective in market segmentation study, Yuspeh and Fein (1982) attempted to classify respondents to a benefit segmentation study two years after the original study was taken. They found that only about 40 percent of the original "core" respondents were accurately re-classified, while only a third of those in key segments were correctly re-assigned. With this finding, they stressed that sensible demographic differences that existed among the benefit segments in the original study were not found among equivalent segments in the subsequent research using the segment predictor[2]. As a result, they concluded that the original study had not provided reliable long term predictions of customers' behaviour.

Two weaknesses have been found in the studies mentioned above (the works of Calantone and Sawyer, and Yuspeh and Fein). Firstly, marketers should focus their attention on groups, not individuals (Haley and Weingarden, 1986, p. 54). Indeed, membership changes do not mean that market segmentation is useless. The toys market is a good example for explaining this point. The LEGO company has segmented its markets into a number of segments according to the ages of children. For example, LEGO PRIMO baby toys have been designed for babies under 24 months. As the babies grow older, different toys are provided, such as LEGO DUPLO for children under 6 years, LEGO TECHNIC STARTER SETS for children from 7 years, and the LEGO TECHNIC ADVANCED for children from 9 - 16 years. It is natural that the membership of the segments will change. However, the segments (age groups) still exist in the market. This is saying that criticising the usefulness of market

[2] According to Yuspeh and Fein (1982, p. 13), a "segment predictor" was developed using "Discriminant-Function Analysis", a technique commonly used in industry practice, to classify customers into appropriate segments.

segmentation from the viewpoint of the dynamic issues is irrational. Secondly, the reliability of this kind of recontact research is also questionable. It is very likely that only a small proportion of the original members can be recontacted. This was certainly true for Yuspeh and Fein (1982), in their study only 275 of the 500 original members could be recontacted.

In discussing the dynamic issues of market segmentation, there is one crucial factor which has been ignored in the papers mentioned above. That is the terms of comparison. How long should an effective segmentation strategy last? The answer to this question has not been made clear. Coincidentally, Calantone and Sawyer (1978) examined the segment stability by using the term of two years, and so did Yuspeh and Fein (1982). It seems that the two years term is an ideal period. In practice, however, the expiration of an effective segmentation strategy might be affected by a variety of factors. In the clothing market, for example, the favourite colour is strongly influenced by the trend of fashion. It is very likely to change annually or quarterly. Apart from depending on the factor of segmentation basis used, business environmental conditions play an important role as well. For instance, in a rapid growth society, the stability of segments might endure shortly because its population structure is very likely to change quickly. As a result, the segment stability depends on a number of factors, such as the bases used for segmenting markets, consumer mobility, and business competition, so that criticising the stability of segments without considering its reasonable period seems to be unfair.

3.4 Stability of grouping techniques

This section considers a variety of issues concerning the stability of grouping techniques. Specifically this section considers the criticisms made by a number of different authors about the stability of segments found using cluster analysis.

3.4.1 Grouping techniques

As stated in the previous chapter, four major types of models can be used in an effort to segment a market, namely *a priori*, cluster-based designs, flexible, and componential. The

procedures for determining membership in market segments vary according to the segmentation model used. The procedures (grouping techniques) most commonly employed for the *a priori* model are sorting and cross-tabulation (Wind, 1978, p. 330). A Bayesian technique to group members for the *a priori* segmentation model has also been suggested (Blattberg and Sen, 1975). When cluster-based segmentation is used, the most common procedures are clustering, MDS, and AID (Wind, 1978, p. 330). As for componential and flexible segmentation, the primary procedures are conjoint analysis and computer simulation (Wind, 1978, p. 330).

Although a variety of alternative techniques for segmenting markets have been developed over the past few decades, cluster analysis seems to be the most common technique used by the commercial segmentation studies. In the analysis stage of segmentation, Kotler (1997, p. 255) suggested that researchers should apply factor analysis to the data collected from interviews to remove highly correlated variables and then apply cluster analysis to create a specified number of maximally different segments. The result expected from using the two statistical techniques is a set of clusters which are internally homogeneous and externally very different from each other. Once the clusters have been identified, each cluster can then be profiled in terms of its distinguishing demographics, attitudes, purchasing occasions, psychographics, DMU characteristics and other variables. In this way each segment can be given a meaningful name based on a dominant distinguishing characteristic.

3.4.2 Stability of cluster analysis

In practice, there are a number of issues surrounding clustering analysis, for example should the data be standardised, which method should be used, which measure of distance should be used and under what conditions (see also Milligan, 1996 and Ketchen and Shock, 1996). Unfortunately, the published literature relating to cluster analysis does not provide satisfactory answers to these questions (Wind 1978, p. 331). Further, researchers tend to select methods mainly on the basis of familiarity, availability and cost rather than on the characteristics and appropriateness of the available methods. As a result several researchers have criticised the stability of market segmentation, because different methods of analysis gave different segments. This is a well-known phenomenon with cluster analysis and, primarily, reflects a

poor understanding of the technique. These issues will be considered in more detail in chapter 7. What is interesting to note about these studies is that they ignore the guidelines for good cluster analysis given by Punj and Stewart (1983), and repeated by Saunders (1994b), Milligan (1996) and Ketchen and Shook (1996).

Esslement and Ward (1989, p. 92) investigated the effects of variations in the choice of clustering algorithms. They compared two non-hierarchical and seven hierarchical methods with the method used by their New Zealand Research Agency. The results of the comparison are shown in Table 3.1.

Table 3.1 Comparison of result with agency method [3].

Method	Cases correctly allocated %
Ward's method	57%
K-means with random starting points	56%
Average linkage between groups	55%
Complete linkage	54%
Median	53%
Average linkage within groups	49%
Centroid	32%
Single linkage	28%

This table indicates that generally only about half the cases were "correctly" allocated and the maximum level of agreement was only 57% between Ward's method and the agency method. Esslement and Ward reported that not only was there considerable disagreement between solutions as to the allocation of cases to segments, but also the positions in the analysis space of the cluster centroids differed substantially between solutions. Based on these results they concluded cluster-based segmentation studies give unstable results. They also concluded that the results of a segmentation study based on cluster analysis cannot be relied on, unless a variety of clustering algorithms have been used, and each has given similar results. This means that real segments can only be said to exist if several different algorithms locate the same segments. Similarly, Hoek, Gendall and Esslemont (1993) stressed that different

3. The K-means method with widely separately starting points was thought to be closest to the method by the research agency, and this was therefore used as the basis for comparison of solutions (Esslement and Ward, 1989, p. 92).

clustering techniques may produce different solutions, and that even the same technique may produce different results for the same set of data.

In terms of the stability issue of clustering solutions, the most important aspects is the fact that each technique requires substantial input from researchers at each of the various stages. For example, in addition to deciding whether or not to transform or standardise the variables, the analyst must also select a clustering approach (K-means, hierarchical etc.), a clustering method (e.g., nearest neighbour, furthest neighbour or Ward's method), and a measure (e.g., squared Euclidean distance, Euclidean distance, or Pearson correlation). As Hoek, Gendall and Esslemont (1993, p. 42) observed, segmentation research is more arbitrary than robust and rarely results in an objective outcome because too many subjective decisions are involved in the classification procedures. In fact, however, the stability issue may not really result from "too many subjective decisions" but from "too little thought". An example is provided by Dibb and Stern (1995) who misused the data collected by Portsmouth Community Health Council to question the reliability of market segmentation techniques. Some variables used in the case, such as age and occupation, were measured using nominal scales which permit only the most rudimentary of mathematical operations, and the usual statistical operations (calculations of means, standard deviations, etc.) are not empirically meaningful (Green, Tull and Albaum, 1988, p. 244). Factor analysis was used before clustering in the case. However, factor analysis has value only when correlations among subsets of the variables really exist (Green, Tull and Albaum, 1988, p. 558). That is, factor analysis is based on the calculation of correlations. Obviously, it is misleading to use factor analysis when the variables were measured using nominal scales.

Milligan (1996) recognises and describes the substantial input by the analyst at various stages in cluster analysis and the fact that the final solution (the stability of the clusters) depends heavily on the choices made by the researcher. This view is also reported by Ketchen and Shook (1996) who stress the importance of following "best practice" and who also stress the importance of validating the results of a cluster analysis. However, criticisms of the method of finding market segments should not be taken as criticisms of market segmentation itself. It

is true that software needs to be improved so that it is easy to follow "best practice" and it is also true that further research on cluster analysis is necessary to define further "best practice". However, the poor use of cluster analysis does not mean that there are no segments.

3.5 Implementation considerations of segmentation strategy

This section considers some of the implementation issues for a segmentation strategy. It includes a description of the usefulness of segmentation strategies for several practical situations, an explanation of "countersegmentation", arguments on the aspects of costs and benefits, an example which questions the usefulness of target marketing, and brief comments on this issue made by this study.

3.5.1 Usefulness of segmentation strategy

Along with the issues of identifying segments described above, implementation issues have resulted in another debate on the usefulness of market segmentation. Young, Ott and Feigin (1978, p.405) suggested some practical considerations in market segmentation. They stressed that the results of most segmentation studies have been disappointing because the segments derived from the study have not been actionable from a marketing standpoint. They gave several instances where they suggest a segmented marketing strategy is not appropriate:

1. The market is so small that marketing to a portion of it is not profitable.
2. Heavy users make up such a large proportion of the sales volume that they are the only relevant target.
3. The brand is the dominant brand in the market.

The authors emphasised that these guidelines needed to be examined carefully before spending a large amount of money on researching segments to determine whether a segmented marketing strategy is workable. The authors also stated that, according to their experience, segmentation based on the benefits desired is usually the most useful method of segmentation

from a marketing viewpoint. This is because segmentation based on the benefits desired directly facilitates product planning, positioning, and advertising communications. However, in several important situations a segmentation analysis based on benefits is not relevant for marketing, for example: (Young, Ott and Feigin, 1978, p. 406)

1. Traditional price lines have developed so that all marketing activities are based on price levels. For certain products such as clothing, cosmetics, automobiles, and appliances, the size of the market for any price line is too low to permit further segmentation.
2. The benefits desired are determined by the occasion or purpose for which the product is used.
3. The style or appearance of the product is the overriding criterion of success.

In fact, these arguments did not mean to challenge the value of market segmentation. What we need to learn from them is that in the real world a market does not necessarily need to be segmented.

3.5.2 Countersegmentation

In contrast to traditional market segmentation, Resnik, Turney and Mason (1979, p. 101) coined the term "countersegmentation" and suggested that marketers should re-evaluate their segmentation policy and reduce the number of targeted markets. This concept resulted from their survey, which showed that consumers are increasingly willing to accept products less tailored to their individual needs if the products are available at a lower price. That is, customers may be willing to 'accept a little less than what I want' in return for a reduced price. Therefore, they suggested that the key to successful countersegmentation is the ability to cut production and marketing costs and to pass on some of these savings to customers through lower prices.

In practice, segmentation strategy affects a firm's structure. If segmentation increases the total number of units sold, and each unit shares common components, economies of scale will

result. Accordingly, segmentation does not always increase costs. According to Resnik, Turney and Mason (1979), however, the additional product offerings to small market segments has often complicated the activities of marketing and production, and resulted in extra costs. Therefore, they stressed that these cost trade-offs and customer trade-offs between price and satisfaction have an important bearing on strategy. In order to decrease the costs of products, the authors suggested reducing the number of targeted markets. They agreed that this is contrary to the conventional wisdom of segmenting markets to satisfy customer needs more precisely. However, if the emerging social and economic changes affect customers' purchasing decision between price and satisfaction, profitable opportunities for the strategy of countersegmentation will exist (Resnik, Turney and Mason, 1979, p. 101). Therefore, they suggested reducing the number of target markets in two ways: (1) eliminate market segments by dropping products, or (2) fuse segments by inducing customers of differentiated products or services to accept more simplified products.

The authors gave an example as evidence that the strategy of countersegmentation has been used by the marketers. They observed that some supermarket chains have offered a line of plain label or highly simplified products including food, paper products, detergents, and health and beauty aids. They stressed that in such cases, people are willing to give up variety and some quality for price reduction 30% to 40% below national brands. Indeed, we can also see this strategy in several UK supermarket chains, like Sainsbury's or Tesco, where they have their own brands in some products, such as coffee, brandy whisky, with lower prices compared to main brands.

Although the authors called the term a new strategy for marketers, in terms of the initial context "countersegmentation" can be seen as another base for segmenting a market. That is , this is saying there is a "price" basis for segmentation but no other base.

3.5.3 Costs and benefits in segmentation

Successful segmentation policy should also include careful considerations of the revenues and costs involved. On the revenue side, better attention to customers needs can generate increased revenues, either through increased sales or through increased prices. Segmentation, however, can also affect a company's cost structures. These trade-offs including the customers trade-off between price and satisfaction need to be included in decisions about the strategy. Cheron and Kleinschmidt (1985, p. 109) suggested that costs should be taken into account before beginning to implement market segmentation. This is because in some cases the direct costs associated with a segmentation strategy are too high when compared with the benefit likely to result from the segmentation strategy. An extreme view on implementation costs was proposed by Wensley and Dibb (1994), who argued that segmentation strategy will be commercially wasteful if it incurs additional costs. They reached this conclusion because they felt that the many implementing problems existing in the real world result in market segmentation, particularly segmenting industrial markets, being "much ado about very little". In fact, the data collection and analysis needed for segmenting a market will inevitably result in extra costs for firms who would like to implement a segmentation strategy. However, compared with the benefits believed to be associated with a segmentation strategy, the cost of the data collection and analysis needed for segmenting a market is often considered trivial (Wind, 1978, p. 328). Nevertheless, it is true that little effort either by academics or business firms has been directed at the assessment of the expected value and the expected cost of implementing different segmentation strategies. This is partly because of difficulties in assessing the expect value associated with a segmentation strategy and also because of the difficulties in identifying the costs linked with the strategy. Although costs needed is a very convenient excuse for not following a segmentation strategy, the potential value of segmentation should not be ignored. Therefore, it is reasonable to conclude that one should not give up using a promising marketing strategy, such as segmentation, without conducting a careful cost-benefit analysis.

3.5.4 Usefulness of target marketing

As stated earlier, Smith's idea of market segmentation has been refined into Kotler's target marketing, and widely adopted by academics and marketers. Wright and Esslemont (1994, p. 13), however, question the usefulness of target marketing. They stress that even if segmentation is successful in terms of real segments being identified and validated, target marketing is still not necessarily the best approach in the market. To support their arguments they give a hypothetical example which contains two segments, old folks and yuppies. The important details of the example are shown in the following table.

Table 3.2 Optimal mix for $10,000 advertising

	Yuppy response	Pensioner response	Market response
Yuppy Mix	$ 150,000	$ 0	$ 150,000
Pensioner Mix	$ 0	$ 100,000	$ 100,000
"Sub Optimal" Mix	$ 90,000	$ 90,000	$ 180,000

Source: Wright and Esslemont (1994, p. 18)

The table shows that the same amount of advertising expenditure, here $10,000, can create different responses in the different segments. For example, if the advertising is designed to cater for the Yuppy segment, then a $150,000 response will be achieved from the Yuppy segment and none from the Pensioner segment. On the other hand, if the advertising is aimed at pensioners, no response will be achieved from the Yuppy segment and a $100,000 response will be achieved from Pensioner segment. As for the third case, if the advertising is not designed to cater for any specific segment but for the whole market (i.e., no segments), a response of $90,000 will be achieved from both the Yuppy and Pensioner segment. As a result, the total market response created by the "sub optimal" mix is $180,000, higher than $150,000 if the advertising is designed for the Yuppy segment or $100,000 if the advertising is designed for the Pensioner segment. With this artificial evidence, the authors demonstrated that targeting does not necessarily give the best overall market response and a mass-marketing effort could have a better overall return.

This is a very weak criticism of target marketing. Firstly, a "sub optimum" mix, which can create $90,000 response from both yuppies and pensioners, seems to be very impractical. This is because the "sub optimum" mix must be very similar to the pensioner mix since a very similar response ($90,000 instead of $100,000) for the Pensioner segment is achieved. Nevertheless, the response from the Yuppy segment jumps from none to $90,000; this seems to be exaggerated. Secondly, the example has distorted the concept of market segmentation since the example assumes that only one segment can be targeted whereas market segmentation assumes that one or more segments can be targeted. As long as sufficient resources are available, the two advertising mixes (yuppy mix and pensioner mix) can be adopted simultaneously and then a $250,000 total market response can be created.

CHAPTER FOUR RESEARCH HYPOTHESES

4.1 Introduction

The hypotheses under test in this thesis were developed from two stages. First of all, the literature review reported in chapter 2 and the investigation of alternative views on market segmentation presented in chapter 3 provide a theoretical background to base a number of hypotheses about issues in segmenting the textiles market in the UK. Secondly, the data collected from preliminary interviews with textiles experts provide practical experience in refining the hypotheses formed in the first stage. The two stages of forming the hypotheses will be discussed in detail in chapter 5.

The remainder of this chapter is devoted to a discussion of the research hypotheses that this study sets out to test. It is based on the following major sub areas: 1) issues in implementing segmentation strategy, 2) bases for segmentation in the textiles industry, 3) differences in product attributes with segmentation strategy, 4) differences in supplier characteristics with segmentation strategy, 5) differences in customers' buying specifics with segmentation strategy, 6) differences in segmentation strategy over time periods.

4.2 Issues in implementing segmentation strategy

As mentioned in chapter 3, a variety of definitions of market segmentation have been used by marketing academics. Market segmentation can be defined in many different ways, for example: a simple process, dividing a potential market into distinct groups of customers; an alternative marketing strategy to product differentiation; an analytic technique for making marketing decisions; a set of continuous steps, including the processes of segmenting, targeting and positioning. In practice, the extent to which market segmentation has been implemented would vary accordingly. This section is concerned with whether a company really implements the strategy of market segmentation.

4.2.1 Practical use of market segmentation

Most of the previous studies on market segmentation have been concerned with finding potential bases for segmenting consumer markets (e.g., Frank, 1967; Greenberg and McDonald, 1989; Haley, 1968; Liebermann, 1983; Mueller, 1991; Novak and MacEvoy, 1990; Plummer, 1974; Yankelovich, 1964). However, studies concerned with finding suitable bases for segmenting industrial markets can also be found in the literature (e.g., Cardozo, 1980; Choffray and Lilien, 1978; Shapiro and Bonoma, 1984; Spekman, 1981). Additionally, there are also several application studies on industrial market segmentation (e.g., Bennion, 1987; Choffray and Lilien, 1980; DeKluyver and Whitlark, 1986; Doyle and Saunders, 1985; Hlavacek and Ames, 1986; Lidstone, 1989; Moriarty and Reibstein, 1986; Rangan et al, 1992). Nevertheless, the studies on the practical use of market segmentation have rarely been reported.

One exception is Abratt (1993), who conducted a survey examining the market segmentation practices of industrial marketers. The data used was collected from 32 industrial companies in South Africa by means of a questionnaire. In terms of the segmentation bases used in the real world, geographic variables, according to Abratt, were the ones used most often by the sampled companies, and psychographics, values, and benefits sought were not used as commonly as the literature suggested. This result is similar to the comments in Wind and Cardozo (1974) that industrial marketers often choose "second choice" segmentation bases - such as the geographic location of potential customers and the quantity purchased - rather than the more useful bases - such as the characteristics of the decision-making units or buying centres.

4.2.2 The limitations of previous studies

Abratt's work, however, has a number of limitations in terms of reliability and validity. The limitations result from three aspects, namely sampling frame, sample size and analysis techniques. Firstly, the respondents were chosen from the top 100 companies listed in the

Financial Mail Top Companies, but the companies had not necessarily implemented a segmentation strategy. This could result in a misleading conclusion about the segmentation bases they used, because it is not necessarily correct to assume all of the companies have implemented a segmentation strategy. Also, as stated earlier, academics have used a variety of definitions of market segmentation so that the answers from the marketers could not be depended upon as a formal definition had not been given before they answered the questionnaires. For example, it is possible that a specific base had been used to identify their customers; but the strategy was not implemented at the targeting or positioning stage. As Wind observed (1978, p. 333), the most difficult aspect of any segmentation project is the translation of the study results into marketing strategy. He further stressed that no rules can be offered to assure a successful translation and that little is known (in the published literature) on how this translation occurs. Hence it is unreasonable to assume the companies listed in the top 100 had already implemented segmentation strategies and a comprehensive investigation would be needed of this aspect.

The second problem is caused by the small size of the sample used in his work. Abratt assumed that the 32 respondents were representative of the top 100 industrial companies in South Africa. These top 100 industrial companies must have included a variety of industries in South Africa and, according to Wind (1978, p. 319), the bases for segmentation are likely to vary depending on the specific decisions facing management. Several academics have noted the differences between different industries and have proposed specific conclusions for specific industry (e.g., Doyle and Saunders: specialised industrial markets, 1985; Hlavacek and Ames: high-tech markets, 1986; Rangan et al: mature industrial markets, 1992). Therefore, it seems unreasonable to reach conclusions on segmentation strategies used by industrial marketers based on a sample size of just 32 respondents.

The third problem is related to the statistical techniques used. In terms of the bases used to segment markets, the conclusions were reached by simply calculating the percentages for each base listed in the questionnaires. There was, for example, no attempt to test the statistical significance among those variables before reaching the conclusions.

4.2.3 Differences in implementation with segmentation strategy

In contrast to the previous studies, this study first attempts to identify which UK textiles companies had implemented market segmentation and which companies had not. After identifying the different groups of companies, a number of hypotheses which examine the relationships between a variety of segmentation bases and the different groups of companies are presented in the following sections.

The above discussions leads to the first hypothesis of this study.

Hypothesis 1: There is no difference in the extent to which textiles companies implement a segmentation strategy.

The issue of how to measure the extent to which a company implements its segmentation strategy has not been found in the previous studies. To deal with this issue, this study has developed a set of variables relating to segmentation barriers and implementation perceptions (see Appendix 5.3). It is assumed that the higher the ratings in these variables, the lower the extent of implementation in the company.

How company characteristics (e.g., company size, SIC sectors, location) affect the company's implementation of a segmentation strategy is another interesting but ignored issue. Although it has been argued that segmentation awareness seems to be a function of size, with big companies being more familiar with it (Cheron and Kleinschmidt, 1985, p. 108), this has not been investigated practically. In addition, the relationships between other company characteristics (e.g., SIC sector and geographic location) and the company's implementation of segmentation strategy have not been reported. Therefore, several subsidiary hypotheses were developed from the first hypothesis above.

Hypothesis 1A: There is no difference between SIC sectors and the extent to which textiles companies implement a segmentation strategy.

Hypothesis 1B: There is no difference between geographic location and the extent to which textiles companies implement a segmentation strategy.

Hypothesis 1C: There is no difference between company size and the extent to which textiles companies implement a segmentation strategy.

4.3 Bases for segmentation in the textiles industry

This section describes the bases used for segmenting industrial markets in general and the textiles industry in particular. It is based on the following major sub areas: (1) previous studies in bases for segmenting markets, (2) the conceptual framework of segmenting textiles markets, (3) the bases used in the study.

4.3.1 Previous studies in bases for segmenting markets

Over the past few decades, the focus of the majority of segmentation studies has been on determining the appropriate bases for forming market segments. As stated in chapter 2, earlier studies used geographic, demographic and socio-economic variables as bases for segmenting markets. Most of this work has been for consumer market segmentation. Later, the concept of benefit segmentation was introduced by Haley (1968), who proposed the base of benefits sought as an alternative to segmenting consumers by geographic location, demographic characteristics and volume (light or heavy usage). According to Haley, the belief underlying this segmentation strategy was that the benefits which people are seeking in consuming a given product are the basic reasons for the existence of true market segments. He argued that the benefits sought by consumers determine their behaviour much more accurately than demographic characteristics or volume of consumption. Since then, the literature has reflected wide acceptance of the concept of benefits sought as a viable and perhaps superior base for segmentation (e.g., Calantone and Sawyer, 1978; DeKluyver and Whitlark, 1986). In practice, however, Moriarty and Reibstein (1986) observed that segmenting industrial markets by benefit sought was not as popular as segmenting consumer

markets by benefit sought. According to Moriarty and Reibstein, the following four reasons can be used to explain why industrial marketers have not adopted the concept of benefits sought as a basis for segmenting their markets:

(1) they have become accustomed to using other criteria, such as SIC codes and customer size;
(2) they can readily identify which segment a customer (organisation) belongs to by using the traditional criteria;
(3) data are easily available on the traditional criteria;
(4) the traditional criteria may serve as reasonable bases for forming near or quasi-benefit segments.

Similarly, Young, Ott and Feigin, (1978, p. 406) stressed that in several important situations a segmentation analysis based on benefits sought is not relevant for industrial marketing (see also in chapter 3). As a result, the most popular segmentation method in industrial market has been to divide companies according to industrial sector and company size (Shapiro and Bonoma, 1984). Unfortunately, after examining whether segmenting industrial markets by using these demographic variables also yields benefit segments, Moriarty and Reibstein (1986, p. 477) concluded that they (at least SIC codes and company size) may be operationally useful but do not provide an adequate base of segmentation.

In a longitudinal benefit segmentation study of a consumer market, Calantone and Sawyer (1978) found that households were frequently being classified into different segments. As a result of the study, increasing attention has been given to the issue of stability in segmenting a market on the basis of benefits sought (see also chapter 3). One reason for the dynamic issue, according to Dickson (1982, p. 60), is that the weights assigned to product features are situation-specific and that the individual's usage situations change over time. That is, the perceived importance of benefits sought vary according to the situations faced by individuals. The ratings of the perceived importance of benefits sought in the work of Calantone and Sawyer were not usage situation-specific so that the dynamic changes of membership within

the segments identified by benefit segmentation were inevitable. Dickson (1982), therefore, proposed a framework to link personal characteristic and usage situation with benefits sought. The key concept in his framework is that person-situation segmentation is a P x S matrix constructed by linking person (P) and situation (S). As a result of linking the two factors, the benefits sought reflect the needs of individuals in different situations so that a richer description and understanding of target markets can be achieved. His framework appears to be logical and comprehensive, however, his framework lacks the special considerations and implementation details needed for industrial market segmentation. Although the concept of segmentation and most of the segmentation approaches have been suggested as being applicable to industrial situations (Wind, 1978, p. 318), agreement has not been reached by academics. Considering the complexity of industrial marketing, for example, Webster (1978, p.24) argued that the approaches used in industrial marketing must often be different from those found in consumer marketing. Recognising the similarity of the underlying concepts between industrial and consumer marketing, Doyle and Saunders (1985, p. 25) suggested a middle course which recognised that the approaches used in consumer marketing were relevant but needed some significant modification for industrial marketing. Indeed, management needs are likely to vary depending on the specific situations facing management. The specific situations are not only linked with the marketing types (consumer or industrial), but also associated with the types of industries (e.g., high-tech or mature). Considering the specific situations facing textiles marketers, this study proposes the following framework (Figure 4.1) to explore those variables which might be closely related to segmentation strategy.

4.3.2 The conceptual framework of segmenting textiles markets

As mentioned in chapter 2, in the industrial segmentation literature, the two-step approach (macro- and microsegmentation) and the so-called nested approach have gained wide attention because of their systematic approach to the segmentation task. Wind and Cardozo (1974) suggested identifying macrosegments on the basis of the characteristics of the buying organisation and the buying situation, and dividing those macrosegments into microsegments

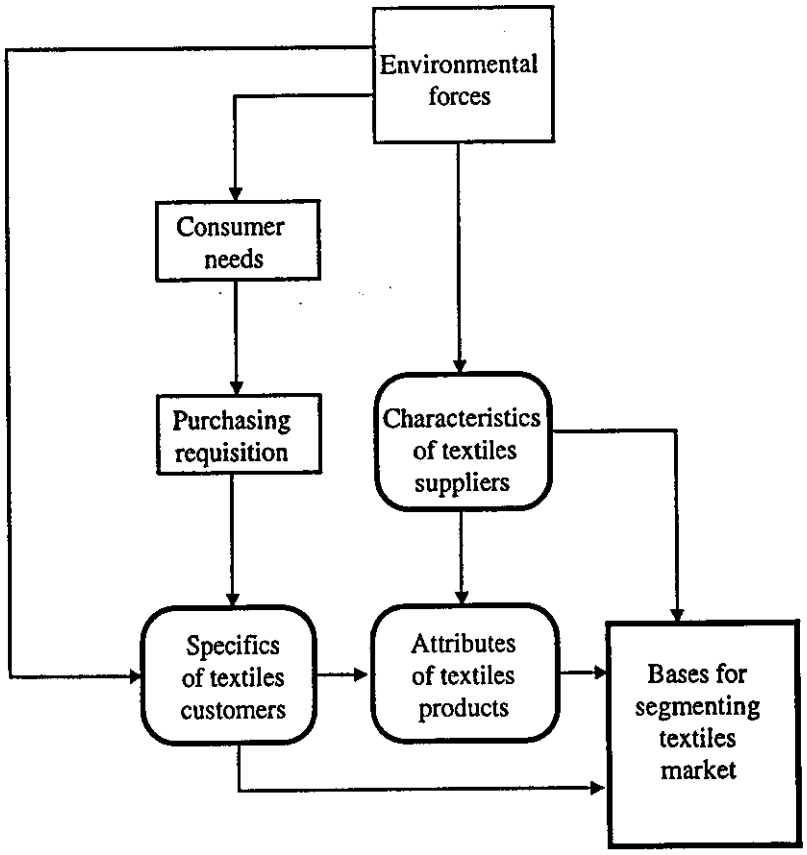
based on the characteristics of the decision-making units (DMUs). Shapiro and Bonoma (1984) subdivided the characteristics of the buying organisation into demographics, operating variables, and customer purchasing approaches and they also included situational factors and the personal characteristics of the buyers. Clearly, Wind and Cardozo, as well as Shapiro and Bonoma, concentrated on the characteristics of the customer as the base for segmenting industrial markets. In contrast to using customer characteristics as the base for segmentation, Haley (1968) suggested using the benefits sought as the base for segmenting markets. The benefits sought usually include a variety of product attributes, such as quality, price, and delivery time, which are regarded as the needs of the customers when they purchase the product. As a result, according to Haley, a relatively homogeneous membership within the benefit segments identified would be achieved. Nevertheless, Willigan (1992, p. 94) argued that while focusing on the product attributes is a great way for a brand to start, it is not enough.

In addition to the customer characteristics and the benefits sought (product attributes in particular), Cardozo (1968, p. 242) suggested that supplier profiles (e.g. supplier capabilities, and competence of supplier's salesperson) should also be considered as a potential segmentation base. In an application case of segmenting an industrial market, Doyle and Saunders (1985) segmented the specialised industrial market of chemicals by using variables related to the product attributes and the supplier characteristics simultaneously. Their research identified six product specific variables affecting choice: softening point, viscosity, colour stability, starting colour, tack and price, and four supplier characteristics, the supplier's product range, service support, geographical coverage, and general reputation for reliability. Similarly, Moriarty and Reibstein (1986, p. 478) segmented the nonintelligent data terminals markets into four segments on the basis of 14 variables which included product attributes and the supplier characteristics. They found that one segment was particularly concerned with the supplier's sales competence together with features related to the operator's interaction with the terminal. They found that another segment was particularly concerned with the suppliers who could provide a broad product line including software.

Therefore, evidence from theoretical arguments and practical implementations suggests that when segmenting industrial markets using a cluster-based segmentation model, variables covering product attributes, customer specifics and supplier's characteristics need to be included so that meaningful segments can be identified.

The conceptual framework below (Figure 4.1) for segmenting the textiles market draws together the market segmentation studies reviewed above, information from literature about the textiles industry and information from interviews with experts in the UK textiles industry.

Figure 4.1 The conceptual framework of segmenting textiles markets



The key concept in the Figure 4.1 is that the bases selected for segmenting textiles markets are grouped into three main categories, namely specifics of textiles customers (customer

specifics), characteristics of textiles suppliers (supplier characteristics), and attributes of textiles products (product attributes). The attributes of textiles products are influenced by both the specifics of textiles customers and the characteristics of textiles suppliers. On the basis of the needs demanded by the textiles customers, the suppliers provide their offerings using the resources and capability they posses. If the gaps between the available resources and the existing capabilities among textiles suppliers are large enough, considerable differences between the offerings provided by the suppliers are likely to exist. Further, the strategies for allocating resources are likely to be different for different suppliers. As a result, it is inevitable that a wide variety of products will exist in the market. This suggests that textiles suppliers may use the attributes of their products as a base for segmenting their markets.

Specifics of textiles customers refers to the buying behaviour of the purchasing organisation. Apart from being influenced by environmental forces (e.g., political, legal, culture, and economic), the buying behaviour of textiles buyers depends mainly on the purchase requisition which is derived from the consumers' (end-users) needs. Obviously, the consumers' needs are also affected by environmental forces. These environmental forces also affect the characteristics of the textiles suppliers. The influence of these environmental forces on segmentation bases are not discussed in this study. The key factors discussed in this study are the three mentioned above, namely customer specifics, supplier characteristics, and product attributes.

4.3.3 The variables used in the study

Based on the framework mentioned above, this study proposes a number of hypotheses to examine the extent to which the bases for segmenting textiles markets have been used.

The three groups of bases for segmenting textiles markets have been operationalised into a number of variables. Initially, drawing on the literature review, interviews with the experts in the UK textiles industry, and the author's own experience working in the textiles industry, this

study used 18 variables to form its first questionnaire to study the potential variation in segmentation bases in the textiles industry. Following a pilot test of the instrument on 40 textiles companies listed in the membership directory of the Textile Institute, a formal questionnaire was constructed. Respondents from the pilot survey suggested three extra variables, stability of product quality, overall management quality, and response to service change. The formal questionnaire, therefore, consists of 21 segmentation variables. The questionnaire also included 5 supplier variables, 4 possible barriers to segmentation, and 6 implementation variables and these are discussed further in chapter 5.

Out of the 21 segmentation variables, seven of them are concerned with attributes of textiles products (product attributes), seven of them are concerned with characteristics of textiles suppliers (supplier characteristics) and seven of them are concerned with specifics of textiles customers (customer specifics). Details of these variables and the hypotheses based on them are included in the following sections.

4.4 Differences in product attributes with segmentation strategy

As stated earlier, benefit segmentation can provide a more detailed picture of customer needs for product design, pricing, distribution, and marketing support decisions. Some academics (e. g., Moriarty and Reibstein, 1986; DeKluyver and Whitlark 1986) have suggested that the first step in segmenting industrial customers should be to use measures of the benefits sought (product attributes).

The second major hypothesis seeks to examine the relationship between the strategy of market segmentation and product attributes in the textiles industry.

Hypothesis 2: There is no difference between textiles companies who segment and those who do not segment in terms of product attributes.

Several subsidiary hypotheses were developed from the major hypothesis above.

4.4.1 Product quality

Hypothesis 2A: There is no difference between textiles companies who segment and those who do not segment in terms of product quality.

According to a survey conducted by INSEAD, 85% of European companies considered the most important factor needed to achieve success to be the ability to offer a "consistent and reliable" quality (Bertolotti, 1987, p. 15). It appears (for example TQM) that there is a growing acceptance of quality as a general objective for the whole organisation and not simply as an additional cost. Nevertheless, Bertolotti (1987, p. 16) emphasised that quality in the textiles sector has not been highlighted due to a lack of intention to implement a quality policy. The key reason, according to Bertolotti, is that textiles firms believe that high quality equals high cost. However, others have recognised the importance of product quality in marketing. For example, after examining the UK textiles industry in terms of the quality of its products, Hawkyard and McShane (1994, p. 469) noted that if British industry is to survive and compete successfully with low-wage countries, it must provide a better quality product more efficiently. Apart from the case in Europe, a survey conducted for the US textiles industry suggested that to compete successfully against both domestic and foreign competition, the product's quality is one of the key success factors (Amacher et al, 1991, p. 217). Additionally, Shaw et al (1994, p. 272) pinpointed that there are a few small firms in the Taiwanese textiles industry which are successfully competing with high quality products. Shiatzy, a small clothing firm, is a good example of a company which has developed a reputation for high quality. As a result, it seems reasonable to expect that product quality will be a useful base for segmentation.

However, a number of arguments relating to the use of product quality as a base for segmentation have been proposed. Roach (1994, p. 489) argued that product quality is essentially a subjective and not an objective standard, because the levels of performance specified by different brands or buying houses for similar articles in the textile industry will vary. For example, customers are more likely to complain about the performance of an

expensive item such as a suit or leather jacket; they are less likely to complain about more modestly priced items such as underwear.

Two cases from the British textiles industry illustrate these points. Allied Maples Group believe that quality can be regarded as a threat or an opportunity, depending on a firm's culture (Wallis, 1990). A quality programme is a threat if the firm fails to change its working practices and the attitudes of its staff. On the other hand, a quality programme is an opportunity for a company which can solve these issues, because a successful quality programme can result in considerable benefits, such as: (1) establishing a reputation in the minds of the customer and thereby gaining a competitive edge; (2) allowing the company to charge more; and (3) reducing total cost of the company. Similarly, using his own experience in Milliken Industries, Jeanes (1990) recognised both bad news and good news in implementing a quality programme. The so called bad news included: (1) the time and money required before starting to see any improvement; and (2) requiring a never-ending commitment from the very top of the company. The good news included: (1) the fact that it works as long as the company sticks at it; and (2) the fact that there are more opportunities available to the companies which have made progress in their quality programme. To explore if product quality is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.4.2 Price level

Hypothesis 2B: There is no difference between textiles companies who segment and those who do not segment in terms of price level.

In exploring the evolution of the French textile and clothing industry, Battiau (1991, p. 141) stressed that low prices are one of the main weapons used by the most dynamic retailers, the mail-order companies and hypermarkets, to attract customers. With clothing, he argued that consumers often prefer to pay low prices, because with the same amount of money, they can change their garments more often in order to keep up with the latest fashion. Apart from the

French situation, Amacher et al (1991, p. 217) employed an American example to demonstrate that in order to compete successfully against both domestic and foreign competition, the textile industry must efficiently produce what is demanded by the final consumer, at the time it is demanded, with the quality that is demanded at a competitive price. To explore if price level is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.4.3 Brand awareness

Hypothesis 2C: There is no difference between textiles companies who segment and those who do not segment in terms of brand awareness.

The most competitive Italian products in the French textiles and clothing markets are knitted goods such as pullovers, because every French girl knows the brand name "Benetton" (Battiau, 1991, p. 139). Although the influence of brand awareness in British textiles has not been particularly reported, the relationship between brand awareness and customer purchasing behaviour is well established in the marketing literature. For example, as stated in chapter 3, Ehrenberg et al (1990), and Ehrenberg (1990), concluded that a small brand typically has the worst of both worlds: compared with major brands, it has fewer buyers who are usually less loyal. Similarly, Raj (1985) found that larger brands with a larger share of users have a proportionately higher fraction of loyal buyers. Therefore, brands that seek to improve their market position, according to Raj, have to be successful, both in terms of getting brand users and in developing their loyalty. To explore if brand awareness is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.4.4 Delivery time

Hypothesis 2D: There is no difference between textiles companies who segment and those who do not segment in terms of delivery time.

Using evidence from a case study about a paper company, Gouillart and Sturdivant (1994, p. 118) found that customers, even loyal customers, are very likely to switch their business to those suppliers who can offer a shorter order-to-delivery cycle time. They stressed that the switching resulted from the fact that a supplier with a shorter delivery time can save customers when they run out of stock during promotions. In addition to the influence in customer's switching behaviour, they further noted that a supplier could reduce its inventory-control cost significantly by shortening its delivery time. To explore if delivery time is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.4.5 Service level

Hypothesis 2E: There is no difference between textiles companies who segment and those who do not segment in terms of service level.

Like product quality, there are advantages and disadvantages from providing a higher level of service in the targeted market. There is no doubt that a higher level of service will cost more than a lower level of service. However, by offering a higher level of service companies can satisfy their customers and strengthen their competitive ability in the target market. An interesting question for industrial marketers is whether customers can be divided into different groups by their buying behaviour in terms of trade-offs between price and service. In a study of segmenting customers in mature industrial markets, Rangan et al (1992) identified four buying behaviour microsegments, namely programmed buyers, relationship buyers, transaction buyers and bargain hunters. They found that the programmed buyers and the relationship buyers were not particularly price or service sensitive whereas the transaction buyers and the bargain hunters were very sensitive to any changes in price or service. They stressed that customers who pay high prices without receiving high levels of service must find the product attractive. Although the trade-off seems natural, Nicholson (1990) argued that there is no alternative to offering the very best in service for today's companies who would like to be successful in their markets. To explore if service level is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.4.6 Product aesthetics (style, colour, size, and etc.)

Hypothesis 2F: There is no difference between textiles companies who segment and those who do not segment in terms of product aesthetics.

According to Willigan (1992, p. 94), it is important in the marketing context to understand the needs of core consumers in terms of a product's function and aesthetics. The term "aesthetics" includes the style, the colour, and the size of the product. In particular, according to Hudson (1987, p. 129), colour is a vital ingredient in the marketing and design of many textiles products. Similarly, the textiles experts interviewed for the present study regarded colour as one of the most important factors affecting the market's fashion trend. It has been suggested that the textiles sectors, in particular dyeing and finishing, might use colour as a base to identify their customers and might have targeted one or more colour groups by providing a specific product or service for them. For example, denim is dyed using indigo dyestuff whereas gingham is made of a variety of coloured yarns. Due to the colour differences, the investment and manufacturing technology needed for producing the two types of products are very different. The variable colour, therefore, might be used as a base for segmenting the textiles market. To explore if product aesthetics (including colour) is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.4.7 Stability of product quality

Hypothesis 2G: There is no difference between textiles companies who segment and those who do not segment in terms of stability of product quality.

As one of the benefits sought by customers, quality plays an important role and this role was discussed earlier. The variable "stability of product quality" was suggested by textiles marketers in the pilot stage. This is because, in their experience, a stable quality was more important than fluctuations along with a high quality product. These are not contradictory ideas since a firm with a higher average level of quality does not necessarily have a lower level

of variation in its quality. It is possible that some firms achieve a higher level in their product quality by investing in up-to-date machinery, but fail to achieve a lower level variation in their products due to lack of effective management or training. To explore if stability of product quality is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.5 Differences in supplier characteristics with segmentation strategy

The third major hypothesis seeks to examine the relationship between the strategy of market segmentation and supplier characteristics in the textiles industry.

Hypothesis 3: There is no difference between textiles companies who segment and those who do not segment in terms of supplier characteristics.

Several subsidiary hypotheses were developed from the major hypothesis above.

4.5.1 A wide range of products

Hypothesis 3A: There is no difference between textiles companies who segment and those who do not segment in terms of range of product offering.

It has been recognised that the production led approach to textiles manufacture is a thing of the past (Graham, 1987, p. 81). According to Graham, the time has passed when companies were able to impose a limited range of products, which suited particular manufacturing capabilities, on the market. He argued that successful organisations have become increasingly aware that a detailed analysis of consumer requirements must be used to decide product mixes for specific market segments and geographical areas.

One result of a detailed analysis of consumer requirements is likely to be an increase in the range of product offering. For example, Amacher et al (1991, p. 219) stressed that the US

textiles and clothing industries have responded to competition and market changes by increasing the number of styles that they produce.

In the real world, the concerns of marketing managers are very often in conflict with those of manufacturing managers. For example, marketers often argue for more diversity to serve an increasingly fragmented marketplace, while manufacturing managers are concerned about the complexity of production. In fact, cost, service, quality, product lines, and so on are always a trade-off decision. As Quelch and Kenny (1994, p. 153) comment, unchecked product-line expansion can weaken a brand's image, disturb trade relations, and disguise cost increases. How to optimise the range of product offering, therefore, may be a crucial challenge faced by practitioners. To explore if range of product offering is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.5.2 Financial stability

Hypothesis 3B: There is no difference between textiles companies who segment and those who do not segment in terms of financial stability.

The variable "financial stability" was suggested in interviews with textiles experts. They believed that a steady supply from a supplier was an important factor for textiles customers. This is because the textiles industry was regarded as a market influenced significantly by business cycles so that large fluctuations in sales by textiles firms is inevitable. As a result, it was suggested that to avoid problems caused by uncertain supply, textiles customers would rather choose a supplier with higher prices but relatively high financial stability than a supplier with lower prices but relatively low financial stability. To explore if financial stability is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.5.3 Salesperson's competence

Hypothesis 3C: There is no difference between textiles companies who segment and those who do not segment in terms of salesperson's competence.

As stated earlier, using salesperson's competence as a base for segmenting industrial market was suggested by Cardozo (1968) and has been employed by Moriarty and Reibstein (1986). To explore if this variable is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.5.4 Geographical coverage

Hypothesis 3D: There is no difference between textiles companies who segment and those who do not segment in terms of geographical coverage.

The geographical coverage of an industrial supplier has been suggested by a number of authors as a potential base for segmenting industrial markets (e. g., Forbis and Mehta 1981; Gensch, 1984). In the work of Doyle and Saunders (1985), geographical coverage was identified as one of the significant variables involved in an extracted factor which they referred to as the strength of a supplier. For the textiles market, Roach (1994, p. 493) noted that to cater for the demand of retailers and distributors in terms of better services (e.g., more innovation, faster response, and more reliable delivery), textiles suppliers should extend their supply lines and hence increase their geographical coverage. To explore if this variable is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.5.5 Quick response system

Hypothesis 3E: There is no difference between textiles companies who segment and those who do not segment in terms of quick response system.

Quick-Response System (QRS) is a mode of operation in which a manufacturing or service industry strives to provide products or services to its customers in the precise quantities and varieties and at the precise time that those customers require (Shah, 1987, p. 271). It has been suggested that QRS techniques eliminate some of the risk involved in reducing inventories whilst seeking to increase sales (Greenwood and Jenkins, 1987, p. 123). Achieving the objectives expected, however, rests on a number of key factors, such as (1) accurate interpretation of market trends (2) design of desirable range at competitive prices (3) appropriate product development, materials-sourcing, and organising/planning for manufacture, and (4) manufacturing and delivering on schedule; together with managing and organising systems to provide flexibility and cover if one gets it wrong (Shah, 1987, p. 271). It is clear that all the conditions are both difficult and expensive to implement.

Amacher et al (1991, p. 216) in discussing the US textiles industry noted that well-managed companies are expected to continue carving out niches in the clothing fabrics area, and future demand should be enhanced by increased domestic manufacturing and retailers' use of quick response techniques. In fact, quick response is not just one operational procedure but is a system of component technologies. Theoretically, it consists of five components: inventory control, information sharing, bar coding, product planning, and shade sorting (Kincade et al, 1993, p. 153). Manufacturers, therefore, should not confine their restructuring to implementing only one of the five component technologies, nor should they limit their change to a single operational procedure (Kincade et al, 1993, p. 155). As a result, the adoption of quick response systems by clothing manufacturers has been slow. Nevertheless, there are a few successful Taiwanese textile companies who retain their flexibility so that they are able to change their production schedules at short notice (Shaw et al, 1994, p. 273). To explore if quick response system is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.5.6 Reputation

Hypothesis 3F: There is no difference between textiles companies who segment and those who do not segment in terms of reputation.

The variable reputation was suggested in interviews with textiles experts. Supplier reputation was also identified as an important characteristic for segmenting industrial market by Doyle and Saunders (1985). For the textiles market, Choi (1992, p. 271) noted that a supplier's reputation for high quality might have to be created at the upper end of a market. He stressed that entry at the upper end of the market might be relatively more difficult but, if successful, might make diversification down-market easier, because there would be a demand for a variety of products, for example clothes, shoes, or perfumes, that carried the good reputation of the supplier. To explore if reputation is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.5.7 Overall management quality

Hypothesis 3G: There is no difference between textiles companies who segment and those who do not segment in terms of overall management quality.

The variable "overall management quality" was suggested by several respondents at the pre-test stage. Overall management quality was also employed as a base for segmenting a basic industry by Bennion (1987). Bennion found that one of the segments identified was related closely to the supplier's management quality. The members of this segment, according to Bennion, would seem to be willing to accept a higher price because they have more confidence that they would receive acceptable product quality and good service from the suppliers with a high overall management quality. To explore if overall management quality is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.6 Differences in customer specifics with segmentation strategy

The fourth major hypothesis seeks to examine the relationship between the strategy of market segmentation and customers' specifics in the textiles industry.

Hypothesis 4: There is no difference between textiles companies who segment and those who do not segment in terms of customer specifics.

Several subsidiary hypotheses were developed from the major hypothesis above.

4.6.1 Supplier loyalty

Hypothesis 4A: There is no difference between textiles companies who segment and those who do not segment in terms of supplier loyalty.

Brand loyalty is a well-known and a heavily researched topic in the field of consumer marketing. For example, Roach (1994, p. 488) noted that if the customer is ultimately satisfied with the performance of the article, a degree of brand loyalty will be developed. He also stressed that it is very likely that customers remember an unsatisfactory purchase more vividly than hundreds of satisfactory purchases. This means that supplier loyalty is built on the basis of a consistently satisfying purchases from the supplier. For industrial products, Wind (1970) was the first to examine supplier loyalty by investigating the purchase of electronic components. In attempting to identify the "switchable" customers on the basis of supplier loyalty for the electrical equipment industry, Gensch (1984, p. 52) concluded that the resulting segmentation served as the basis for a marketing allocation strategy that produced impressive sales results. On the other hand, Uncles and Ehrenberg (1990) showed that the loyalty of airlines for their fuel purchases tends to be highly divided among different oil companies, and that there is no sign of any market segmentation. Considering several macro-changes in the business environment, such as demographic change and the change of economy style, Robert (1992, p. 53) pointed out that brand loyalty exists in a push economy because there is more

demand than supply, while in a pull economy consumers are loyal to themselves and not to the producer because there is more supply than demand. To explore if supplier loyalty is a useful base for segmenting textiles market, this study proposes the hypothesis stated above.

4.6.2 Decision-making unit

Hypothesis 4B: There is no difference between textiles companies who segment and those who do not segment in terms of decision- making unit.

Wilson et al (1971) suggested segmenting industrial markets on the basis of the decision making styles of individual buyers. For industrial markets, Frank, Massy and Wind (1972) developed a two-step segmentation approach defining both macro segmentation bases and decision-making unit bases. Based on those studies, Choffray and Lilien (1980) proposed a decision matrix for segmenting industrial markets on the basis of decision making units (DMU). Nevertheless, extensive surveys of multiple members of complex DMUs have been found to be impractical and arduous (Johnson and Flodhammer 1980; Moriarty and Spekman 1984). Rangan et al (1992, p. 74) argued that the procedure is time-consuming, costly, and may influence the very behaviour one is attempting to observe. To explore if DMU is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.6.3 Purchasing quantities (order size)

Hypothesis 4C: There is no difference between textiles companies who segment and those who do not segment in terms of purchasing quantities.

Assael and Ellis (1976) undertook an empirical study for the industrial telecommunications market. They found that two of the segments identified contained a total of only 10% of the customers, but accounted for 40 % of the sales. This finding suggested that the concept of heavy and light users of products could be used as a basis for segmenting industrial markets. However, in markets with highly seasonal sales or short product lifetimes, like the textiles

market, the story could be very different. As Robert (1992, p. 51) observed, the retailers winning today are those that fragment the market with a host of styles and fashions with a much wider variety of material and finishes, but in smaller quantities. This means that increasingly diversified needs in the textiles markets could force textile suppliers to give up the traditional concept of mass production. Using the case of the US textiles market, Robert concluded that the problem of unsuccessful firms was that they did not make what the customers wanted to buy, but concentrating on materials that could be produced in large quantities, such as denim and sheeting. To explore if purchasing quantity is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.6.4 Familiarity with the buying task

Hypothesis 4D: There is no difference between textiles companies who segment and those who do not segment in terms of familiarity with the buying task.

According to Cardozo (1980, p. 265), familiarity with the buying task can be classified into three categories, namely new task, straight rebuy and modified rebuy. He defined the three "buyclasses" as follows:

(1) A "new task" is one with which members of the buying organisation have not dealt before, at least in their present organisation.
(2) A "straight rebuy" involves purchases of previously purchased items from suppliers already judged acceptable.
(3) "Modified rebuys" represent an intermediate residual category of purchases with which individuals in the buying organisation are familiar, but for which buyers may re-evaluate their buying objectives and re-evaluate suppliers.

Various authors have suggested that familiarity with the buying task could be a useful base for segmenting industrial markets. For example, Yankelovich (1964) noted that when people make a purchasing decision with little confidence, they tend to rely on the reputations of both the dealers and manufacturers. He stressed that these customers tend to be brand loyal and tend not to be price sensitive, whereas buyers who can make decisions with confidence in the area will be the opposite. This suggests that the marketing mix, including pricing policy,

needs to meet the customer's buying situations, and particularly the extent of familiarity with the buying task. To explore if familiarity with the buying task is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.6.5 Product importance

Hypothesis 4E: There is no difference between textiles companies who segment and those who do not segment in terms of product importance.

A number of factors related to product importance in a specific buying situation have been suggested as possible variables for segmenting markets. For example, the degree of risk (Cardozo 1980; Moriarty and Galper 1978; Sheth 1973) as well as the compatibility and complexity (Rogers 1983) of the product or its application have been identified as key determinants of industrial buying behaviour. In an empirical study of a mature industrial market, Rangan et al (1992) found that customers who perceived the product line to be critical to the operation of their company devoted more energy and consideration to the buying process. They also found that high product importance was linked with those customers who were sensitive to changes in price or service. The explanation, according to Rangan et al, was that these customers were the most knowledgeable about suppliers and hence the most likely to switch suppliers at the slightest dissatisfaction. To explore if product importance is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.6.6 Response to price changes

Hypothesis 4F: There is no difference between textiles companies who segment and those who do not segment in terms of price flexibility.

Wind (1978, p. 319) argued that the bases for segmentation could vary depending on the specific decisions facing management. If management is concerned with the likely impact of a

price increase on its customers, according to Wind, the appropriate basis might be the current customers' price sensitivity. Similarly, in reviewing the previous studies in buying behaviour, Rangan et al (1992, p. 76) noted that customer sensitivity to price changes is an important aspect of buying behaviour.

A number of studies which use price sensibility as a segmentation base can be found in the segmentation literature. For example, Frank and Massy (1975) evaluated price sensitivity for several market segments for a frequently purchased food product. The results of their study indicated that price sensitivity differed from one segment to another. Similarly, Shilliff (1975) investigated the price sensitivity of supermarket products for various consumer segments. He concluded that price sensitivity was a function of other segmentation variables, such as age, income, family size, education, and frequency and amount of use.

Although the majority of research linking market segmentation and price sensitivity has taken place in the consumer market, examples can also be found in the industrial marketing literature. For example, Moriarty and Reibstein (1986) employed price sensitivity as one of the clustering bases for segmenting the market for nonintelligent data terminals. They found that price sensitivity was one of the most significant variables in a segment they identified and which they called hardware buyer. The members of the hardware buyer segment tended to be more concerned about price changes. Similarly, price sensitivity has also been included in a segmentation study of the market for natural gas by Ferrell et al (1989). Using three different price levels (decreasing price by 10%, 20% and 30%), the authors investigated the possible reactions to each of these price changes. Their research results indicated that different segments would react differently to the different potential price changes for natural gas.

To explore if price sensitivity is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.6.7 Response to service changes

Hypothesis 4G: There is no difference between textiles companies who segment and those who do not segment in terms of service flexibility.

The variable "service flexibility" was suggested by several respondents at the pre-test stage. Opinions from the pre-test suggested that if price sensitivity is an appropriate base for segmenting the textiles market, then service sensitivity should also be included as a possible base for segmenting the textiles market. To explore if service flexibility is a useful base for segmenting the UK textiles market, this study proposes the hypothesis stated above.

4.7 Differences in segmentation strategy over time periods

The final major hypothesis seeks to examine possible changes over time.

Hypothesis 5: There is no difference among the groups of textiles companies which are identified on the basis of segmentation bases they used in the different time periods.

Using the hypotheses discussed so far, the dynamic issues associated with the various bases for segmenting the textiles markets can now be considered. In fact, segment stability depends on three factors, namely the bases for segmentation, the volatility of the market place, and consumer characteristics (Wind, 1978, p. 326). The factor "consumer characteristics" has been discussed in chapter 3. The factor "volatility of the market place" refers to changes in competitive activities and other environmental (e.g., political, legal, cultural, economic) conditions, which are beyond the research scope of this study. The bases for segmentation is the last of the confusing issues that this study attempts to explore.

CHAPTER FIVE METHODOLOGY

5.1 Introduction

Methodology is the foundation of good research (Saunders, 1994a, p 359). To produce good research, Churchill (1979) suggested a procedure for developing better measures of marketing constructs. Two important steps are involved in his suggestion. One is specifying the domain of the construct. This means being exacting in delineating what is included in the definition and what is excluded. The other is to generate items which capture the domain as specified. Churchill suggested that marketers are much better served by multi-item rather than single-item measures of their constructs. Following his suggestions, this study proposed a systematic research procedure to ensure the quality of the research. In addition, the hypotheses used in this study were consistently linked with the research questions mentioned in Chapter 1 in order to achieve a higher quality of research. The checklist which links the hypotheses with research questions will be described in section 5.4.

This chapter presents the methodology employed in carrying out this research. The intention is to describe the systematic research procedure used by this study and to provide details for each part of the procedure. The remainder of this chapter is divided into three sections. The first section discusses the research design by which the systematic research procedure was formed. The second section provides details of the way in which the data was gathered in this study. The third section introduces the data analysis methods used in this study.

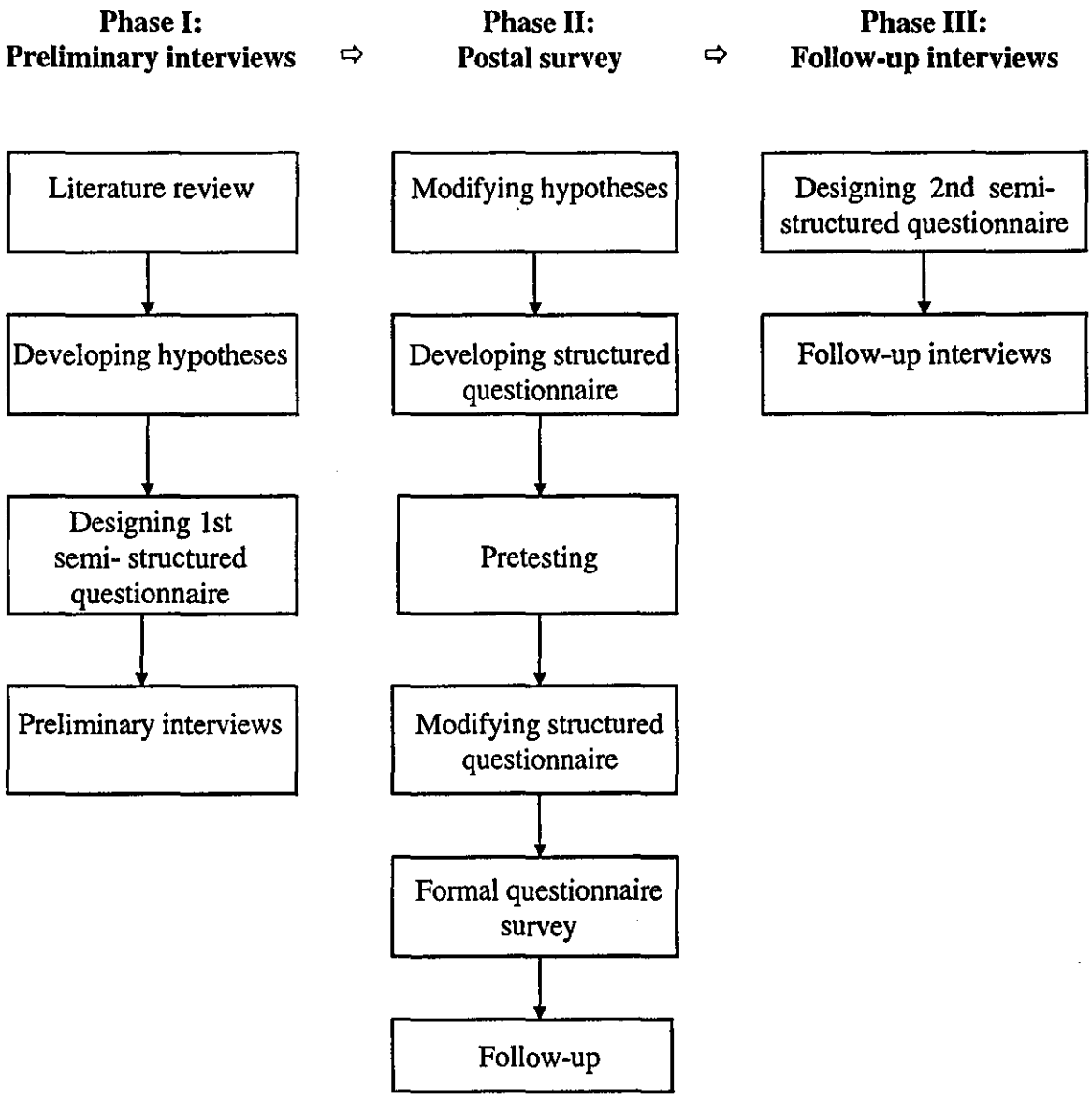
5.2 Research design

Compared to consumer market segmentation, industrial market segmentation is a relatively new research area. As stated in chapter 2, the majority of research has been focused on possible bases for industrial market segmentation and there have been few empirical studies devoted to providing practical models for specific markets. As for exploring the issues in segmenting the textiles market, no systematic and comprehensive study has been found. As a result, in addition to borrowing many concepts and techniques from the general literature of

marketing research and market segmentation, exploratory interviews with textiles experts and a formal survey of textiles marketing executives were also conducted in this study.

This research follows the example of Hooley and Lynch (1994, p. 371) and uses a three-phase methodology. Their three-phase methodology comprises preliminary interviews, a postal survey and follow-up interviews and combines the theories of academics with the opinions of marketing executives. The details of the three-phase methodology used to explore segmentation issues in the UK textiles market are shown in Figure 5.1. A paper describing the three-phase methodology was presented at the EMAC Doctoral students Colloquium in May 1995 (see Appendix 5.1). The three phases are described in detail in the remainder of this section.

Figure 5.1 The three-phase research methodology



5.2.1 PHASE I: preliminary interviews

The first phase is concerned with preliminary interviews and is, by nature, an exploratory study. An exploratory study, according to Green, Tull, and Albaum (1988, p. 97), is often used as an introductory phase of a larger study and the results are used in developing the larger study. An exploratory study was used in this research to enhance the author's knowledge about the practical issues in segmenting the UK textiles market.

Phase I consists of four procedures, namely literature review, developing hypotheses, designing a semi-structured questionnaire, and conducting preliminary interviews. This section discusses these procedures in general terms. A later section (section 5.3) of this chapter deals with their outcomes in detail.

The literature review covered a variety of areas, including market segmentation (consumer and industrial), UK textiles industry, marketing research, and statistical analysis. From the review of the market segmentation literature, a variety of issues confusing the implementation of market segmentation in industrial markets were identified. A brief review of the UK textiles industry was then conducted to augment the author's knowledge of the textiles industry generally. From this review, the potential bases for segmenting the UK textiles industry were identified. The use of appropriate analysis methods is also a key factor in research design. This study reviews the techniques of data analysis and particularly factor and cluster analysis because these two techniques are often used in market segmentation. Factor analysis and cluster analysis are discussed in detail in sections 5.4.2, and 5.4.3.

The second procedure in phase I is developing hypotheses. A hypothesis is an assertion about the "state of nature" and often refers to a possible course of action with a prediction of the outcome if the course of action is followed (Green, Tull, and Albaum 1988, pp. 37-38). In this study, the hypotheses which needed to be developed were mainly focused on the relationship between segmentation bases and the extent to which textiles companies segmented their markets. In addition, there was also interest in the changes in the segmentation bases over time. One key problem is how could the relevant alternative courses of action (i.e. potential segmentation bases) be recognised so that the hypotheses could be developed? The answer, according to Green, Tull, and Albaum (1988, p 38), is to use the experience, judgement, and creative capabilities of the individuals concerned. Therefore, the research hypotheses developed in this stage of this study were originally constructed during the literature review.

Having developed the initial hypotheses, the questionnaire for the preliminary interviews could then be constructed. The preliminary interviews were designed to collect information from

people who are knowledgeable about market segmentation in the textiles industry. It was expected that three objectives would be achieved by using preliminary interviews. The first objective was to collect opinions about segmentation bases which could be used in the textiles industry. To achieve this objective, interviewees were encouraged to revise and to enhance the list of segmentation bases prepared in advance by the interviewer. The second objective was to eliminate ambiguous terms from the questionnaire. From the author's experience of questionnaires from industrial marketers, the terms used were frequently too technical or unclear to answer. By asking people in the preliminary interviews, the potentially ambiguous terms could be eliminated. The third objective of the interviews was to obtain opinions about the methodology and in particular about the sample design.

5.2.2 PHASE II: postal survey

The second phase is concerned with the postal survey and is a descriptive study. A descriptive study, according to Green, Tull, and Albaum (1988, p. 102), often involves the description of the extent of the association between two or more variables. As mentioned in chapter 4, 21 variables relating to bases for segmenting the UK textiles market were identified. The purpose of the postal survey was to obtain responses from marketing practitioners. The relationship between the possible bases for segmentation and the extent to which the textiles companies segmented their markets could then be examined.

The original hypotheses developed from the literature review were modified using the information from the preliminary interviews. Having modified the hypotheses, the structured questionnaire could then be constructed.

However before any formal survey is carried out, the structured questionnaire should be pretested. Pretesting a questionnaire, according to Green, Tull, and Albaum (1988, p. 185), may answer two broad questions: (1) whether or not the study is asking "good" questions; and (2) whether or not the questionnaire flows smoothly and the sequence is logical. The most common situation, according to the author's experience, is that the terms used in the

questionnaire are too technical to understand or too ambiguous to answer. The questionnaire used in this study was pretested to reduce these sources of potential research error.

Data collected from the pretesting was used to modify the first structured questionnaire and the modified questionnaire was then sent to the sample of firms. The sample design, including type of sample, sampling frame, and sample size, is another crucial part of research design which will be discussed in the next section (section 5.3).

A major problem in postal surveys is a low response rate. In consumer surveys, a number of approaches, such as an introductory post card, a covering letter, a reply paid return envelope, a reminder post card, a follow-up questionnaire, and a telephone follow-up, have been used to improve response rates. Using these approaches a response rate of 40 percent or more can be achieved (Green, Tull, and Albaum 1988, p. 55). The response rate for postal surveys in industrial market research has shown a decreasing trend in recent years. According to Jobber and Bleasdale (1987, p. 9), the response rate for postal surveys fell from an average of 37% in 1966 to an average of 24% in 1985. Although a variety of techniques for stimulating response rates have been proposed by academics (e.g., Jobber and Bleasdale, 1987; Jobber and Saunders, 1993; Wittink et al., 1994), the reality of low response rates is still a problem for researchers. This study used several of the approaches that have been suggested in the research literature. The approaches used to improve the response rate will be discussed later in this chapter (section 5.3.5).

5.2.3 PHASE III: followed-up interviews

Subsequent to the postal survey, follow-up interviews can be used to add a further, qualitative, dimension to the findings. In order to carry out the follow-up interviews, a second semi-structured questionnaire needs to be developed based on the quantitative results from the postal survey. After the follow-up interviews have been carried out, the results from the qualitative and quantitative research can then be integrated to provide a more complete picture.

5.3 Data collection

This section provides more details about the methods of data collection used to gather information from the respondents. This section also includes details of the outcomes from the preliminary interviews and the pretesting questionnaire. Based on the research design discussed in the previous section, this section is organised into the following areas: 1) questionnaire design; 2) outcomes from preliminary interviews; 3) outcomes from pretesting questionnaire; 4) sample design; 5) increasing response rate.

5.3.1 Questionnaire design

As stated earlier, this study uses a three-phase methodology to explore the segmentation issues faced by textiles marketers. As a result, different questionnaires were used in each of the three phases according to the different objectives of each phase.

The types of questionnaire used in industrial marketing research can be classified into three categories namely structured, unstructured, and semi-structured (Rhys, 1978; Hague, 1992). In a structured questionnaire all of the questions are fully written out. As a result, every person can be asked the same questions in the same order and the responses will be recorded in the same way. Therefore, a structured questionnaire is used wherever there are a large number of interviews (say, over 50 interviews) to carry out (Hague, 1992, p. 207), or for a postal survey (Rhys, 1978, p. 26). An unstructured questionnaire is simply a checklist of questions used to guide a discussion (Hague, 1992, p. 207). An unstructured questionnaire allows the researcher to modify the interview to suit the circumstances; this requires skill and experience. In practice, it is hard work to conduct a large number of interviews in this way. In the middle, between structured and unstructured questionnaires, are semi-structured questionnaires. According to Hague (1992, p. 210), in a semi-structured questionnaire there is a fixed order of questions and a suggested wording for each of the questions. However, unlike the rigidity of the layout in a structured questionnaire, semi-structured questionnaires include open-ended questions to allow respondents to explain their answers in their own

words. Also, in a similar way to unstructured questionnaires, the interviewer can adjust the questions in a semi-structured questionnaire to suit a particular circumstance. Therefore, semi-structured questionnaires are used widely in business-to-business interview programmes where it is necessary to maintain some flexibility to allow for the large differences that exist between respondent firms (Hague, 1992, p. 211). Since each type of questionnaire has its own advantages and disadvantages, choosing the correct type of questionnaire for a particular situation is an important consideration for successful industrial marketing research.

In Phase I of this study, there were three objectives for the preliminary interviews and these were discussed earlier. To achieve these objectives, a semi-structured questionnaire was designed (see Appendix 5.2) so that the majority of the required information could be obtained in an orderly and systematic fashion. The semi-structured questionnaire included questions about the interviewees themselves, the segmenting bases used by textiles companies and the implementation issues faced by textiles marketers. Depending on the background of the interviewee, the interviewees were also asked to answer some questions which were not listed in the questionnaire. For example, the experts from academic institutions were asked questions about the methodology and research instrument for this study, while the experts from the textiles research institutions, such as the Textile Intelligence Centre in Leeds, were asked questions about the UK textiles industry. The experts from the textiles companies were asked questions about their practical experience in refining the potential segmentation bases and about implementation issues facing textiles companies.

Based on the data collected from the preliminary interviews, the semi-structured questionnaire was developed into the pilot questionnaire for pretesting. The pilot questionnaire was structured to collect information in the following categories: (a) demographic information about textiles manufacturers in the UK; (b) the segmentation bases used by the UK textiles companies in the past; (c) the segmentation bases used by the UK textiles companies in the present; (d) the segmentation bases expected to be used by the UK textiles companies in the future; and (e) implementation issues in segmentation. The pilot questionnaire was then pretested to confirm the suitability of this research instrument. The companies used in the

pretesting of the questionnaire as well as their comments and the actions taken by this study will be discussed later in this chapter. The formal questionnaire was then developed, taking into account the information obtained from pretesting.

As can be seen in the formal questionnaire (Appendix 5.3), this study used a 6-point Semantic scale to measure the textiles marketers' attitudes toward the potential segmentation bases identified from the literature review and from the interviews. The respondents were asked two questions about each segmentation base: (1) how important is the feature; and (2) how well did their company perform. The results and the multivariate analysis of the importance and performance ratings from respondents will be discussed in the next chapter. Six point scales are widely used in market research and a number of examples are listed in Table 5.1. Green and Rao (1970) argued that response scales should contain at least six points. Lehmann and Hulbert (1972) concluded that if a researcher was interested in individual behaviour, a minimum of a 5- to 6-point scale is usually necessary. In reviewing the marketing literature over a 20-year period, Churchill and Peter (1984, pp. 365) concluded that the reliability of the measure increases as the number of scale points increases. They also demonstrated that scales with neutral points do not necessarily have higher reliability than forced-choice scales. Considering these suggestions, this study adopted a six point scale to evaluate textiles marketers' attitudes toward the potential segmentation bases identified by this study.

Table 5.1 A summary of some published papers using 6-point scale

Authors	Study area	Nature of scales	Type of scale	No. of points per item	Sample size
Sheth and Talarzyk (1972)	Attitudes	Product attributes and brands	Semantic differential	6	1271
Darden and Reynolds (1974)	Innovation	13 AIO's apparel innovativeness	Likert	6	154
Darden and Perreault (1975)	Life style	12 lifestyle covariates	Likert	6	359
Lundstrom and Lamont (1976)	Consumer discontent	Attitudes toward business practice	Likert	6	226
Ryan and Becherer (1976)	Personality	Personality traits: complaint, aggressive, & detached	Semantic differential	6	175
Best, Hawkins and Albaum (1977)	Attitudes	Beliefs (about 5 department stores)	Semantic differential	6	70
Moriarty and Reibstein (1986)	Industrial market segmentation	Benefit segmentation	Semantic differential	6	489

5.3.2 Preliminary interviews

The preliminary interviews were designed to collect information from people who are knowledgeable about market segmentation in the textiles industry. The preliminary interviews were conducted using both face-to-face interviews and telephone interviews. Table 5.2 shows a summary of the preliminary interviews. A number of key comments and suggestions for the questionnaire are presented in Appendix 5.4.

Table 5.2 Interviews with experts in the textiles industry (Feb.- Mar. 1996)

Interviewee	Institution	Key comments
1. Professor Ronnier Luo	Design Research Centre, University of Derby	See Appendix 5.3.
2. Dr Steve C. A. Shaw (Associated Professor)	Institute of Textile and Clothing, Fu Jen Catholic University, Taiwan	❶ Add the definition of market segmentation at the beginning of questionnaire. ❷ Clothing means the all garment products. It is suggested that made-up could be a better term for the textiles group.
3. Dr Peter Kilduff (Director)	Textile Intelligence Centre Department of Textile Industries Leeds University	See Appendix 5.3.
4. Mr Xiao Bing Wang (Researcher)	Textile Intelligence Centre Department of Textile Industries Leeds University	See Appendix 5.3.
5. Textiles Marketing Executive	ABC Textiles Ltd * Bradford UK	High quality, low price, shorter delivery time, and high service level seem to be the abilities needed to survive in this industry. More product lines for customers to choose might be important.
6. Managing Director	Supertex Textiles Ltd * Rossendale UK	Brand awareness, product aesthetics, brand loyalty and DMU were not stressed by the company. Financial stability and delivery time were focused especially. To ensure a more steady supply source, a supplier's financial stability becomes a powerful weapon. Further, for the purpose of competition, a shorter delivery time is believed more important than product quality and price level.
7. Company Owner	XYZ Textiles Ltd * Shepshed, Leics UK	As a small company, the product attributes seem to be more important, while supplier characteristics and customer's buying specifics are relatively less important. Limited by the company's size, the owner has to be in charge of both production and marketing so that the issue of market segmentation has never been highlighted.
8. General Manager	Hightech Textiles Limited * Taipei Taiwan	Textile industry is by no means a sunset industry, but a sunrise industry. The inevitable trend is going to be more international co-operation. In this sense, market segmentation is becoming more and more important.

* In order to keep the promise of anonymity, the names of the experts have been omitted. Similarly, the names of the textiles companies have been disguised.

5.3.3 Pretesting questionnaire

The pilot questionnaire was based on the literature review and the interviews with experts in the textiles industry. The pilot questionnaire asked demographic questions, questions about the importance and competitive position for a number of segmentation bases for the three different time periods and questions about the implementation of market segmentation.

In response to suggestions from the preliminary interviews, the author became a member of the Textiles Institute, an international organisation for textiles firms. It was suggested that this would result in better co-operation from the respondents. Pilot questionnaires were mailed to 25 members listed in the membership directory of the Textiles Institute, who were marketing executives in the UK textiles industry. Also, 25 pilot questionnaires were delivered directly to marketing executives at a conference at Leeds University. The 50 marketing executives were required to rate the importance and their company's competitive position for each of the segmentation bases listed. They were also asked to suggest segmentation bases used by the industry that were missing from the list.

Nineteen firms returned the pilot questionnaires suitably completed, giving a response rate of 38 percent. Reynolds et al (1993, p. 175) states that the sample size for the pilot questionnaire will be small, perhaps as low as 10 depending on the nature of the research. Green, Tull, and Albaum (1988, p. 185) stated that the pilot questionnaire should cover all subgroups of the targeted population. Based on these comments, the nineteen usable questionnaires appears to be adequate, since all subgroups of the UK textiles industry were covered. In terms of the subgroups there were two responses from each of spinning and weaving companies, three responses from each of knitting and making-up companies, four responses from finishing companies, and five responses from dyeing companies.

Two lessons were learnt from the pilot survey. Firstly that some bases for segmentation had been omitted, and these were included in the final questionnaire. Secondly that the questions about the implementation of market segmentation were not sufficiently sensitive to distinguish

between companies. Further questions about the implementation of market segmentation were developed and were included in the final questionnaire.

The formal questionnaire (Appendix 5.3) comprised five pages of questions, including general information about the sampled company, the segmentation bases used by the company in the past, the present, and expected to be used in the future, and barriers to segmentation as well as issues in segmentation. The major differences between the formal questionnaire and the pilot questionnaire have been summarised in Table 5.3.

Table 5.3 Comparison of pretesting questionnaire and formal questionnaire

Questions	Pretesting	Formal survey	Comments
1. Classification of textiles firms	Based on 6 main production activities in the textiles industry.	Based on 7 main product types in the textiles industry.	Data collected from pretesting suggested that grouping firms by product types would lead to a clearer interpretation of the survey result.
2. Company size	Both employees and turnover were divided into 6 groups.	Both employees and turnover were divided into 3 groups.	The classification of three groups (small, medium and large) was used by Kompass Directory.
3. Bases for segmenting textiles markets	18 variables extracted from literature review and suggested in the preliminary interviews.	3 extra variables were added.	This was in response to the suggestions collected from pretesting.
4. The extent to which the textiles firms implemented a market segmentation strategy.	Three questions relating to attitude towards market segmentation.	Combining different opinions in four barriers and six segmentation issues.	To overcome the problem of failure to identify which firms segment, more sensitive questions were formulated.

5.3.4 Sample design

Based on the interviews with experts in the textiles industry, including staff at the Textiles Institute, the sampling frame used in this study was the textiles company information listed in the Kompass directory. The Kompass directory was thought to provide a comprehensive and up-to-date listing of textiles companies in the UK. Some 1800 UK textiles companies are listed in the Kompass directory and 1126 of these were identified as eligible and these formed the population for this study. An eligible textiles company was defined as one that met the following criteria:

1. The company has their own production factories in the UK. Hence, companies who are engaged only in trading were omitted from the population for this study.

2. The company could be classified into one of the following product groups:
   (1) Man-made fibres and fabrics.
   (2) Woollen yarns and fabrics.
   (3) Cotton yarns and fabrics.
   (4) Industrial fabrics.
   (5) Knitted fabrics and goods.
   (6) Carpets and rugs.
   (7) Dyeing and finishing.

Some other sectors, such as sewing and embroidery threads, cordage, twines and ropes, nets for fishing, sport, cargo, etc., were omitted from the population, because they were either very small or not directly relevant to the main textiles product groups.

The seven product groups were used as strata for a stratified sample. Using an alphabetical list of the companies, the sampling selection was to select every fourth entry on the list, giving a total sample size of 280. Assuming that a response rate of 35% could be achieved, the total number of respondents was expected to be 98. The expected numbers of respondents from

each product group are shown in the last column of Table 5.4. These numbers acted as guidelines for the minimum number of respondents desired from each product group.

Table 5.4 Number of UK textiles companies in each sector and the sample allocation

The SIC codes: 4 digit number	The product groups	Number in population listed in the directory *	Number in sample: 25% of population	Expected number of respondents : 35% of total sample	Actual number of respondents
2304, 2320	man-made fibres and fabrics	286	71	25	22
2312, 2323	woollen yarns and fabrics	182	45	16	15
2313, 2325, 2326, 2327	cotton yarns and fabrics	160	40	14	15
2339	industrial fabrics	104	26	9	9
2368	carpets and rugs	80	20	7	15
2345, 2347, 2348	knitted fabrics and goods	116	29	10	11
2380, 2382, 2384	dyeing and finishing	198	49	17	14
	Total	1126	280	98	101

*Source: accounted from the product category 23 in the CBI UK Kompass (1996)

5.3.5 Increasing response rate

Diamantopoulos and Schlegelmilch observed (1996, p. 509) that executives of major companies frequently receive postal mail questionnaires for proprietary and governmental studies and that they are practically overwhelmed with postal questionnaires from academic

researchers. Given that the executives will be highly selective in terms of which questionnaires they answer, care must be taken to ensure a good response rate.

Studies suggest that the response rates for postal questionnaires can be improved by using a variety of techniques. The techniques used in this study were:

1. The postal addresses and the names of executives were checked carefully to avoid mailing to a wrong address.

2. The formal questionnaire was accompanied by a personalised covering letter requesting co-operation (Appendix 5.5).

3. The questionnaire package was sent by first class mail to ensure the questionnaire reached respondents as soon as possible, and to reduce the chance of the questionnaire being lost in the post.

4. The author's membership of the Textiles Institute was emphasised in the covering letter to build a better relationship between respondent and researcher. One of the marketing executives wrote that he has received so many letters requesting the completion of questionnaires that he could not answer all of them, that he was replying to this questionnaire because we belong to the same professional organisation.

5. Assurances of anonymity were made. Although no financial data was collected in this study, the author still stressed the confidentiality of the responses.

6. A stamped addressed return envelope was enclosed with the questionnaire. According to the author's experience a stamped addressed return envelope has become a necessary condition for respondents to complete and return questionnaires.

7. The covering letter included an offer of sending a report of the research findings to the respondent. This seems to have been important since 76 out of 101 respondents would like to receive a report of the research findings.

One month after mailing the original questionnaires, a follow-up letter (Appendix 5.6) and a second copy of the questionnaire were mailed to 123 non-respondents. The purpose of the second mailing was to improve the overall response rate and to achieve the target numbers in the stratified sampling scheme mentioned earlier (Table 5.4). After the second mailing, the usable response rate increased from 29.6% to 36.1%, an increase in response rate of 6.5%. In addition to 101 usable returned questionnaires, 17 letters were received from companies in the sample giving reasons for not participating in the study. Six companies stated that completing questionnaires was against company policy. Five companies stated that they lacked time to fill in questionnaires because of reduced staff numbers. Three marketing executives stated that they had retired and hence had not completed the questionnaire. The last three companies stated that they had changed their business from manufacturing to trading only. If these 17 companies were taken into account, the total response rate would be 42.14%. In either case, comparing the response rate to the normal response rate for industrial postal surveys, the response rate can be regarded as satisfactory. A summary of the response rates for the postal survey is given in Table 5.5.

Table 5.5 A summary of response rate from the postal survey

Mailing date	Number of questionnaires dispatched	Number returned (%)		
		Usable	Unusable	Total
First mailing (6/10/96)	280	83 (29.6%)	4 (1.4%)	87 (31.1%)
Follow-up mailing (6/11/96)	123	18 (14.6%)	13 (10.6%)	31 (25.2%)
Response rate calculated on the basis of the first mailing		101 (36.1%)*	17 (6%)	118 (42.14%)

* To achieve a higher response rate, follow-up letters and questionnaires were sent to those companies who had not responded in the first mailing. The response rate, therefore, is calculated on the basis of the number, 280, in the first mailing (36.1% = 101 ÷ 280).

5.3.6 Nonresponse bias

As stated in the last section, the usable response rate of the current study was 36.1% (excluding the 17 companies who returned the questionnaires without completing them). Whether the response rate was 36.1% or 42.1% (including 17 the uncompleted questionnaires), nonresponse bias (or error) could occur.

According to Green, Tull and Albaum (1988. p. 125), noncontact and refusal are the two possible ways which result in nonresponse. Noncontact implies the inability to contact all members of the sample. In consumer surveys the inaccessibility of some respondents occurs because they are not at home or they have moved or are away from home for the period of the survey. In the current study the noncontact occurred because some companies had moved their production base overseas or the marketing executives were no longer working for these companies but had either retired or left. Regarding refusal, this refers to nonresponse to some or all of the items on the measurement instrument. In practice, refusals may result from respondents who are reluctant to answer some sensitive or confidential items or even the entire questionnaire. From the preliminary interviews with textiles marketing practitioners, financial issues were the items that they were most reluctant to answer. Hence, to reduce the refusal from individual items, financial questions such as net profit and return on investment were excluded from the questionnaire used in this study. As for refusing to complete the entire questionnaire, the length of time required to complete the questionnaire is a common reason for refusal. To reduce the refusal rate for the entire questionnaire, all of the items included in the questionnaire for the current study have been considered carefully and the questionnaire kept as short as possible.

In spite of careful design there was still a large proportion of nonresponses. Therefore, two sorts of nonresponse errors could exist in the current survey. Firstly, companies responding to the postal questionnaire might have had stronger feelings about the subject (market segmentation) than the nonresponding companies. Secondly, the original design using a

stratified sampling frame could be invalidated if the nonresponding companies come from particular product groups, and this would affect the representativeness of the sample.

To measure the two errors, this study followed the suggestions of Green Tull and Albaum (1988, p. 183), and used additional mailings and telephone interviews to contact a sample of the nonrespondents. By using additional mailings, 18 nonrespondents returned usable questionnaires and 13 nonrespondents still did not complete the questionnaire but gave reasons instead. As mentioned in section 5.3.4, the main reasons for not replying to the questionnaire were that it was against company policy, lack of time, people retiring and the business having changed to trading only. These reasons for not replying suggest that strength of feelings about market segmentation have not influenced the chance of response. Further, as shown in Table 5.4, there is no evidence, significant effect at the 5% level, of a difference between the distribution of actual responses in the seven subgroups of UK textiles industry and those for the expected number of respondents (χ^2 = 10.27, 6 degrees of freedom, critical value at 5% is 12.59). Hence, there is no evidence that population subgroup has influenced the chance of response and no evidence that the sample is unrepresentative.

To further investigate the effect of nonresponse, telephone interviews were also conducted. A total of ten interviews were achieved. The major findings, which are summarised in Section 8.2.1, were supported by the follow-up interviews. Hence considering the stated reasons for nonresponse, the representativeness of the sample and the results of the follow-up interviews, there is no evidence that nonresponse bias has affected the major findings of this study.

5.4 Methods of data analysis

The scheme for data analysis in the study can be divided into four stages, namely:

Stage 1: Calculation of attitude measurement.

Stage 2: Grouping of the potential bases used by textiles companies for segmenting their markets (factor analysis).

Stage 3: Grouping of the textiles companies into clusters on the basis of the extent to which the strategy of market segmentation is implemented by them (cluster analysis).

Stage 4: Analysis of the relationship between the potential segmentation bases used by the industry and the companies who were classified into different clusters (analysis of variance).

In addition to using the techniques (factor analysis, cluster analysis, and analysis of variance) mentioned above, this study takes the form of a checklist (see Table 5.6) to examine if the questions formulated in the questionnaire link closely with the hypotheses proposed and what sort of statistical techniques will be used. This is because the hypotheses proposed would not only be a guide to what information would be sought but in large part would also determine the type of question and form of response used to collect it (Churchill, 1991, p. 361). As shown in Table 5.6, the first column describes the main hypothesis of this study. The second column lists the specific questions number which were listed in the formal questionnaire (see Appendix 5.3). The third and fourth columns indicate the dependent variables and independent variables for the respective hypothesis. The last column shows the analysis techniques used for testing the specific hypothesis.

This section finishes with some examples of the use of factor analysis and cluster analysis in market segmentation studies.

Table 5.6 A checklist linking questions with hypotheses and analysis techniques

Main hypothesis	Questions	Dependent variable	Independent variable/ factor	Analysis techniques
I There is no difference in the extent to which textiles companies implement a segmentation strategy (H1).	Q15 a- j		segments clustered from Q15a to Q15j.	Cluster analysis
a) There is no difference between SIC sectors and the extent to which textiles companies implement a segmentation strategy (H1A).	❶Q15 a- j ❷Q1	clusters obtained from Q15a to Q15j	SIC sectors	Chi-squared
b) There is no difference between geographic location and the extent to which textiles firms implement a segmentation strategy (H1B).	❶Q15 a- j ❷Q4	clusters obtained from Q15a to Q15j	geographic location	Chi-squared
c) There is no difference between company size and the extent to which textiles companies implement a segmentation strategy (H1C).	❶Q15 a- j ❷Q2, Q3, & Q5	clusters obtained from Q15a to Q15j	company size	Chi-squared
II There is no difference between textiles companies who segment and those who do not in terms of the leverage of product attributes (H2).	❶Q15 a- j ❷Q6a-g, Q9a-g, & Q12a-g	21 leverage scores	segments clustered from Q15a to Q15j	Factor analysis, cluster analysis, and ANOVA
III There is no difference between textiles companies who segment and those who do not in terms of the leverage of company's characteristics (H3).	❶Q15 a- j ❷Q7a-g, Q10a-g Q13a-g.	21 leverage scores	segments clustered from Q15a to Q15j	Factor analysis, cluster analysis, and ANOVA
IV There is no difference between textiles companies who segment and those who do not in terms of the leverage of customer's specifics (H4).	❶Q15 a- j ❷Q8a-g, Q11a-g Q14a-g.	21 leverage scores	segments clustered from Q15a to Q15j	Factor analysis, cluster analysis, and ANOVA
V There is no difference among the groups of textiles companies which are identified on the basis of segmentation bases they used in the different time periods (H5).	❶Q6a ~ Q8g ❷Q9a ~ Q11g ❸Q12a ~ Q14g	clusters obtained from Q6a to Q8g, clusters obtained from Q9a to Q11g, and clusters obtained from Q12a to Q14g	21 leverage scores from the three different periods.	Factor analysis, cluster analysis, and ANOVA

5.4.1 Calculation of attitude

The most convenient way to measure the importance of each of the 21 possible bases for segmenting the UK textiles market may be to ask the respondents directly. Alternatively the importance of each of the bases could be shown by their competitive position for those bases. For example, if a company really believes that product quality is very important then it is reasonable to expect their competitive position for product quality to be very strong. Hence two questions were asked for each of the 21 possible bases (see copy of the questionnaire, Appendix 5.3). Firstly the respondents were asked to rate the importance for each of the possible bases and secondly the respondents were asked to indicate their competitive position for each of the possible bases. The final score for each of the possible bases was then obtained by multiplying the importance score by the competitive position score,
that is

$$A_{ij} = I_{ij} B_{ij}$$

where

i = possible base,

j = respondent,

such that:

A_{ij} = respondent j's attitude score for possible base i,

I_{ij} = the importance score for possible base i by respondent j,

B_{ij} = the competitive position score for possible base i by respondent j'.

This score is termed "leverage" within this thesis.

This approach is similar to the Fishbein Model (Engel, Blackwell and Miniard, 1993, p. 332). Symbolically, the Fishbein Model can be expressed as

$$A_0 = \sum_{i=1}^{n} b_i e_i$$

Where

A_0 = attitude toward the object,

b_i = the strength of the belief that the object has attribute *i*,

e_i = the evaluation of attribute *i*,

n = the number of attributes.

In short, the Fishbein model shows that the attitude towards a given object (such as a product) is based on the beliefs about the object's attributes weighted by the evaluation of those attributes.

This approach is also similar to the approach of Moriarty and Reibstein (1986). They developed a determinacy score for use in industrial market segmentation. The determinacy score was obtained by multiplying the importance of an attribute by the variability of that attribute in the industry. They argued that high determinacy depended both on high importance and high variability in the industry.

5.4.2 Groupings of the possible segmentation bases

In stage 2 of the data analysis process, factor analysis was used to identify the underlying patterns of relationships among the set of possible segmentation bases. It was expected that factor analysis would show that there were not 21 separate possible bases but that these were linked together by a few underlying factors.

Factor analysis is a data simplification technique and is used to determine the (few) underlying dimensions of a large set of intercorrelated variables (Kotler, 1997, p.128). Suppose that we have a data set with **n** variables, then factor analysis attempts to reduce the number of variables to $\mathbf{n^f}$ (where $\mathbf{n^f}$ is significantly smaller than **n**). Factor analysis attempts to identify factors which are independent from each other in order to promote an understanding of the

structure of the specific content area (Green, Tull and Albaum, 1988; Hackett and Foxall, 1994).

As far as segmentation studies are concerned, factor analysis has been using widely. In practice, factor analysis is often applied prior to cluster analysis, and there are two benefits in doing this (Saunders, 1994b, p. 16). First, it reduces the number of variables which have to be analysed by the cluster analysis process. Second, the results from exploratory factory analysis can help with the interpretation of the clusters.

There are three areas in which decisions need to be made in factor analysis. Firstly deciding whether factor analysis is appropriate for the data. Secondly deciding how many factors should be used. Thirdly deciding which variables are important for which factors. Table 5.7 summarises some possible answers to these questions.

Table 5.7 Some criteria in factor analysis

Criteria	Researcher	Comments
KMO (MSA)	Stewart, David W. (1981)	*MSA< 0.50 is unacceptable* (The criteria was cited from: Kaiser and Rice, 1974, Educational and Psychological measurement)
Eigenvalue	Hair, J. F., R. E. Anderson and R. L. Tatham (1987).	For Principal Component Analysis only those values with an eigenvalue of *greater than one* are considered to be significant.
Factor loading	1. Churchill, JR., Gilbert A. (1979) 2. Hackett, Paul M. W. and Gordon R. Foxall (1994).	*Factor loading < 0.35 need to be eliminated* Factor loading ≥ 0.4 are highlighted (i.e., *0.4 is the cut-off point*)

5.4.3 Grouping textiles companies

In stage 3 of the data analysis process, this study used cluster analysis to develop groups of companies that implement market segmentation to a similar degree. These groupings can be developed using the barriers and issues questions in section 5 of the questionnaire. In addition, the textiles companies can be grouped on the basis of their leverage scores which were derived by multiplying the importance scores and the competitive position scores. After completing the grouping procedures, the groups identified can be further examined by analysing the relationships between the potential segmentation bases and the different groups of companies.

Cluster analysis is a way of sorting items into a small number of homogeneous groups. Like factor analysis, it is an exploratory method that seeks patterns within data by operating on the matrix of variables. Usually objects to be clustered are measured on several dimensions and are grouped on the basis of the similarity of their scores (Saunders, 1980, p. 422). Saunders (1994b, p.13) further explained that cluster analysis is an interdependence method where the relationships between objects and subjects are explored without a dependent variable being specified. Thus, in the marketing area, cluster analysis has been used widely to sort customers into subgroups with as much similarity as possible within groups and as much difference as possible between groups.

5.4.4 Analysis of variance

In stage 4 of the data analysis process, this study uses one-way ANOVA to test the hypotheses proposed in chapter four.

Analysis of variance (ANOVA) is used to test whether the hypothesis that the means for two or more populations are equal can be accepted on the basis of the observed sample (Green, Tull and Albaum, 1988, p. 468). Green, Tull and Albaum described the basic idea of analysis of variance (ANOVA) as comparing the among-samples sum of squares (after adjustment by

degrees of freedom to get a mean square) with the (similarly adjusted) within-sample sum of squares. The larger the ratio of the among samples sum of squares to the within samples sum of squares, the more we are inclined to reject the null hypothesis that the means of the different populations are equal.

This study examines whether different groups of companies have different preferences in using the different segmentation bases. ANOVA can be used to answer this question. A summary of the analysis methods and the hypotheses is given in Table 5.7.

5.4.5 Examples of analysis methods

This section provides two examples of the uses of factor analysis and cluster analysis in market segmentation studies.

One of the best known papers in terms of combining factor analysis and cluster analysis to study market segmentation is Doyle and Saunders (1985). The application of these methods is illustrated by using the case of a company diversifying into a speciality market. In the paper, the authors firstly provided some information about the technology and its application. Primary data was collected for six product variables and four company variables. From these ten variables factor analysis identified four factors which Doyle and Saunders labelled the perceived strength of the supplier, the breadth of application of its product range, and two factors relating to technical characteristics. Cluster analysis was then carried out using values for these four factors and twelve clusters were identified. In order to examine the statistical validity of the 12-cluster solution, the authors implemented a three stage validation process (Choffray and Lilien, 1980). Firstly they tested the sensitivity of the cluster analysis to extreme observations or outliers by using single linkage cluster analysis. Secondly they tested the nonrandomness of the data structure by using a simulation approach. Finally they tested the uniqueness of the clustering solution obtained by comparing the results from using four common cluster techniques: Ward's method, Euclidean distance with complete linkage, Euclidean distance with single linkage, and correlation with single linkage.

The same approach, using factor analysis and then cluster analysis, was used by Bennion (1987) who studied the market for automotive forgings. Bennion developed the questionnaire using focus group sessions with ten executives involved in the purchase of automotive forgings. The initial questionnaire was pre-tested with local customers and the purchasing department of the firm being studied, and the final questionnaire consisted of 24 statements referring to the respondent's attitudes. A factor analysis of the 24 variables using principle component analysis with varimax rotation was performed and five factors were extracted. These factors accounted for 64.7% of the variance in the data and were labelled management quality, price, product quality, order policy and production flexibility. Each of these five factors was interpreted as a basic benefit sought by the customers. Using the five benefits identified by factor analysis, a cluster analysis was performed to determine whether the market could effectively be segmented. As a result, seven clusters were identified. However, because cluster 7 consisted of a single observation and because cluster 6 consisted of two observations which were weakly connected, the final solution consisted of five clusters plus three outliers.

CHAPTER SIX ANALYSIS AND DISCUSSION

6.1 Introduction

This Chapter presents an evaluation of the statistical analyses performed on the questionnaires returned. The statistical analyses used in this study include factor analysis, cluster analysis, one-way ANOVA, and Chi- squared tests.

Statistical analyses were performed to answer several research questions about confusing issues in segmenting an industrial market. The research questions addressed in this chapter are as follows:

(1) Do textiles companies implement a market segmentation strategy?

(2) What are the critical confusing issues hindering marketing managers from implementing a segmentation strategy in the textiles industry?

(3) Do different textiles companies (in terms of demographics) differ in the implementation of segmentation strategies?

(4) Do different textiles companies (in terms of demographics) differ in their usage of segmentation bases?

(5) Do those segmentation bases and strategies vary over time?

The remainder of the chapter is divided into ten sections. The first section presents the results of factor analysis using the data for all 101 companies. The second section provides a brief introduction to cluster analysis. The third and fourth sections present the results of cluster analysis for what the companies said and what the companies did, respectively. The next three sections (the fifth to the seventh) present the results of cluster analysis for the three groups of segmentation bases, product attributes, supplier characteristics, and customer specifics, respectively. The eighth section describes the results of tandem cluster analysis. The ninth section provides a comparison of the results of cluster analysis using different bases. Finally the means for importance and the means for performance for all 21 segmentation bases are compared.

6.2 The results of factor analysis

As stated in the last chapter (chapter 5), factor analysis was used to identify the underlying patterns of relationships among the set of possible segmentation bases. It was expected that factor analysis would show that there were not 21 separate possible bases but that these were linked together by a few underlying factors.

Factor analysis was performed using the guidelines described in chapter 5 for KMO, eigenvalues, and factor loadings. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is an index for comparing the magnitudes of the observed correlation coefficients to the magnitudes of the partial correlation coefficients (Norusis, 1994, p. 52). A small value for KMO means that a factor analysis of the variables may not be appropriate, because correlations between pairs of variables can not be explained by the other variables. Kaiser (1974) characterises KMO values in the 0.90's as marvellous, in the 0.80's as meritorious, in the 0.70's as middling, in the 0.60's as mediocre, in the 0.50's as miserable, and below 0.5 as unacceptable. The KMO values obtained from analysing the data for the 21 separate possible bases relating to the past, the present and the future, are 0.82, 0.77 and 0.81, respectively. These show that the data set collected from 101 companies can be used for factor analysis.

To decide how many factors should be used, this study followed the general rule of using as many factors as there are eigenvalues greater than one. The eigenvalues near or greater than one for the three different periods in this study are listed in Table 6.1. To obtain a clear picture of the factors extracted for the three different time periods, solutions with different numbers of factors were considered (for example including an extra factor when an eigenvalue was just less than one or using one less factor when an eigenvalue was only just greater than one). As a result of this consideration, a 5-factor solution for each time period was obtained. Table 6.1 shows that regardless of the time period the 5-factor solution matched the criteria of all eigenvalues greater than one. Further, the cumulative percentage of the variance explained by the five factors for each of the three time periods is large with values of 66.7%, 61.3%, and

64.1%, respectively. Thus, five factors are adequate to summarise the 21 separate possible bases for each of the three time periods.

Table 6.1 A summary of eigenvalue information for the three different periods

	Past		Present		Future	
Factor	Eigenvalue	Cum Pct*	Eigenvalue	Cum Pct*	Eigenvalue	Cum Pct*
1	7.41	35.3	6.36	30.3	6.73	32.1
2	2.22	45.9	2.26	41.0	2.21	42.6
3	1.67	53.8	1.64	48.8	1.75	50.9
4	1.51	61.0	1.40	55.5	1.58	58.5
5	**1.18**	**66.7**	**1.22**	**61.3**	**1.19**	**64.1**
6	0.99	71.4	1.09	66.5	1.09	69.4
7	0.74	74.9	0.91	70.8	0.84	73.4

* Cum Pct stands for cumulative percentage and indicates the percentage of variance attributable to that factor and those that precede it in the table. For example, factor 1 for the data set relating to the past accounts for 35.3% of the total variance and the first five factors together account for 66.7% of the total variance.

Having decided to extract 5 factors from the data sets for each of the three time periods, the next step is to decide which variables are important for which factors. The factor loading is the correlation between a variable and a factor, a variable with a low factor loading to a specific factor may be assumed to be unrelated to that factor. Churchill (1979) suggests that factor loadings smaller than 0.35 need to be eliminated, whereas Hackett and Foxall (1994) suggest that factor loadings less than 0.4 can be ignored. This study follows Hackett and Foxall and used 0.4 as the cut-off point to decide which variables are important for which factors. The results of the factor analysis for all 21 variables relating to the three time periods are summarised in Table 6.2.

Table 6.2 A summary of factor analysis for all 101 companies

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
		The data set relating to **the past**			
Factor loading	7.41	2.23	1.67	1.51	1.18
Segmentation bases	1. Service level 2. Stability of quality 3. Delivery time 4. Product quality 5. Product aesthetics	1. Geographical coverage 2. Financial stability 3. Salesperson's competence 4. Reputation 5. Quick response 6. Management quality 7. Product range	1. Purchasing quantities 2. Buying task 3. Product importance. 4. Service sensitivity	1. Brand awareness 2. Supplier loyalty 3. DMU	1. Price level 2. Price sensitivity
Label	Product orientation	Company capability	Buying situation	Customer orientation	Price orientation
		The data set relating to **the present**			
Factor loading	6.36	2.26	1.64	1.40	1.22
Segmentation bases	1. Service level 2. Reputation 3. Delivery time 4. Price sensitivity 5. Quick response 6. Service sensitivity 7. Management quality	1. Buying task 2. DMU 3. Geographical coverage 4. Product importance 5. Salesperson's competence	1. Product range 2. Brand awareness 3. Purchasing quantities 4. Financial stability	1. Product quality 2. Stability of quality 3. Supplier loyalty	1. Price level 2. Product aesthetics
Label	Benefits sought	Buying situation	Diversified	Quality orientation	Product orientation
		The data set relating to **the future**			
Factor loading	6.73	2.21	1.75	1.58	1.19
Segmentation bases	1. Delivery time 2. Product quality 3. Stability of quality 4. Service level 5. Reputation 6. Price level 7. Quick response	1. Buying task 2. DMU 3. Purchasing quantities 4. Financial stability	1. Service sensitivity 2. Price sensitivity 3. Product importance	1. Brand awareness 2. Supplier loyalty 3. Product aesthetics 4. Product range	1. Management quality 2. Salesperson's competence 3. Geographical coverage
Label	Benefits sought	Buying situation	Customer orientation	Product orientation	Company capability

Table 6.2 shows that for all three time periods the 21 segmentation bases can be simplified into five factors. The five factors for segmenting the UK textiles market in the past were labelled as product orientation, company capability, buying situation, customer orientation, and price orientation. The first factor consists of five product attributes: service level, stability of quality, delivery time, product quality, and product aesthetics. The second factor consists of all seven supplier (company) characteristics identified by this study: geographical coverage, financial stability, salesperson's competence, reputation, quick response, management quality, and product range. The third factor consists of four customer specifics: purchasing quantities, buying task, product importance, and service sensitivity. The fourth factor consists of one product attribute, brand awareness, and two customer specifics, supplier loyalty and DMU. This makes sense since brand awareness can be regarded as a sort of recognition that a customer deals with a specific brand (or supplier). Thus the fourth factor was labelled as customer orientation. The fifth factor was labelled as price orientation because the two variables relating to price, price level and price sensitivity, were involved.

In the same way, the five factors for segmenting the UK textiles market in the present were labelled as benefits sought, buying situation, diversified, quality orientation, and price orientation. The first factor consists of two product attributes (service level and delivery time), three supplier characteristics (reputation, quick response, and management quality), and two customer specifics (price sensitivity and service sensitivity). The second factor consists of three customer specifics (buying task, DMU, and product importance), and two supplier characteristics (geographical coverage, and salesperson's competence). The third factor was labelled as diversified because it consists of two product attributes (product range and brand awareness), one supplier characteristic (financial stability), and one customer specific (purchasing quantities). The fourth factor was labelled as quality orientation because it consists of two variables relating to quality (product quality, and stability of quality) and one customer specific (supplier loyalty). The fifth factor was labelled as product orientation because the two variables relating to product attributes, price level and product aesthetics, were involved.

For the future, the five factors for segmenting the UK textiles market were labelled as benefits sought, buying situation, customer orientation, product orientation, and company capability. The first factor consists of five product attributes (delivery time, product quality, stability of quality, service level, and price level), and two supplier characteristics (reputation, and quick response). The second factor consists of three customer specifics (buying task, DMU, and purchasing quantities), and one supplier characteristic (financial stability). The third factor was labelled as customer orientation because it consists of three customer specifics (price sensitivity, service sensitivity, and product importance). The fourth factor was labelled as product orientation because it consists of three variables relating to product (brand awareness, product aesthetics, and product range), and one customer specific (supplier loyalty). The fifth factor was labelled as company capability because the three variables relating to a company's capability, management quality, salesperson's competence, and geographical coverage, were involved.

From the analyses above, using factor analysis the original 21 possible segmentation bases can be linked together by five underlying factors, regardless of time period. Some of these underlying factors are changing over time and some of them remain the same. For example, the importance of product orientation is decreasing over time and those of the benefits sought and buying situation are increasing over time.

6.3 Methods used for cluster analysis

As stated in Chapter 4, this study uses a set of questions, consisting of four segmentation barriers and six implementation issues, to identify the extent to which UK textiles companies implement the strategy of market segmentation. It is assumed that the higher the ratings in these variables, the lower the extent to which a company implements the strategy of market segmentation. In this study these ten questions are regarded as what the companies said, because they are asking about attitudes towards segmentation. In addition to analysing what the companies said, it is also possible to analyse what the company did based on their answers to the questions about the possible segmentation bases. In particular, cluster analysis can be

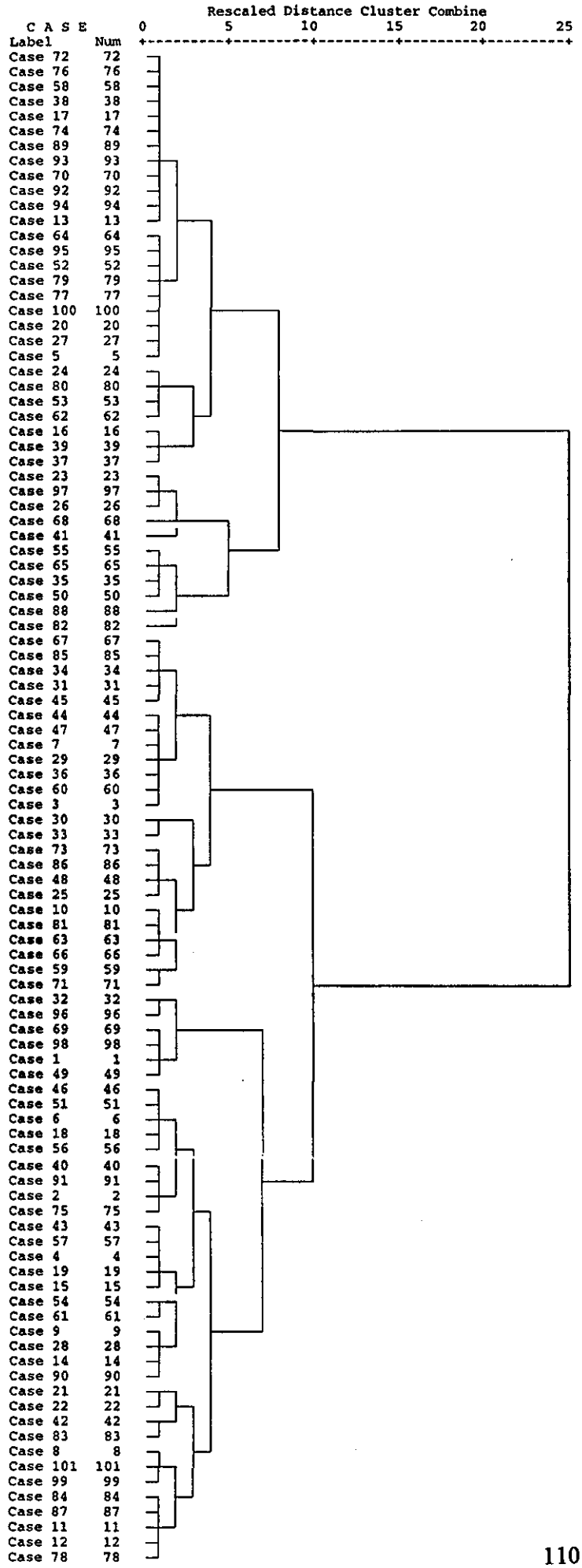
used to divide UK textiles companies into groups (possibly "segmenters" and "non-segmenters") based on what they said and also on what they did. Using these groups, the relationship between the groups and the segmentation bases used can then be explored. Cluster analysis was used to group the companies since cluster analysis is a way of sorting items into a small number of homogeneous groups. Saunders (1994b, p. 13) suggests that cluster analysis can be used to cluster customers into segments, to group similar products in test market selection, and to identify companies pursuing similar strategies.

As stated in Chapter 3 and Chapter 5, there are many methods for calculating the distances between objects and for combining the objects into clusters. According to Norusis (1994, p. 85), the most commonly used method for measuring distances is the squared Euclidean distance and the popular method for forming clusters is agglomerative hierarchical cluster analysis. Norusis (1994, p. 100) stressed that the hierarchical cluster analysis procedure is suitable for grouping similar cases or variables in the case of moderate-size data files whereas K-means clustering should be used for a casewise cluster analysis when the number of cases exceeds several hundred. Similarly, Doyle and Saunders (1985, p. 27) suggest using Ward's hierarchical clustering method because this technique is consistently more accurate than others in recovering clusters. Following the suggestions above, this study used the cluster analysis routine in SPSS for Windows (release 6) to identify companies pursuing similar segmentation strategies. The classification method used was Ward's hierarchical clustering routine and the distances between objects were measured using the squared Euclidean distance.

6.4 Cluster analysis for what the companies said

The first cluster analysis was based on what the companies said. The dendrogram obtained by using Ward's method suggests that the UK textiles companies can be classified into two clusters (see Figure 6.1).

Figure 6.1 Dendrogram based on 4 barriers and 6 issues questions



The two cluster solution was saved as a new independent variable and used for comparing the means of the dependent variables (4 segmentation barriers and 6 implementation issues) between clusters. The differences in the means of the dependent variables were analysed using one-way ANOVA. The results of the one-way ANOVA are summarised in Table 6.3.

As stated earlier, it is assumed that the higher the ratings in these clustering variables, the lower the extent to which companies implement the strategy of market segmentation. From Table 6.3, it is obvious that the first cluster has relatively higher group means in each clustering variable than the second cluster. This suggests that the companies in the first cluster were facing higher segmentation barriers and confusing issues than the companies in the second cluster. On this basis, this study labelled the first cluster as "non-segmenting" and the second cluster was labelled "segmenting".

The results of the one-way ANOVA in Table 6.3 reveal that three variables (V6, V7, V8) have similar means for the two clusters. The first two non-significant variables, V6 and V7, may result from the fact that the respondent companies did not clearly identify any differences between the strategies of target marketing, mass marketing, and product-variety marketing. This implies that companies might regard target marketing, mass marketing and product-variety marketing as the same strategy. This kind of confusing cognition has already been discussed in Chapter 3. The third non-significant variable, V8, indicates that the two clusters are not significantly different in terms of implementing the first step of market segmentation, dividing customers into different groups of needs. Unlike the first step of market segmentation, the second step (V9) and the third step (V10) have significant differences between the companies who segment their market and those who do not. There can be little doubt that dividing customers into different groups of needs is easier than targeting one or more of those groups and developing different products/services and related marketing activities to meet their needs. As a result, it appears that the non-segmenting companies tend to implement only the first step of market segmentation whereas the segmenting companies tend to implement all three steps of market segmentation. In addition, data from the four

variables (V1 through V4) relating to segmentation barriers suggests that the non-segmenting companies faced more barriers than the segmenting companies.

Comparing the means for the two clusters has provided some validation of the two cluster solution. Green, Tull, and Albaum (1988, p. 586) suggest three further possible ways of validating a cluster solution:

(1) split the data into halves and analyse each half separately;

(2) delete several variables from the original set of variables;

(3) use a different clustering routine.

This study implemented all three ways of validating the two-cluster solution obtained from Ward's hierarchical clustering routine. The results confirm that there are two groups which can be labelled "non-segmenting" and "segmenting".

First of all, the total of 101 cases were randomly split into two halves, the first half consisting of 50 cases and the second half consisting of 51 cases. After splitting the cases into two halves, Ward's hierarchical clustering was performed for each half and the means for each cluster were examined. The means for the two halves are listed in Table 6.4. Table 6.4 shows that using the same method of cluster analysis, both the first half and the second half of the data set were classified into two groups, which could be labelled "non-segmenting" and "segmenting". Similar to the results from the whole data set, there are two non-significant variables for both the first half and the second half of the data set. The non-significant variables in the first half are V6, V7, and the second half are V7, V8. Further, Chi-squared tests were performed to compare the results from analysing the all 101 cases and the results from analysing the two halves split. The results of the Chi-squared test are shown in Table 6.5. From Table 6.5 it can be seen that 93 cases out of 101 cases (92.1%) were classified consistently and the Pearson value, 70.07, is greater than the critical value (3.841) at the 95% significance level ($\chi^2_{0.05}$ at DF = 1). Therefore, there is a consistency between the results for cluster analysis using the whole data set and the results for cluster analysis using part of the data set.

Table 6.3 Group means and significance levels for the two-cluster solution (using 4 barriers and 6 issues)

Variables	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
V1: A failure to properly understand the scope and relevance of segmentation.	4.3	2.9	32.2	0.00
V2: A lack of support from senior management	4.1	1.7	94.9	0.00
V3: Extra costs incurred by segmentation	3.9	1.9	84.7	0.00
V4: Resistance from other functional groups	3.9	1.9	65.4	0.00
Group means of 4 barriers	4.04	2.12	180.0	0.00
V5: Membership of segments is not stable over time	3.7	2.6	15.3	0.00
V6: Target marketing is not superior to mass marketing	2.9	2.3	3.5	0.07
V7: Target marketing is not superior to product-variety marketing	3.0	2.9	0.11	0.74
V8: A failure to divide customers into different groups of needs	3.2	2.9	1.0	0.31
V9: A failure to select one or more of these groups as target markets	3.2	2.6	5.6	0.02
V10: A failure to develop different products/services and related marketing activities to meet the needs of these selected markets	3.0	2.0	15.7	0.00
Group means of 6 issues	3.17	2.55	12.12	0.00
Number of members	62	39		

Table 6.4 Comparison of group means and significance levels for the two-cluster solution from splitting data into halves (using 4 barriers and 6 issues)

Variables	Cluster 1: Non-segmenting		Cluster 2: Segmenting		F Ratio		Significance (F Prob.)	
	1st half	2nd half	1st half	2nd half	1st half	2nd half	1st half	2nd half
V1	4.27	4.06	3.29	2.89	5.97	10.36	0.02	0.00
V2	3.97	4.00	2.14	1.61	22.19	39.58	0.00	0.00
V3	3.83	3.79	2.10	1.89	28.32	38.62	0.00	0.00
V4	3.97	3.70	2.33	1.72	17.38	39.33	0.00	0.00
V5	3.93	3.82	2.19	2.5	22.39	13.89	0.00	0.00
V6	3.03	3.09	2.24	2.0	3.23	5.63	0.08	0.02
V7	3.1	3.09	2.62	2.72	1.38	0.79	0.25	0.38
V8	3.72	3.00	2.57	2.83	7.13	0.16	0.01	0.69
V9	3.35	3.27	2.24	2.5	10.48	4.31	0.00	0.04
V10	3.28	3.00	1.67	2.17	30.00	4.28	0.00	0.04
Number of members	29	33	21	18				

Table 6.5 Comparison of results from analysing all 101 cases and results from analysing the two halves split

results from all 101 cases	Count	results from two halves: Non-segmenting	segmenting	Row Total
	Non-segmenting	58	4	62 61.4
	segmenting	4	35	39 38.6
	Column Total	62 61.4	39 38.6	101 100.0

Chi-Square	Value	DF	Significance
Pearson	70.06929	1	.00000

The second method suggested for validating a cluster solution is to delete several variables from the original data set and then to group cases using the same method of cluster analysis. As shown in Table 6.3, for the two-cluster solution, variables V6, V7 and V8 are not significant and so were deleted from the list of clustering variables. For the purposes of testing the effect of deleting the variables, the first result of cluster analysis (using V1 through V10 and all 101 cases) was called CLU2-1 and the second result of cluster analysis (omitting V6, V7 and V8 and using all 101 cases) was called CLU2-2. Table 6.6 shows the results of the Chi square test for CLU2-1 and CLU2-2.

Table 6.6 Comparison of CLU2-1 Ward method by CLU2-2 Ward method

	Count	CLU2_2 Non-segmenting	CLU2_2 segmenting	Row Total
CLU2_1	Non-segmenting	50	12	62 61.4
	segmenting	4	35	39 38.6
	Column Total	54 53.5	47 46.5	101 100.0

Chi-Square	Value	DF	Significance
Pearson	47.67521	1	.00000

From Table 6.6 it can be seen that 85 cases out of 101 cases (84%) were classified consistently and the Pearson value, 47.68, is greater than the critical value (3.841) at the 95% significance level ($\chi^2_{0.05}$ at DF = 1). That is, there is consistency between the results from CLU2-1 and CLU2-2. This suggests that the result of clustering companies based on the 4 barriers and 6 issues with the whole data set is reliable.

The third method suggested for validating a cluster solution is to use a different clustering routine. A K-Means cluster analysis was employed in this study to examine further the results from Ward's hierarchical cluster analysis. The first step in conducting a K-Means cluster analysis is to analyse the data using Ward's hierarchical cluster analysis to determine the number of clusters and the means of those clusters. The second step is to analyse the data using the K-Means routine with the specified number of clusters and the means of those clusters from Ward's hierarchical cluster analysis. Using the K-Means method of cluster analysis with unspecified or random means can lead to very poor cluster solutions. The final result of the K-Means method of cluster analysis was called QCL-1. The results of the Chi-squared test for CLU2-1 and QCL-1 are shown in Table 6.7.

From Table 6.7 it can be seen that 95 cases out of 101 cases (94%) were classified consistently and the Pearson value, 78.21, is greater than the critical value (3.841) at the 95% significance level ($\chi^2_{0.05}$ at DF = 1). The results of clustering using Ward's method and the K-Means method are very similar.

Table 6.7 Comparison of CLU2-1 Ward method by QCL-1 K-Means routine

CLU2_1	Count	QCL_1 Non-segmenting	QCL_1 segmenting	Row Total
	Non-segmenting	57	5	62 61.4
	segmenting	1	38	39 38.6
	Column Total	58 57.4	43 42.6	101 100.0

Chi-Square	Value	DF	Significance
Pearson	78.21286	1	.00000

Summarising the results of the three methods suggested for validating a cluster solution, we can conclude that the data collected from the 101 UK textiles companies can validly be clustered into two groups which differ in terms of the extent to which the companies implement a market segmentation strategy.

As a result, the first hypothesis presented in chapter 4 is not supported.

Reject H1: There is no difference in the extent to which textiles companies implement a segmentation strategy.

Therefore, as mentioned in Chapter 4, Abratt's work (1993) is questionable because his work assumed that all the respondent companies were implementing a market segmentation strategy. The results of the current study show that it is unreasonable to explore which segmentation bases are being used by a company without first considering whether the company has implemented a market segmentation strategy.

Given that the textiles companies in the sample can be divided into two different groups, non-segmenting companies and segmenting companies, the three subsidiary hypotheses, H1A, H1B and H1C, can be tested using the Chi- squared test, because the demographic variables are all measured using nominal scales. Data was collected for demographic variables in the past (before 1990), in the present (1990's), and in the future (after 2000). Hence for each subsidiary hypothesis there are three results.

Hypothesis H1A states that there is no difference between SIC sectors and the extent to which textiles companies implement a segmentation strategy. The results of the Chi- squared test for this hypothesis are summarised in Table 6.8. For the SIC sector in the past the Pearson value is 5.98. For the SIC sector in the present the Pearson value is 5.11. For the SIC sector in the future the Pearson value is 5.11. All three Pearson values are smaller than 12.592 ($\chi^2_{0.05}$ at DF = 6). As a result, hypothesis H1A is supported.

Accept H1A: there is no difference between SIC sectors and the extent to which textiles companies implement a segmentation strategy.

Hypothesis H1B states that there is no difference between geographic location and the extent to which textiles companies implement a segmentation strategy. The results of the Chi-squared test for this hypothesis are summarised in Table 6.9. For the geographic location in the past the Pearson value is 4.17. For the geographic location in the present the Pearson value is 3.90. For the geographic location in the future the Pearson value is 3.52. All three

Pearson values are smaller than 9.488 ($\chi^2_{0.05}$ at DF = 4). As a result, hypothesis H1B is supported.

Accept H1B: there is no difference between geographic location and the extent to which textiles companies implement a segmentation strategy.

For some of the geographic locations, the expected values are very small. Combining locations to avoid this problem results in the same conclusion, that is there is no significant evidence of a relationship between geographic location and whether companies are segmenting or not. The Pearson values for the past, the present, and the future are 0.095, 0.489 and 0.137 and these are smaller than 3.84 (($\chi^2_{0.05}$ at DF = 1).

Hypothesis H1C states that there is no difference between company size and the extent to which textiles companies implement a segmentation strategy. As stated in Chapter 5, the size of a company can be classified as small, medium, or large size. According to the 1981 Companies Act (see Kompass, 1995/96), a small size company has a turnover less than £2.8M and its average number of employees is less than 50. A medium size company has a turnover between £2.8M and £11.2M, and its average number of employees is between 50 and 250. A large size company has a turnover greater than £11.2M, and its average number of employees is greater than 250. This study used these criteria to classify the UK textiles companies into three size groups. Once the companies had been classified, the relationship between company size and the extent to which companies implement a segmentation strategy could be examined. The results of the Chi- squared test are summarised in Table 6.10. For the company size in the past the Pearson value is 0.80. For the company size in the present the Pearson value is 1.35. For the company size in the future the Pearson value is 0.19. All the three Pearson values are smaller than 5.991 ($\chi^2_{0.05}$ at DF = 2). As a result, hypothesis H1C is supported.

Accept H1C: there is no difference between company size and the extent to which textiles companies implement a segmentation strategy.

Table 6.8 Cross tabulation between SIC sectors and segmentation strategy (using 4 barriers and 6 issues)

	SIC sectors	Cluster 1: Non-segmenting	Cluster 2: Segmenting	Row total	Row %	DF	Pearson χ^2 value
Past	Man-made fibres & fabrics	14	8	22	21.8		
	Woollen yarns & fabrics	6	9	15	14.9		
	Cotton yarns & fabrics	9	6	15	14.9		
	Industrial fabrics	5	4	9	8.9		
	Carpets and rugs	12	3	15	14.9		
	Knitted fabrics, goods & hosiery	8	3	11	10.9		
	Dyeing/finishing	8	6	14	13.9		
	Column total	62	39	101		6	5.98
	Column %	61.4	38.6		100		
Present	Man-made fibres & fabrics	14	9	23	22.8		
	Woollen yarns & fabrics	6	8	14	13.9		
	Cotton yarns & fabrics	9	7	16	15.8		
	Industrial fabrics	5	3	8	7.9		
	Carpets and rugs	12	3	15	14.9		
	Knitted fabrics, goods & hosiery	8	3	11	10.9		
	Dyeing/finishing	8	6	14	13.9		
	Column total	62	39	101		6	5.11
	Column %	61.4	38.6		100		
Future	Man-made fibres & fabrics	14	9	23	22.8		
	Woollen yarns & fabrics	6	8	14	13.9		
	Cotton yarns & fabrics	9	7	16	15.8		
	Industrial fabrics	5	3	8	7.9		
	Carpets and rugs	12	3	15	14.9		
	Knitted fabrics, goods & hosiery	8	3	11	10.9		
	Dyeing/finishing	8	6	14	13.9		
	Column total	62	39	101		6	5.11
	Column %	61.4	38.6		100		

Table 6.9 Cross tabulation between geographic location and segmentation strategy (classified by using 4 barriers and 6 issues)

Geographic location		Cluster 1: Non-segmenting	Cluster 2: Segmenting	Row total	Row %	DF	Pearson χ^2 value
Past	England	51	33	84	83.2		
	Wales	1	0	1	1.0		
	Scotland	5	1	6	5.9		
	Northern Ireland	2	4	6	5.9		
	Multiple	3	1	4	4.0		
	Column total	62	39	101		4	4.17
	Column %	61.4	38.6		100		
Present	England	49	33	82	81.2		
	Wales	2	0	2	2.0		
	Scotland	5	1	6	5.9		
	Northern Ireland	3	4	7	6.9		
	Multiple	3	1	4	4.0		
	Column total	62	39	101		4	3.90
	Column %	61.4	38.6		100		
Future	England	49	32	81	80.2		
	Wales	2	0	2	2.0		
	Scotland	5	1	6	5.9		
	Northern Ireland	3	4	7	6.9		
	Multiple	3	2	5	5.0		
	Column total	62	39	101		4	3.52
	Column %	61.4	38.6		100		

Table 6.10 Cross tabulation between company size and segmentation strategy (using 4 barriers and 6 issues)

Company size		Cluster 1: Non-segmenting	Cluster 2: Segmenting	Row total	Row %	DF	Pearson χ^2 value
Past	Small	22	14	36	35.6		
	Medium	28	20	48	47.5		
	Large	12	15	17	16.8		
	Column total	62	39	101		2	0.80
	Column %	61.4	38.6		100		
Present	Small	20	12	32	31.7		
	Medium	29	22	51	50.5		
	Large	13	5	18	17.8		
	Column total	62	39	101		2	1.35
	Column %	61.4	38.6		100		
Future	Small	18	12	30	29.7		
	Medium	29	19	48	47.5		
	Large	15	8	23	22.8		
	Column total	62	39	101		2	0.19
	Column %	61.4	38.6		100		

6.5 Factor analysis based on what the companies said

Given that the textiles companies in the sample based on what the companies said (4 barriers and 6 issues questions) can be divided into two different groups, non-segmenting companies and segmenting companies, the two groups can be further analysed using factor analysis to examine: (1) if there are differences between the two groups in terms of the latent factors (factors extracted); (2) if there are differences between the results from analysing all 101 cases and the results from analysing two groups separately in terms of the latent factors (factors extracted); (3) if the cluster structure affects the latent factors.

The results of the factor analysis based on the 39 segmenting companies are summarised in Table 6.11. Table 6.11 shows that for all three time periods the 21 segmentation variables based on the 39 segmenting companies can be simplified into five factors. The five factors for segmenting the UK textiles market by the 39 segmenting companies in the past were labelled as company capability, buying situation, product orientation, price orientation, and diversified. The first factor consists of five supplier characteristics (reputation, geographical coverage, quick response, management quality, and salesperson's competence) and two customer specifics (service sensitivity and product importance). The second factor consists of three customer specifics (DMU, buying task, and purchasing quantities), which are related to the buying situation. The third factor consists of five product attributes (stability of quality, product quality, service level, product aesthetics, and delivery time). The fourth factor consists of two price variables (price level and price sensitivity), and one supplier characteristic (financial stability). The fifth factor was labelled as diversified because it consists of one variable from each of the product attributes (brand awareness), customer specifics (supplier loyalty), and supplier characteristics (product range).

In the same way, the five factors for segmenting the UK textiles market by the 39 segmenting companies in the present were labelled as benefits sought, diversified, company capability, price orientation, and buying situation. The first factor consists of two product attributes (service level, and delivery time), three supplier characteristics (quick response, reputation,

and geographical coverage), and two customer specifics (service sensitivity, and product importance). The second factor consists of three product attributes (brand awareness, stability of quality, and product quality), one supplier characteristic (product range), and two customer specifics (supplier loyalty, and purchasing quantities). The third factor consists of one product attribute (product aesthetics) and two supplier characteristics (salesperson's competence, and management quality). The fourth factor was labelled as price orientation, because it consists of two price variables (price level, and price sensitivity), and one supplier characteristic (financial stability). The fifth factor consists of two customer specifics (DMU and buying task), which are related to the buying situation.

For the future, the five factors for segmenting the UK textiles market by the 39 segmenting companies were labelled as benefits sought, buying situation, price orientation, company capability, and product orientation. The first factor consists of four product attributes (service level, delivery time, product quality, and stability of quality), and four supplier characteristics (financial stability, quick response, reputation, and geographical coverage), which were regarded as the benefits sought by the customers. The second factor consists of four customer specifics (buying task, DMU, and purchasing quantities, and supplier loyalty), which are related to the buying situation. The third factor was labelled as price orientation, because it consists of two price variables (price level and price sensitivity), and one customer specific (service sensitivity). The fourth factor consists of two supplier characteristics (management quality and salesperson's competence), and one customer specific (product importance). The fifth factor was labelled as product orientation because two product attributes (brand awareness, and product aesthetics), and one supplier characteristics (product range) relating to product variables, were involved.

Table 6.11 A summary of factor analysis: with 39 segmenting companies

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
			The data set relating to **the past**		
Factor loading	7.37	2.28	2.01	1.78	1.27
Segmentation bases	1. Reputation 2. Geographical coverage 3. Quick response 4. Management quality 5. Service sensitivity 6. Product importance 7. Salesperson's competence	1. DMU 2. Buying task 3. Purchasing quantities	1. Stability of quality 2. Product quality 3. Service level 4. Product aesthetics 5. Delivery time	1. Price level 2. Financial stability 3. Price sensitivity	1. Brand awareness 2. Supplier loyalty 3. Product range
Label	Company capability	Buying situation	Product orientation	Price orientation	Diversified
			The data set relating to **the present**		
Factor loading	6.97	2.38	1.82	1.77	1.47
Segmentation bases	1. Quick response 2. Service level 3. Reputation 4. Service sensitivity 5. Geographical coverage 6. Product importance 7. Delivery time	1. Brand awareness 2. Supplier loyalty 3. Product range 4. Stability of quality 5. Product quality 6. Purchasing quantities	1. Salesperson's competence 2. Product aesthetics 3. Management quality	1. Financial stability 2. Price level 3. Price sensitivity	1. DMU 2. Buying task
Label	Benefits sought	Diversified	Company capability	Price orientation	Buying situation
			The data set relating to **the future**		
Factor loading	5.75	2.48	2.02	1.68	1.63
Segmentation bases	1. Service level 2. Delivery time 3. Product quality 4. Financial stability 5. Quick response 6. Reputation 7. Geographical coverage 8. Stability of quality	1. Buying task 2. DMU 3. Purchasing quantities 4. Supplier loyalty	1. Price sensitivity 2. Service sensitivity 3. Price level	1. Management quality 2. Salesperson's competence 3. Product importance	1. Brand awareness 2. Product range 3. Product aesthetics
Label	Benefits sought	Buying situation	Price orientation	Company capability	Product orientation

The results of the factor analysis based on the 62 non-segmenting companies are summarised in Table 6.12. Table 6.12 shows that for all three time periods the 21 segmentation variables based on the 62 non-segmenting companies can be simplified into five factors. The first two factors for the 62 non-segmenting UK textiles companies in the past were labelled as diversified, and the other three factors were labelled as customer orientation, buying situation, and company capability. The first factor consists of four product attributes (price level, delivery time, service level, and product quality), one supplier characteristic (quick response), and two customer specifics (price sensitivity, and service sensitivity). The second factor consists of two product attributes (stability of quality, and product aesthetics), two supplier characteristics (management quality, and reputation), and one customer specific (product importance). The third factor consists of one product attribute (brand awareness), and two customer specifics (supplier loyalty and DMU). This makes sense since brand awareness can be regarded as a sort of recognition that a customer deals with a specific brand (or supplier). Thus the third factor was labelled as customer orientation. The fourth factor consists of two customer specifics (purchasing quantities and buying task), which are related to the buying situation. The fifth factor was labelled as company capability because it consists of four supplier characteristics (geographical coverage, salesperson's competence, financial stability, and product range).

In the same way, the first three factors for the 62 non-segmenting UK textiles companies in the present were labelled as diversified, and the other two factors were labelled as customer orientation, and price orientation. The first factor consists of four product attributes (delivery time, stability of quality, service level, and product quality), and three supplier characteristics (management quality, reputation, and quick response). The second factor consists of one product attribute (brand awareness), three supplier characteristic (financial stability, product range, and geographical coverage), and one customer specific (supplier loyalty). The third factor consists of one product attribute (product aesthetics), one supplier characteristic (salesperson's competence), and three customer specifics (buying task, DMU, and product importance). The fourth factor was labelled as customer orientation because it consists of three customer specifics (price sensitivity, service sensitivity, and purchasing quantities). The

fifth factor was labelled as price orientation because it consists of only one variable, price level.

For the future, the first four factors for the 62 non-segmenting UK textiles companies were all labelled as diversified, and the fifth factor was labelled as product orientation. The first factor consists of two product attributes (delivery time, and service level), one supplier characteristic (quick response), and one customer specific (product importance). The second factor consists of three supplier characteristics (financial stability, management quality, and reputation), and two customer specifics (buying task, and DMU). The third factor consists of two supplier characteristics (salesperson's competence, and geographical coverage), and three customer specifics (price sensitivity, service sensitivity, and purchasing quantities). The fourth factor consists of two product attributes (brand awareness, and product aesthetics), one supplier characteristic (product range), and one customer specific (supplier loyalty). The fifth factor was labelled as product orientation because three product attributes (stability of quality, price level, and product quality) were involved.

Similar to the results of factor analysis based on all 101 companies, from the analyses above, using factor analysis based on the 62 non-segmenting companies and the 39 segmenting companies separately, the original 21 possible segmentation bases can also be linked together by five underlying factors, regardless of time period. However, it can be seen that the underlying factors from analysing the 62 non-segmenting companies are more diversified than those from analysing the 39 segmenting companies and those from analysing all 101 companies. This difference makes sense because non-segmenting companies have no clear segmentation strategies and results in a mixture of attitudes about segmentation bases for those companies.

From the analyses above it can also be seen that there is evidence of both a factor structure and a cluster structure using factor analysis and cluster analysis. Further, the existence of a 2-cluster solution affects the underlying factors extracted, this will be further discussed in Chapter 7.

Table 6.12 A summary of factor analysis: with 62 non-segmenting companies

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
			The data set relating to **the past**		
Factor loading	7.65	2.78	1.73	1.39	1.15
Segmentation bases	1. Price level 2. Delivery time 3. Service level 4. Quick response 5. Price sensitivity 6. Service sensitivity 7. Product quality	1. Stability of quality 2. Management quality 3. Reputation 4. Product aesthetics 5. Product importance	1. Supplier loyalty 2. Brand awareness 3. DMU	1. Purchasing quantities 2. Buying task	1. Geographical coverage 2. Salesperson's competence 3. Financial stability 4. Product range
Label	Diversified	Diversified	Customer orientation	Buying situation	Company capability
			The data set relating to **the present**		
Factor loading	6.13	2.88	1.79	1.31	1.21
Segmentation bases	1. Delivery time 2. Management quality 3. Stability of quality 4. Service level 5. Reputation 6. Quick response 7. Product quality	1. Brand awareness 2. Supplier loyalty 3. Financial stability 4. Product range 5. Geographical coverage	1. Buying task 2. Product aesthetics 3. Salesperson's competence 4. DMU 5. Product importance	1. Price sensitivity 2. Service sensitivity 3. Purchasing quantities	1. Price level
Label	Diversified	Diversified	Diversified	Customer orientation	Price orientation
			The data set relating to **the future**		
Factor loading	7.56	2.45	1.91	1.48	1.05
Segmentation bases	1. Delivery time 2. Service level 3. Quick response 4. Product importance	1. Buying task 2. Financial stability 3. Management quality 4. Reputation 5. DMU	1. Price sensitivity 2. Service sensitivity 3. Salesperson's competence 4. Geographical coverage 5. Purchasing quantities	1. Supplier loyalty 2. Brand awareness 3. Product range 4. Product aesthetics	1. Stability of quality 2. Price level 3. Product quality
Label	Diversified	Diversified	Diversified	Diversified	Product orientation

6.6 Cluster analysis for what the companies did

Apart from carrying out cluster analysis based on the 4 barriers and 6 issues variables (see section 6.4 above), this study also carried out cluster analysis based on the 21 segmentation variables relating to product attributes, supplier characteristics, and customer specifics. As stated in Chapter 5, a segmentation base with a high leverage value (high value for importance and performance) is regarded as a useful segmentation base by that company. Based on this assumption, it may be possible to classify the 101 respondent companies into a number of different groups and hence to examine the relationship between those groups and their demographic profile (SIC sectors, geographic location, and company size).

The research instrument was designed to collect data for the past (before 1990), the present (1990's), and the future (after 2000). Thus the cluster analysis based on the 21 segmentation variables was performed three times, once for each time period. The three dendrograms are presented in Figure 6.2 (data relating to the past), Figure 6.3 (data relating to the present), and Figure 6.4 (data relating to the future). All of the dendrograms show that the UK textiles companies can be classified into two clusters. The results of the one-way ANOVA are summarised in Tables 6.13, 6.14, and 6.15.

Tables 6.13 and 6.14 show that in the past and in the present, all the group means of segmentation bases of the segmenting companies (cluster 2) were significantly greater than those of the non-segmenting companies (cluster 1). However, for the data relating to the future (Table 6.15), there were five non-significant variables (brand awareness, product aesthetics, product range, supplier loyalty, and DMU) between the two clusters. This may be due to the respondent companies' uncertainty in evaluating the bases in the future.

In order to compare the results from analysing what the companies said and what the companies did, Chi-squared tests were performed three times, once for each time period. The results of the Chi-squared test for the three time periods were shown in Tables 6.16, 6.17, and 6.18.

Figure 6.2 Dendrogram based on all 21 segmentation variables relating to the past

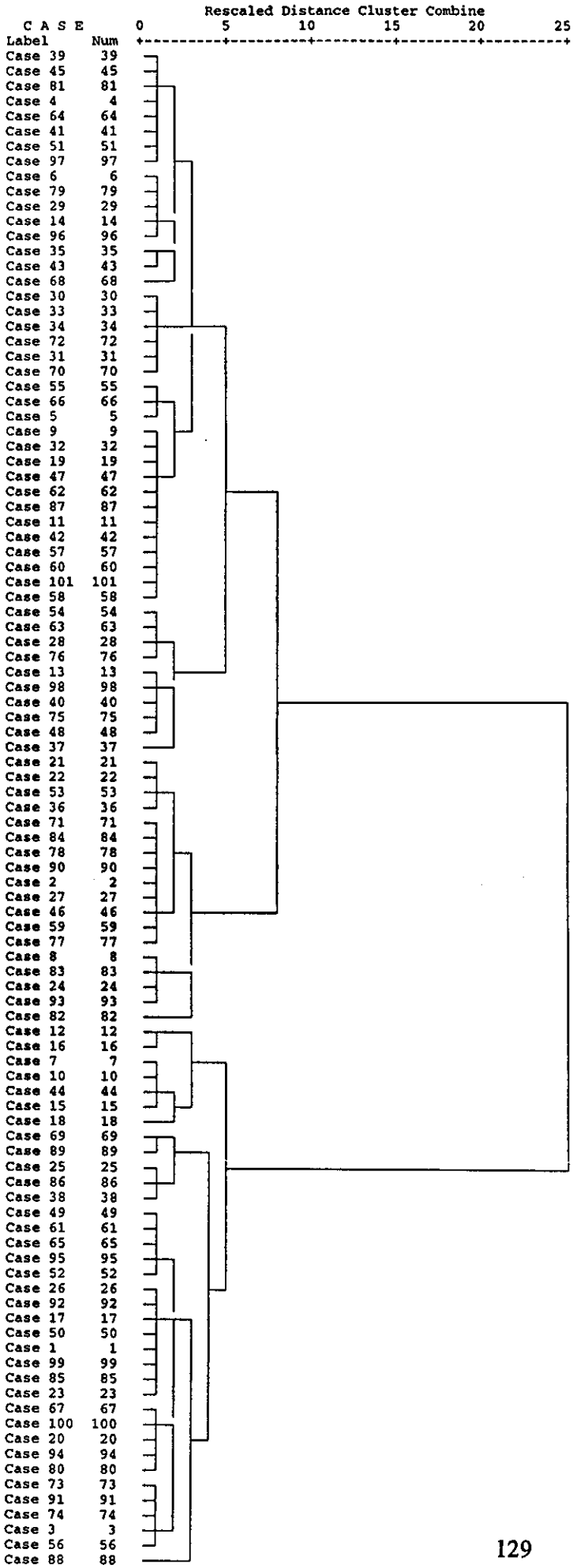


Figure 6.3 Dendrogram based on all 21 segmentation variables relating to the present

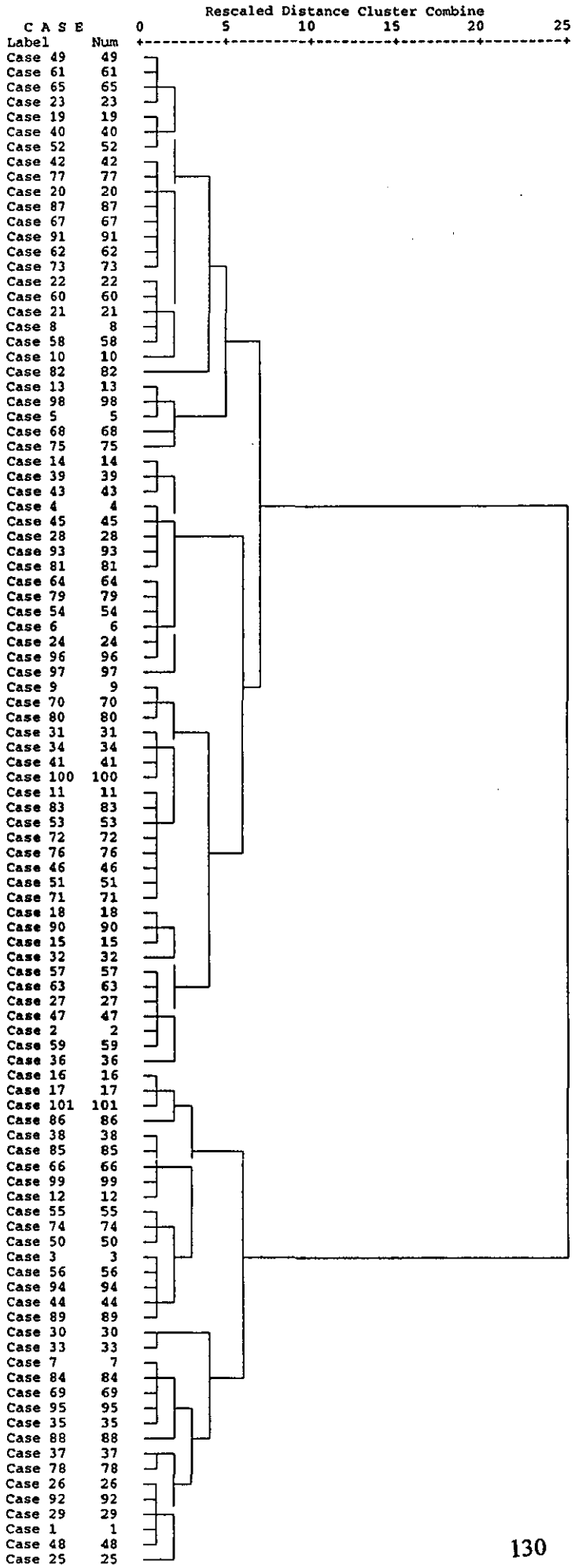


Figure 6.4 Dendrogram based on all 21 segmentation variables relating to the future

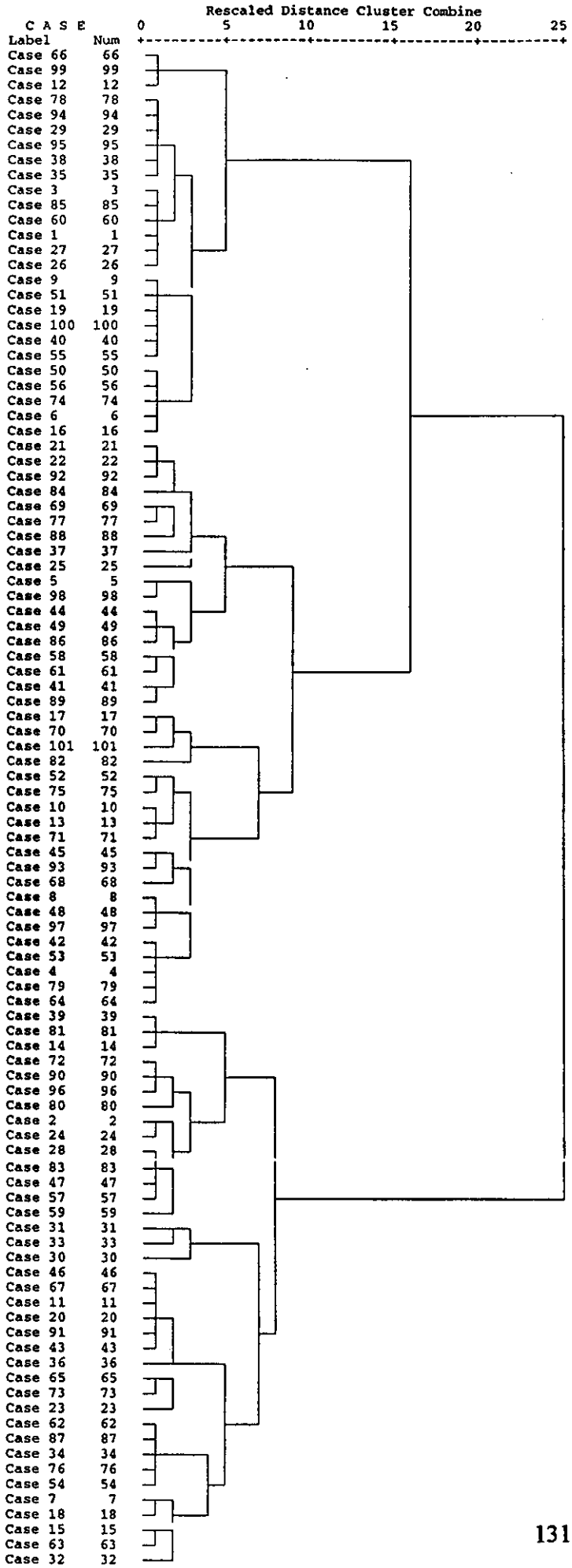


Table 6.13 Group means and significance levels of the segmentation bases in the past for the two cluster solution (using 21 variables)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product quality	22.46	29.75	20.97	0.00
Price level	20.55	24.19	4.84	0.03
Brand awareness	6.82	13.75	15.94	0.00
Delivery time	18.62	28.17	31.96	0.00
Service level	20.25	28.61	23.22	0.00
Product aesthetics	16.85	22.14	6.38	0.01
Stability of quality	20.06	27.50	19.78	0.00
Product range	10.37	20.56	35.64	0.00
Financial stability	14.65	22.56	26.19	0.00
Salesperson's competence	16.97	24.53	22.40	0.00
Geographical coverage	13.92	21.14	16.38	0.00
Quick response	16.86	26.92	35.83	0.00
Reputation	21.23	31.08	41.32	0.00
Management quality	16.85	26.44	38.98	0.00
Supplier loyalty	9.25	19.97	43.37	0.00
DMU	7.77	16.47	41.96	0.00
Purchasing quantities	12.14	19.56	20.68	0.00
Buying task	11.26	20.14	47.88	0.00
Product importance	15.65	27.39	63.85	0.00
Price sensitivity	16.22	23.00	17.65	0.00
Service sensitivity	14.75	24.92	45.08	0.00
Group (members) means	(65) 15.4	(36) 23.75	158.02	0.00

Table 6.14 Group means and significance levels of the segmentation bases in the present for the two cluster solution (using 21 variables)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product quality	26.31	32.27	18.23	0.00
Price level	23.32	27.48	6.37	0.01
Brand awareness	10.90	15.76	6.36	0.01
Delivery time	24.93	32.33	35.70	0.00
Service level	25.35	33.18	31.26	0.00
Product aesthetics	18.72	28.91	27.75	0.00
Stability of quality	23.69	31.42	38.32	0.00
Product range	16.29	19.97	3.13	0.08
Financial stability	18.03	25.79	21.47	0.00
Salesperson's competence	19.22	30.06	63.05	0.00
Geographical coverage	16.93	25.09	15.69	0.00
Quick response	22.84	32.85	46.54	0.00
Reputation	23.12	31.82	43.07	0.00
Management quality	21.04	27.67	29.43	0.00
Supplier loyalty	11.41	17.45	12.08	0.00
DMU	11.31	20.70	30.47	0.00
Purchasing quantities	15.21	22.91	19.03	0.00
Buying task	15.51	22.73	22.17	0.00
Product importance	22.32	30.67	33.24	0.00
Price sensitivity	22.51	27.85	9.83	0.00
Service sensitivity	22.79	31.15	25.86	0.00
Group (members) means	(68) 19.61	(33) 27.05	160.23	0.00

Table 6.15 Group means and significance levels of the segmentation bases in the future for the two cluster solution (using 21 variables)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product quality	28.59	32.97	15.82	0.00
Price level	24.41	30.23	17.43	0.00
Brand awareness	14.89	15.25	0.03	0.87
Delivery time	26.19	33.58	55.26	0.00
Service level	26.41	33.92	72.15	0.00
Product aesthetics	21.89	25.45	2.97	0.09
Stability of quality	26.16	31.48	16.21	0.00
Product range	20.70	20.64	0.00	0.98
Financial stability	20.73	25.11	7.34	0.01
Salesperson's competence	20.30	27.34	16.58	0.00
Geographical coverage	17.38	23.61	8.77	0.00
Quick response	24.97	33.17	48.19	0.00
Reputation	23.65	30.91	36.47	0.00
Management quality	24.86	29.20	10.26	0.00
Supplier loyalty	15.05	14.53	0.07	0.79
DMU	13.81	17.27	3.11	0.08
Purchasing quantities	16.14	21.91	7.55	0.01
Buying task	16.73	20.55	4.56	0.04
Product importance	22.7	30.17	26.09	0.00
Price sensitivity	19.89	32.25	81.24	0.00
Service sensitivity	20.22	33.66	105.75	0.00
Group (members) means	(37) 21.22	(64) 26.82	55.12	0.00

Table 6.16 Comparison of what companies said and what companies did (data relating to the past)

SAID2_1 — Count	DID2_1: Non-segmenting	DID2_1: segmenting	Row Total
Non-segmenting	43	19	62 61.4
segmenting	22	17	39 38.6
Column Total	65 64.4	36 35.6	101 100.0

Chi-Square	Value	DF	Significance
Pearson	1.74879	1	.18603

Table 6.17 Comparison of what companies said and what companies did (data relating to the present)

SAID2_1 — Count	DID2_2: Non-segmenting	DID2_2: segmenting	Row Total
Non-segmenting	43	19	62 61.4
segmenting	25	14	39 38.6
Column Total	68 67.3	33 32.7	101 100.0

Chi-Square	Value	DF	Significance
Pearson	.30023	1	.58374

Table 6.18 Comparison of what companies said and what companies will do in the future

SAID2_1	Count	DID2_3 Non-segmenting	segmenting	Row Total
	Non-segmenting	28	34	62 61.4
	segmenting	9	30	39 38.6
	Column Total	37 36.6	64 63.4	101 100.0

Chi-Square	Value	DF	Significance
Pearson	5.02998	1	.02491

From Table 6.16 it can be seen that only 60 cases out of 101 cases (59%) were classified consistently and the Pearson value, 1.75, is smaller than the critical value (3.841) at the 95% significance level ($\chi^2_{0.05}$ at DF = 1). That is, there is not consistency between the results from analysing what the companies said (4 barriers and 6 issues questions) and what the companies did in the past (21 possible segmentation variables in the past).

From Table 6.17 it can be seen that only 57 cases out of 101 cases (56%) were classified consistently and the Pearson value, 0.30, is smaller than the critical value (3.841) at the 95% significance level ($\chi^2_{0.05}$ at DF = 1). That is, there is not consistency between the results from analysing what the companies said (4 barriers and 6 issues questions) and what the companies did in the present (21 possible segmentation variables in the present).

From Table 6.18 it can be seen that 58 cases out of 101 cases (57%) were classified consistently and the Pearson value, 5.03, is greater than the critical value (3.841) at the 95%

significance level ($\chi^2_{0.05}$ at DF = 1). That is, there is consistency between the results from analysing what the companies said (4 barriers and 6 issues questions) and what the companies will do in the future (21 possible segmentation variables in the future).

From the discussion above, regardless of the time period it is reasonable to classify UK textiles companies into two clusters using the 21 segmentation variables. Also, more companies expect to segment in the future (from 36 companies in the past to 64 companies in the future). This provides further evidence that the first hypothesis (H1: There is no difference in the extent to which textiles companies implement a segmentation strategy) is not supported.

As a result, the first hypothesis presented in chapter 4 is not supported:

Reject H1: There is no difference in the extent to which textiles companies implement a segmentation strategy.

These new clusters can also be used to test the three subsidiary hypothesis H1A, H1B, and H1C.

Hypothesis H1A states that there is no difference between SIC sectors and the extent to which textiles companies implement a segmentation strategy. The results of the Chi- squared test for this hypothesis are summarised in Table 6.19. For the SIC sector in the past the Pearson value is 8.17. For the SIC sector in the present the Pearson value is 1.47. For the SIC sector in the future the Pearson value is 3.13. All three Pearson values are smaller than 12.592 ($\chi^2_{0.05}$ at DF = 6). As a result, hypothesis H1A is supported.

Accept H1A: there is no difference between SIC sectors and the extent to which textiles companies implement a segmentation strategy.

Hypothesis H1B states that there is no difference between geographic location and the extent to which textiles companies implement a segmentation strategy. The results of the Chi-squared test for this hypothesis are summarised in Table 6.20. For the geographic location in the past the Pearson value is 8.00. For the geographic location in the present the Pearson value is 3.90. For the geographic location in the future the Pearson value is 7.65. All three Pearson values are smaller than 9.488 ($\chi^2_{0.05}$ at DF = 4). As a result, hypothesis H1B is supported.

Accept H1B: there is no difference between geographic location and the extent to which textiles companies implement a segmentation strategy.

For some of the geographic locations, the expected values are very small. Combining locations to avoid this problem results in the same conclusion, that is there is no significant evidence of a relationship between geographic location and whether companies are segmenting or not. The Pearson values for the past, the present, and the future are 1.161, 0.430 and 0.437 and these are smaller than 3.84 ($\chi^2_{0.05}$ at DF = 1).

Hypothesis H1C states that there is no difference between company size and the extent to which textiles companies implement a segmentation strategy. The results of the Chi- squared test for this hypothesis are summarised in Table 6.21. For the company size in the past the Pearson value is 0.31. For the company size in the present the Pearson value is 2.43. For the company size in the future the Pearson value is 0.56. All three Pearson values are smaller than 5.991 ($\chi^2_{0.05}$ at DF = 2). As a result, hypothesis H1C is supported.

Accept H1C: there is no difference between company size and the extent to which textiles companies implement a segmentation strategy.

Table 6.19 Cross tabulation between SIC sectors and segmentation strategy (using 21 variables)

	SIC sectors	Cluster 1: Non-segmenting	Cluster 2: Segmenting	Row total	Row %	DF	Pearson value
Past	Man-made fibres & fabrics	12	10	22	21.8		
	Woollen yarns & fabrics	8	7	15	14.9		
	Cotton yarns & fabrics	8	7	15	14.9		
	Industrial fabrics	7	2	9	8.9		
	Carpets and rugs	13	2	15	14.9		
	Knitted fabrics, goods & hosiery	6	5	11	10.9		
	Dyeing/finishing	11	3	14	13.9		
	Column total	65	36	101		6	8.17
	Column %	64.4	35.6		100		
Present	Man-made fibres & fabrics	17	6	23	22.8		
	Woollen yarns & fabrics	9	5	14	13.9		
	Cotton yarns & fabrics	11	5	16	15.8		
	Industrial fabrics	6	2	8	7.9		
	Carpets and rugs	10	5	15	14.9		
	Knitted fabrics, goods & hosiery	7	4	11	10.9		
	Dyeing/finishing	8	6	14	13.9		
	Column total	68	33	101		6	1.47
	Column %	67.3	32.7		100		
Future	Man-made fibres & fabrics	8	15	23	22.8		
	Woollen yarns & fabrics	6	8	14	13.9		
	Cotton yarns & fabrics	5	11	16	15.8		
	Industrial fabrics	2	6	8	7.9		
	Carpets and rugs	8	7	15	14.9		
	Knitted fabrics, goods & hosiery	4	7	11	10.9		
	Dyeing/finishing	4	10	14	13.9		
	Column total	37	64	101		6	3.13
	Column %	36.6	63.4		100		

Table 6.20 Cross tabulation between geographic location and segmentation strategy (using 21 variables)

Geographic location		Cluster 1: Non-segmenting	Cluster 2: Segmenting	Row total	Row %	DF	Pearson value
Past	England	56	28	84	83.2		
	Wales	1	0	1	1.0		
	Scotland	1	5	6	5.9		
	Northern Ireland	5	1	6	5.9		
	Multiple	2	2	4	4.0		
	Column total	65	36	101		4	8.00
	Column %	64.4	35.6		100		
Present	England	54	28	82	81.2		
	Wales	1	1	2	2.0		
	Scotland	6	0	6	5.9		
	Northern Ireland	5	2	7	6.9		
	Multiple	2	2	4	4.0		
	Column total	68	33	101		4	3.90
	Column %	67.3	32.7		100		
Future	England	31	50	81	80.2		
	Wales	0	2	2	2.0		
	Scotland	4	2	6	5.9		
	Northern Ireland	0	7	7	6.9		
	Multiple	2	3	5	5.0		
	Column total	37	64	101		4	7.65
	Column %	36.6	63.4		100		

Table 6.21 Cross tabulation between company size and segmentation strategy (using 21 variables)

Company size (employee number)		Cluster 1: Non-segmenting	Cluster 2: Segmenting	Row total	Row %	DF	Pearson value
Past	Small	24	12	36	35.6		
	Medium	31	17	48	47.5		
	Large	10	7	17	16.8		
	Column total	65	36	101		2	0.31
	Column %	64.4	35.6		100		
Present	Small	19	13	32	31.7		
	Medium	38	13	51	50.5		
	Large	11	7	18	17.8		
	Column total	68	33	101		2	2.43
	Column %	67.3	32.7		100		
Future	Small	11	19	30	29.7		
	Medium	19	29	48	47.5		
	Large	7	16	23	22.8		
	Column total	37	64	101		2	0.56
	Column %	36.6	63.4		100		

6.7 Product attributes for market segmentation

Hypothesis H2 states that there is no difference between textiles companies who segment and those who do not segment in terms of product attributes (see also section 4.4). Firstly, this section analyses the product attributes data for the two groups of companies identified by using the 4 barriers and 6 issues questions (what the companies said). Secondly, this section analyses the product attributes data for possible clusters of companies based on the 7 product attributes questions (what the companies did).

To examine if product attributes are useful bases for segmenting the UK textiles market (hypothesis H2), this study used one-way ANOVA to test if there are differences between the two groups of companies identified by using the 4 barriers and 6 issues questions. The results relating to the past, the present, and the future are summarised in Tables 6.22, 6.23, and 6.24, respectively. The three tables show that the only significant variable for segmenting the UK textiles market is the brand awareness in the past. This could mean that brand awareness was a useful base for companies segmenting their markets in the past (before 1990). However, in terms of simple probability, one significant variable out of 21 variables would be expected by chance at the 95% significance level when there was no difference.

As a result, the second hypothesis presented in chapter 4 is supported.

Accept H2: There is no difference between textiles companies who segment and those who do not segment in terms of product attributes.

Using the two groups of companies identified by using the 4 barriers and 6 issues questions is one way to analyse the product attributes data. Since "what the companies say" and "what the companies do" may be different, this study also performed cluster analysis using the 7 product attributes to investigate further possible differences between companies.

As discussed in Chapter 3, the existence of confusing issues about market segmentation in the real word means that what a company says is not necessarily consistent with what a company does. The research instrument was designed to collect data for the past (before 1990), the present (1990's), and the future (after 2000). Thus the cluster analysis based on the 7 product attributes variables was performed three times, once for each time period. The three dendrograms are presented in Figure 6.5 (data relating to the past), Figure 6.6 (data relating to the present), and Figure 6.7 (data relating to the future). All of the dendrograms show that the UK textiles companies can be classified into two clusters.

The results of using ANOVA to analyse the 7 product attributes in the past, the present, and the future are summarised in Tables 6.25, 6.26, and 6.27, respectively. The first cluster, regardless of the time period, was labelled "non-segmenting", because the cluster means were lower. On the other hand, the second cluster was labelled "segmenting", because the cluster means were higher. The F statistics listed in the three tables are very different from those listed in Tables 6.22, 6.23, and 6.24. Unlike the analysis based on what companies said (using the 4 barriers and 6 issues questions), the results of analysing what companies do (using the 7 product attributes questions) do not support the hypothesis H2 and the majority of its subsidiary hypotheses. The only non-significant attribute (regardless of the time period) is price level. This result shows that based on what companies say and what companies do there is no significant difference between the textiles companies who were segmenting and those who were non-segmenting in terms of price level. This means that the subsidiary hypothesis H2B is supported. For all the other product attributes examined in this study, the results from what the companies say and what the companies do are contradictory.

The results summarised in Tables 6.25, 6.26, and 6.27 also indicate that the number of non-segmenting companies is decreasing over time (from 62 companies in the past to 43 companies in the future). In addition, the average group mean for the segmenting companies for the 7 product attributes is increasing, from 26.12 in the past to 29.61 in the future. This indicates that the 7 product attributes identified by this study have received increasing attention (importance and performance) from UK textiles companies.

Figure 6.5 Dendrogram based on 7 product attributes relating to the past

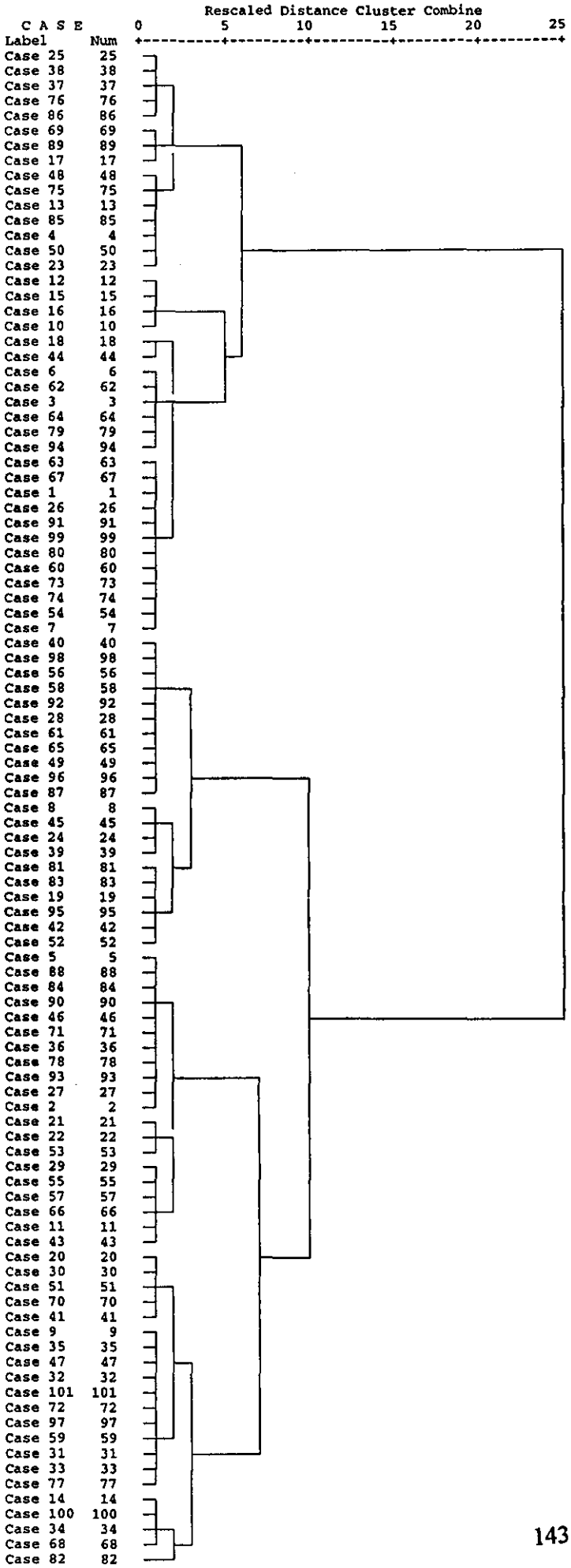


Figure 6.6 Dendrogram based on 7 product attributes relating to the present

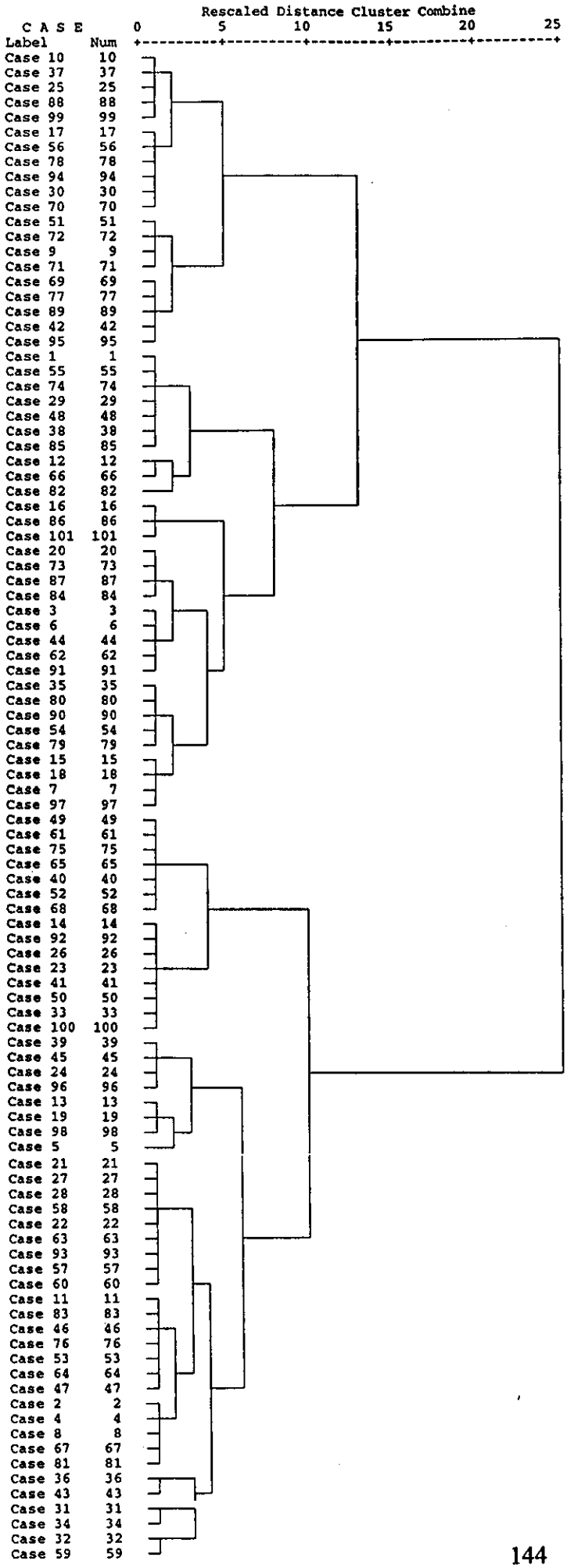


Figure 6.7 Dendrogram based on 7 product attributes relating to the future

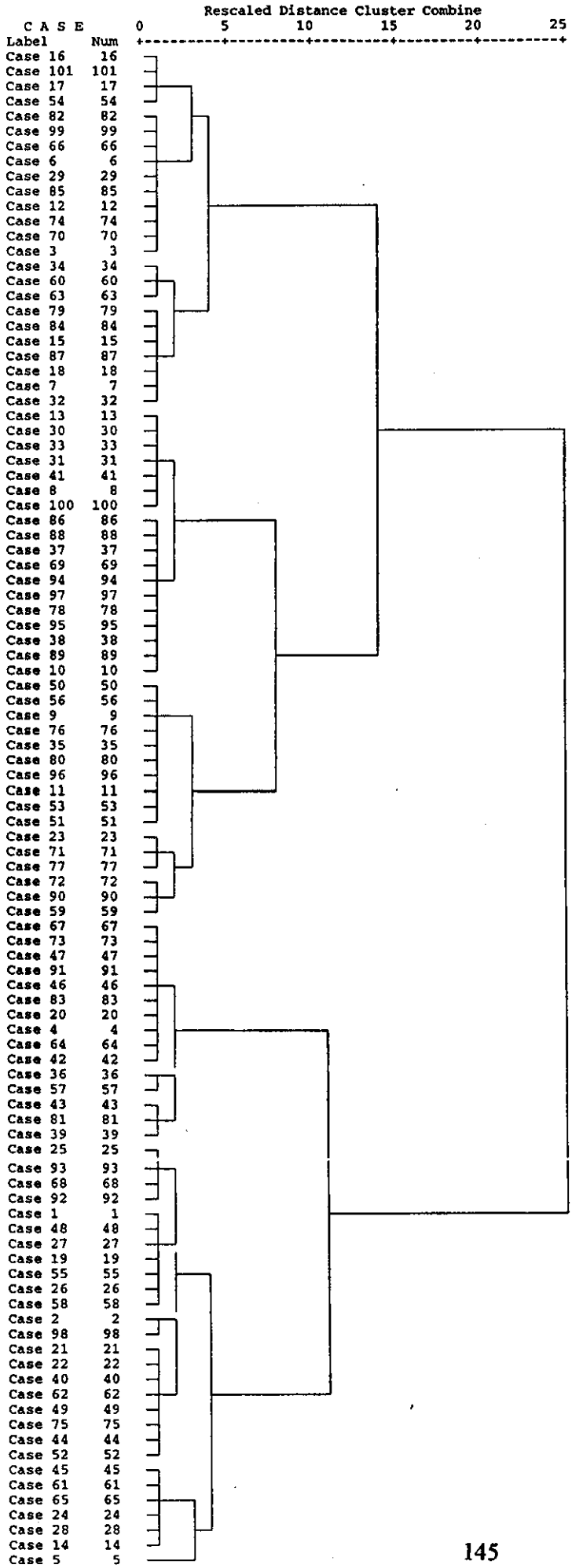


Table 6.22 Group means and significance levels of product attributes in the past by segmentation strategy (using 4 barriers and 6 issues)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product quality	25.0	25.2	0.01	0.91
Price level	22.8	20.3	2.33	0.13
Brand awareness	10.7	7.0	4.37	**0.04**
Delivery time	21.8	22.3	0.07	0.79
Service level	22.9	23.8	0.24	0.63
Product aesthetics	17.9	20.0	0.99	0.32
Stability of quality	21.9	23.9	1.26	0.26
Group (members) means	(62) 20.44	(39) 20.36	0.00	0.95

Table 6.23 Group means and significance levels of product attributes in the present by segmentation strategy (using 4 barriers and 6 issues)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product quality	27.4	29.6	2.43	0.12
Price level	24.7	24.6	0.00	0.97
Brand awareness	13.6	10.6	2.52	0.12
Delivery time	26.9	28.1	0.79	0.38
Service level	26.9	29.6	3.23	0.08
Product aesthetics	22.2	21.9	0.02	0.89
Stability of quality	25.4	27.5	2.09	0.15
Group means	(62) 23.87	(39) 24.56	0.55	0.46

Table 6.24 Group means and significance levels of product attributes in the future by segmentation strategy (using 4 barriers and 6 issues)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product quality	30.6	32.6	2.85	0.09
Price level	28.3	27.8	0.11	0.74
Brand awareness	15.8	14.0	0.78	0.38
Delivery time	30.2	31.9	1.79	0.18
Service level	30.4	32.4	3.05	0.08
Product aesthetics	23.5	25.1	0.57	0.45
Stability of quality	28.8	30.7	1.99	0.16
Group means	(62) 26.82	(39) 27.78	1.01	0.32

Table 6.25 Group means and significance levels of product attributes in the past by segmentation strategy (using 7 product attributes)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product quality	21.68	30.44	34.93	0.00
Price level	20.52	23.97	4.5	0.04
Brand awareness	6.13	14.31	24.65	0.00
Delivery time	17.27	29.56	70.97	0.00
Service level	18.92	30.08	53.13	0.00
Product aesthetics	14.37	25.67	39.41	0.00
Stability of quality	18.85	28.85	44.57	0.00
Group (members) means	(62) 16.82	(39) 26.12	125.60	0.00

Table 6.26 Group means and significance levels of product attributes in the present by segmentation strategy (using 7 product attributes)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product quality	27.4	29.10	1.44	0.23
Price level	23.84	25.51	1.11	0.30
Brand awareness	8.16	16.73	26.82	0.00
Delivery time	24.72	29.92	17.27	0.00
Service level	25.12	30.65	15.57	0.00
Product aesthetics	15.02	28.94	85.86	0.00
Stability of quality	23.56	28.82	17.05	0.00
Group (members)means	(50) 21.12	(51) 27.10	72.98	0.00

Table 6.27 Group means and significance levels of product attributes in the future by segmentation strategy (using 7 product attributes)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product quality	29.86	32.48	5.45	0.02
Price level	27.14	28.81	1.30	0.26
Brand awareness	10.95	18.21	13.85	0.00
Delivery time	29.16	32.14	6.45	0.01
Service level	29.74	32.22	5.03	0.03
Product aesthetics	14.53	31.28	209.12	0.00
Stability of quality	26.00	32.16	24.47	0.00
Group (members) means	(43) 23.91	(58) 29.61	57.34	0.00

6.8 Supplier characteristics for market segmentation

Hypothesis H3 states that there is no difference between textiles companies who segment and those who do not segment in terms of supplier characteristics (see also section 4.5). Firstly, this section analyses the supplier characteristics data for the two groups of companies identified by using the 4 barriers and 6 issues questions (what the companies said). Secondly, this section analyses the supplier characteristics data for possible clusters of companies based on the 7 supplier characteristics questions (what the companies did).

To examine if supplier characteristics are useful bases for segmenting the UK textiles market (hypothesis H3), this study used one-way ANOVA to test if there are differences between the two groups of companies identified by using the 4 barriers and 6 issues questions. The results relating to the past, the present, and the future are summarised in Tables 6.28, 6.29, and 6.30, respectively. The three tables show that the only two significant variables for segmenting the UK textiles market are the product range and the financial stability in the past. This could mean that product range and financial stability were useful bases for companies segmenting their markets in the past (before 1990). However, there is no significant variable for segmenting the UK textiles market in the present and in the future in terms of the 7 supplier characteristics.

As a result, the third hypothesis presented in chapter 4 is supported.

Accept H3: There is no difference between textiles companies who segment and those who do not segment in terms of supplier characteristics.

Using the two groups of companies identified by using the 4 barriers and 6 issues questions is one way to analyse the supplier characteristics data. Since "what the companies say" and "what the companies do" may be different, this study also performed cluster analysis using the 7 supplier characteristics to investigate further possible differences between companies.

As discussed in Chapter 3, the existence of confusing issues about market segmentation in the real word means that what a company says is not necessary consistent with what a company does. The research instrument was designed to collect data for the past (before 1990), the present (1990's), and the future (after 2000). Thus the cluster analysis based on the 7 supplier characteristics variables was performed three times, once for each time period. The three dendrograms are presented in Figure 6.8 (data relating to the past), Figure 6.9 (data relating to the present), and Figure 6.10 (data relating to the future). All of the dendrograms show that the UK textiles companies can be classified into two clusters.

The results of using ANOVA to analyse the 7 supplier characteristics in the past, the present, and the future are summarised in Tables 6.31, 6.32, and 6.33, respectively. The first cluster, regardless of the time period, was labelled "non-segmenting", because the cluster means were lower. On the other hand, the second cluster was labelled "segmenting", because the cluster means were higher. The F statistics listed in the three tables are very different from those listed in Tables 6.28, 6.29, and 6.30. Unlike the analysis based on what companies say (using the 4 barriers and 6 issues questions), the results of analysing what companies do (using the 7 supplier characteristics questions) do not support the hypothesis H3 or any of its subsidiary hypotheses. Therefore, for all the supplier characteristics examined in this study, the results from what the companies say and what the companies do are contradictory.

The results summarised in Tables 6.31, 6.32, and 6.33 also indicate that the number of non-segmenting companies is decreasing over time (from 62 companies in the past to 32 companies in the future). In addition, the average group mean for the segmenting companies for the 7 supplier characteristics is increasing, from 25.64 in the past to 27.86 in the future. This indicates that the 7 supplier characteristics identified by this study have received increasing attention (importance and performance) from UK textiles companies.

Figure 6.8 Dendrogram based on 7 supplier characteristics relating to the past

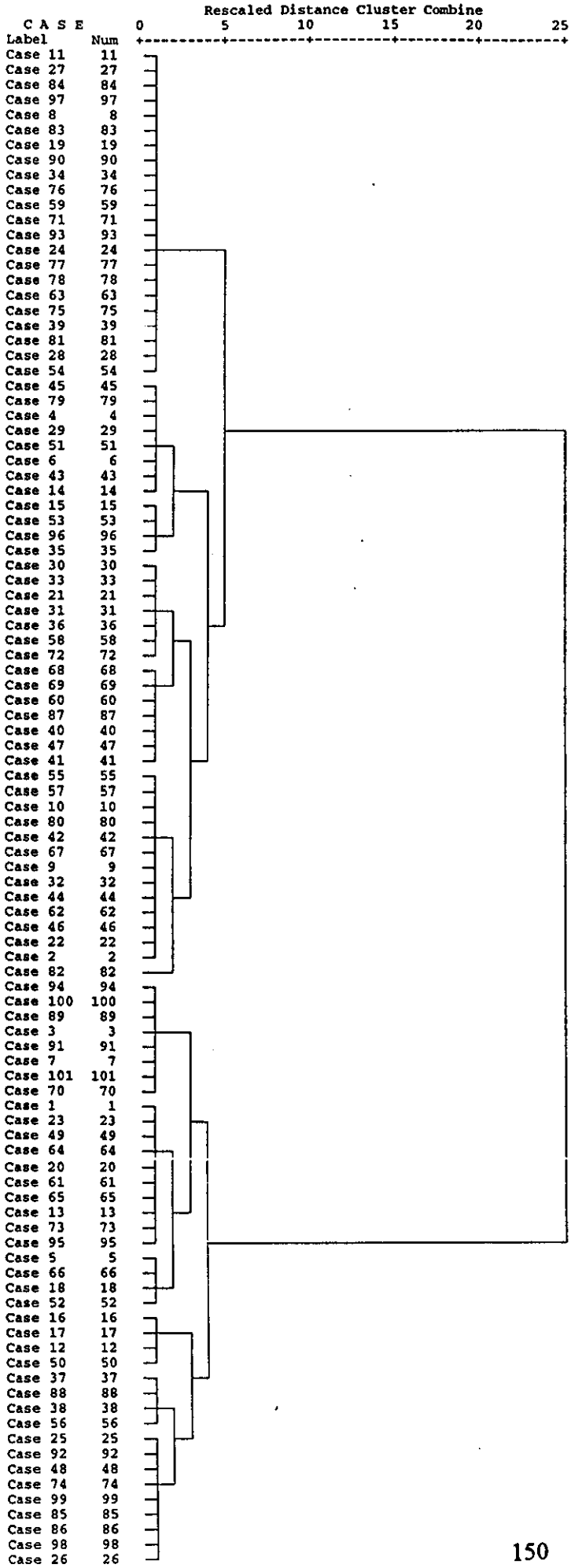


Figure 6.9 Dendrogram based on 7 supplier characteristics relating to the present

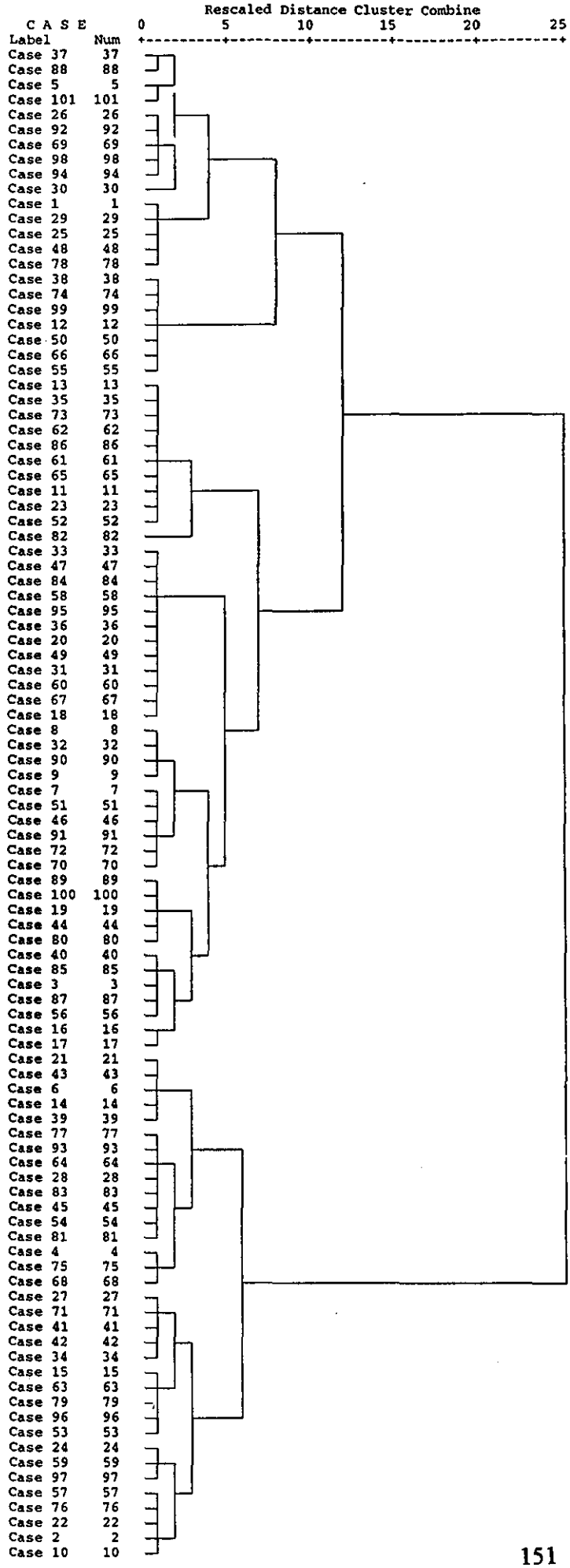


Figure 6.10 Dendrogram based on 7 supplier characteristics relating to the future

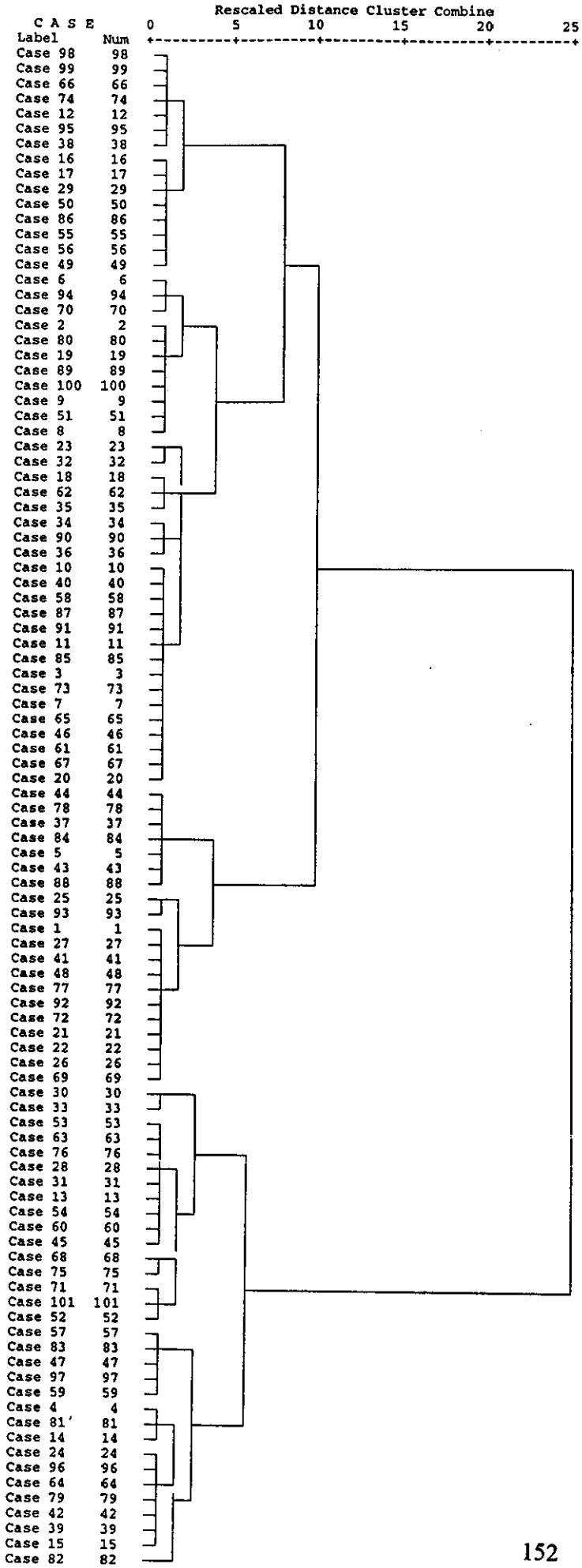


Table 6.28 Group means and significance levels of supplier characteristics in the past by segmentation strategy (using 4 barriers and 6 issues)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product range	12.5	16.4	4.19	**0.04**
Financial stability	16.0	19.8	5.31	**0.02**
Salesperson's competence	18.7	21.2	2.13	0.15
Geographical coverage	15.9	17.4	0.62	0.43
Quick response	19.4	22.1	2.0	0.16
Reputation	23.4	26.8	3.69	0.06
Management quality	19.5	21.4	1.15	0.29
Group (members) means	(62) 17.92	(39) 20.74	4.91	**0.03**

Table 6.29 Group means and significance levels of supplier characteristics in the present by segmentation strategy (using 4 barriers and 6 issues)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product range	16.6	18.8	1.19	0.28
Financial stability	19.4	22.5	3.11	0.08
Salesperson's competence	22.0	23.9	1.28	0.26
Geographical coverage	19.5	19.7	0.01	0.91
Quick response	25.6	26.9	0.60	0.44
Reputation	25.7	26.4	0.26	0.61
Management quality	22.9	23.7	0.35	0.56
Group (members) means	(62) 21.67	(39) 23.15	1.89	0.17

Table 6.30 Group means and significance levels of supplier characteristics in the future by segmentation strategy (using 4 barriers and 6 issues)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product range	20.5	20.8	0.02	0.88
Financial stability	23.6	23.4	0.01	0.91
Salesperson's competence	24.2	25.7	0.67	0.41
Geographical coverage	21.1	21.7	0.10	0.76
Quick response	29.8	30.7	0.43	0.51
Reputation	27.7	29.1	0.95	0.33
Management quality	27.1	28.4	0.91	0.34
Group (members) means	(62) 24.86	(39) 25.7	0.60	0.44

Table 6.31 Group means and significance levels of supplier characteristics in the past by segmentation strategy (using 7 supplier characteristics)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product range	9.90	20.51	41.77	0.00
Financial stability	13.90	23.13	41.25	0.00
Salesperson's competence	14.98	27.10	95.14	0.00
Geographical coverage	12.90	22.21	31.90	0.00
Quick response	15.61	28.13	73.29	0.00
Reputation	20.68	31.21	52.71	0.00
Management quality	15.89	27.23	68.15	0.00
Group (members) means	(62) 14.84	(39) 25.64	223.39	0.00

Table 6.32 Group means and significance levels of supplier characteristics in the present by segmentation strategy (using 7 supplier characteristics)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product range	12.65	19.96	13.87	0.00
Financial stability	13.88	23.96	43.45	0.00
Salesperson's competence	17.21	25.58	30.55	0.00
Geographical coverage	11.15	23.88	50.50	0.00
Quick response	21.24	28.58	20.98	0.00
Reputation	21.29	28.33	24.93	0.00
Management quality	20.71	24.48	8.08	0.01
Group (members) means	(34) 16.87	(67) 24.97	112.65	0.00

Table 6.33 Group means and significance levels of supplier characteristics in the future by segmentation strategy (using 7 supplier characteristics)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Product range	16.44	22.62	9.33	0.00
Financial stability	18.47	25.84	22.09	0.00
Salesperson's competence	16.16	28.75	73.94	0.00
Geographical coverage	10.47	26.36	96.46	0.00
Quick response	24.94	32.59	35.92	0.00
Reputation	25.16	29.68	10.71	0.00
Management quality	24.25	29.17	12.58	0.00
Group (members) means	(32) 19.41	(69) 27.86	119.35	0.00

6.9 Customer specifics for market segmentation

Hypothesis H4 states that there is no difference between textiles companies who segment and those who do not segment in terms of customer specifics (see also section 4.6). Firstly, this section analyses the customer specifics data for the two groups of companies identified by using the 4 barriers and 6 issues questions (what the companies said). Secondly, this section analyses the customer specifics for possible clusters of companies based on the 7 customer specifics questions (what the companies did).

To examine if customer specifics are useful bases for segmenting the UK textiles market (hypothesis H4), this study used one-way ANOVA to test if there are differences between the two groups of companies identified by using the 4 barriers and 6 issues questions. The results relating to the past, the present, and the future are summarised in Tables 6.34, 6.35, and 6.36, respectively. The three tables show that the only significant variable for segmenting the UK textiles market is the buying task, regardless of the time period. This means that buying task can be a useful base for companies segmenting their markets, regardless of the time period However, the average group means of the 7 customer specifics is not significant, regardless of the time period.

As a result, the fourth hypothesis presented in chapter 4 is supported.

Accept H4: There is no difference between textiles companies who segment and those who do not segment in terms of customer specifics.

Using the two groups of companies identified by using the 4 barriers and 6 issues questions is one way to analyse the customer specifics data. Since "what the companies say" and "what the companies do" may be different, this study also performed cluster analysis using the 7 customer specifics to investigate further possible differences between companies.

As discussed in Chapter 3, the existence of confusing issues about market segmentation in the real word means that what a company says is not necessary consistent with what a company does. The research instrument was designed to collect data for the past (before 1990), the present (1990's), and the future (after 2000). Thus the cluster analysis based on the 7 customer specifics variables was performed three times, once for each time period. The three dendrograms are presented in Figure 6.11 (data relating to the past), Figure 6.12 (data relating to the present), and Figure 6.13 (data relating to the future). All of the dendrograms show that the UK textiles companies can be classified into two clusters.

The results of using ANOVA to analyse the 7 customer specifics in the past, the present, and the future are summarised in Tables 6.37, 6.38, and 6.39, respectively. The first cluster, regardless of the time period, was labelled "non-segmenting", because the cluster means were lower. On the other hand, the second cluster was labelled "segmenting", because the cluster means were higher. The F statistics listed in the three tables are very different from those listed in Tables 6.34, 6.35, and 6.36. Unlike the analysis based on what companies said (using the 4 barriers and 6 issues questions), the results of analysing what companies do (using the 7 product attributes questions) do not support the hypothesis H4 or any of its subsidiary hypotheses. For all the 7 customer specifics examined in this study, the results from what the companies say and what the companies do are contradictory.

The results summarised in Tables 6.37, 6.38, and 6.39 also indicate that the average group mean for the segmenting companies for the 7 customer specifics is increasing, from 19.64 in the past to 26.38 in the future. This indicates that the 7 customer specifics identified by this study have received increasing attention (importance and performance) from UK textiles companies. However, unlike a decreasing number of non-segmenting companies across time from analysing the 7 product attributes and the 7 customer specifics, the number of non-segmenting companies from analysing the 7 supplier characteristics fluctuates. This may be a response to the fact that it is more difficult practically to segment a market based on customer specifics than based on product attributes and customer specifics.

Figure 6.11 Dendrogram based on 7 customer specifics relating to the past

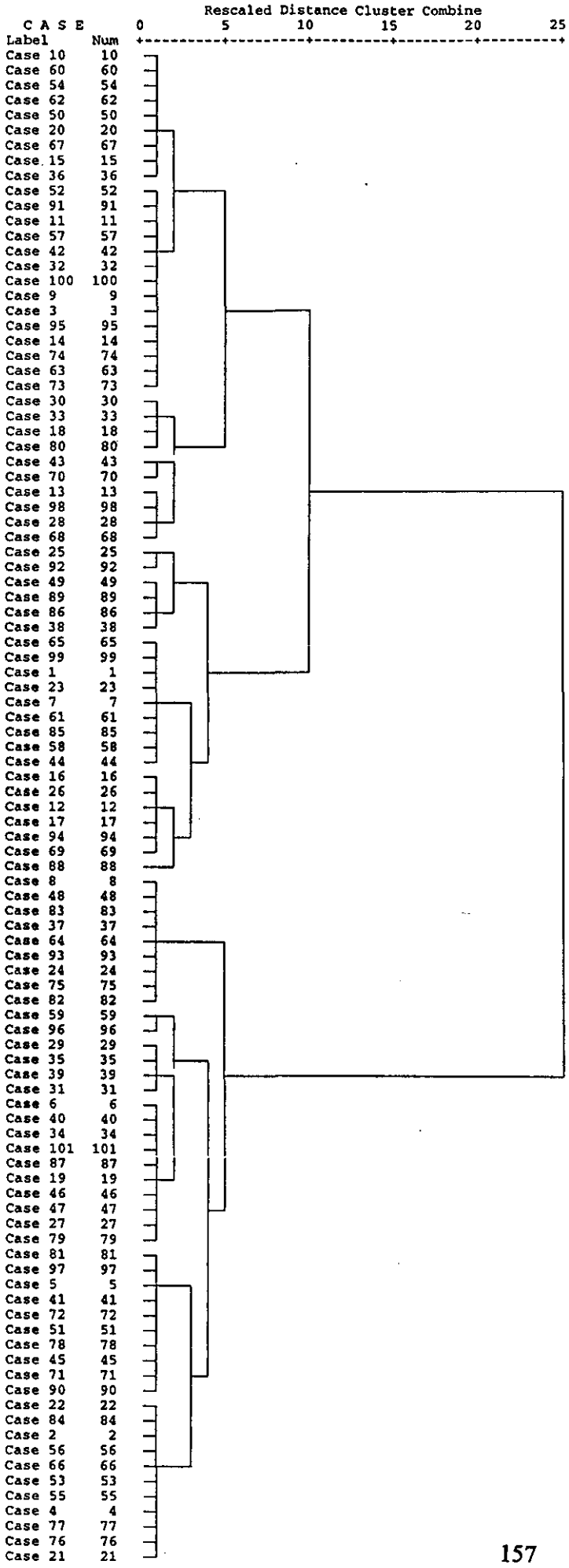


Figure 6.12 Dendrogram based on 7 customer specifics relating to the present

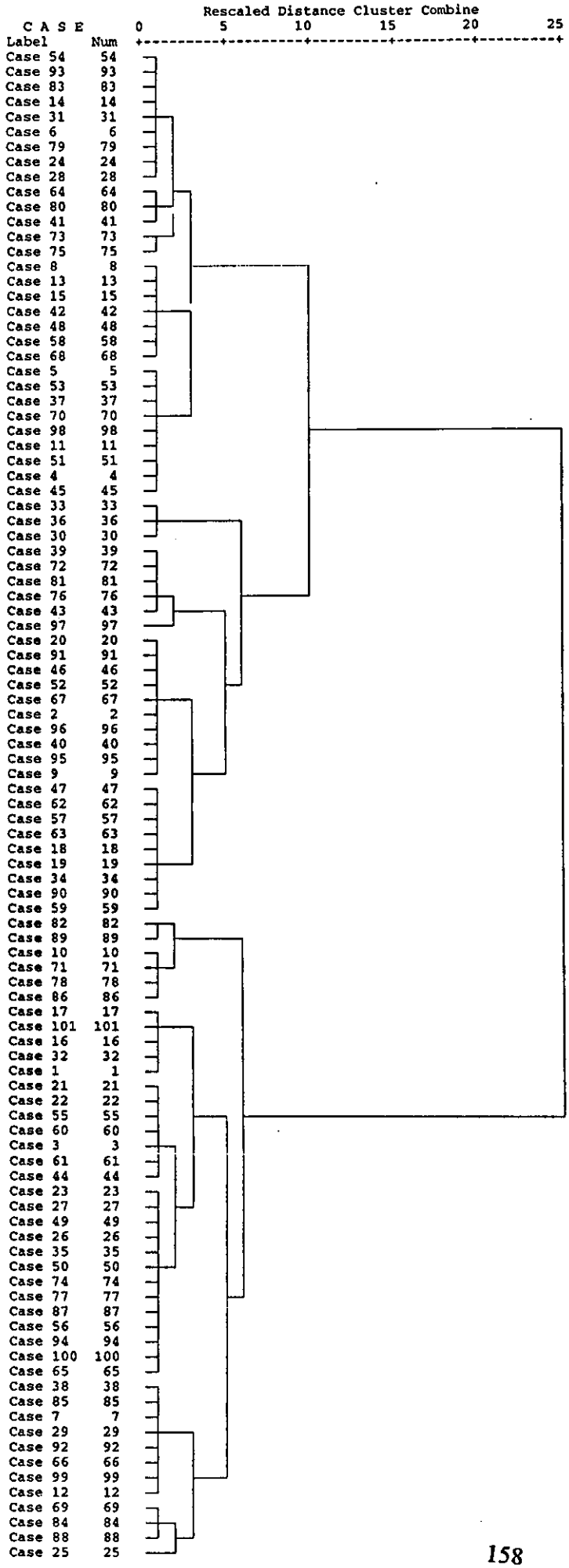


Figure 6.13 Dendrogram based on 7 customer specifics relating to the future

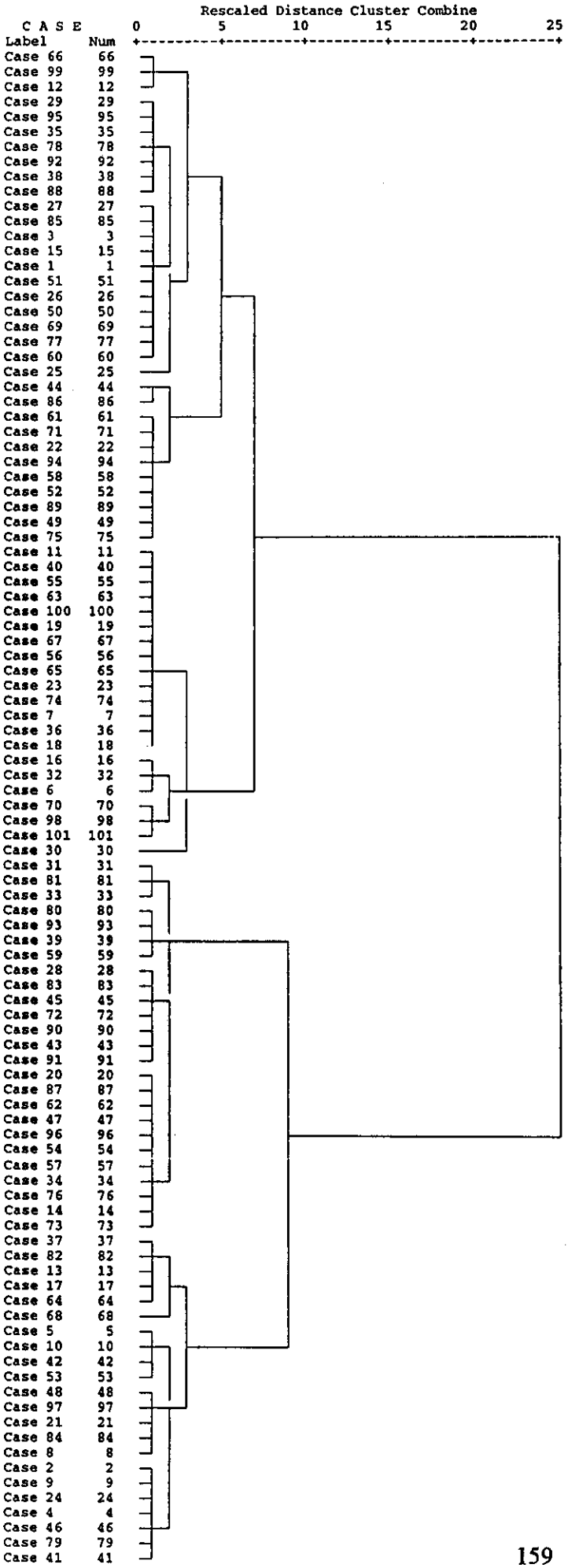


Table 6.34 Group means and significance levels of customer specifics in the past by segmentation strategy (using 4 barriers and 6 issues)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Supplier loyalty	13.0	13.2	0.01	0.91
DMU	11.0	10.7	0.05	0.83
Purchasing quantities	14.9	14.5	0.05	0.82
Buying task	15.6	12.6	3.94	**0.05**
Product importance	20.0	19.6	0.05	0.83
Price sensitivity	19.0	18.1	0.30	0.58
Service sensitivity	17.5	19.7	1.45	0.23
Group (members) means	(62) 15.86	(39) 15.48	0.11	0.74

Table 6.35 Group means and significance levels of customer specifics in the present by segmentation strategy (using 4 barriers and 6 issues)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Supplier loyalty	13.5	13.3	0.01	0.92
DMU	14.8	13.7	0.36	0.55
Purchasing quantities	17.6	17.9	0.02	0.88
Buying task	19.5	15.3	7.16	**0.01**
Product importance	25.9	23.8	1.70	0.19
Price sensitivity	23.9	24.8	0.26	0.61
Service sensitivity	25.2	26.1	0.28	0.6
Group (members) means	(62) 20.04	(39) 19.26	0.52	0.47

Table 6.36 Group means and significance levels of customer specifics in the future by segmentation strategy (using 4 barriers and 6 issues)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Supplier loyalty	15.2	13.9	0.44	0.51
DMU	16.5	15.3	0.35	0.55
Purchasing quantities	19.7	19.8	0.00	0.98
Buying task	21	16.2	7.57	**0.01**
Product importance	26.6	28.7	1.61	0.21
Price sensitivity	26.6	29.6	2.76	0.10
Service sensitivity	27.3	31.0	4.01	**0.05**
Group (members) means	(62) 21.86	(39) 22.07	0.03	0.87

Table 6.37 Group means and significance levels of customer specifics in the past by segmentation strategy (using 7 customer specifics)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Supplier loyalty	7.22	17.96	48.89	0.00
DMU	6.39	14.62	39.96	0.00
Purchasing quantities	12.30	16.85	7.49	0.01
Buying task	10.52	17.69	29.55	0.00
Product importance	12.76	25.75	106.53	0.00
Price sensitivity	15.04	21.64	18.08	0.00
Service sensitivity	12.85	23.00	50.45	0.00
Group (members) means	(46) 11.01	(55) 19.64	129.48	0.00

Table 6.38 Group means and significance levels of customer specifics in the present by segmentation strategy (using 7 customer specifics)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Supplier loyalty	10.41	17.40	48.89	0.00
DMU	10.62	19.44	29.73	0.00
Purchasing quantities	12.72	24.47	70.58	0.00
Buying task	14.90	21.88	23.35	0.00
Product importance	21.90	29.30	27.94	0.00
Price sensitivity	21.26	28.30	21.01	0.00
Service sensitivity	21.28	31.26	48.37	0.00
Group (members) means	(58) 16.16	(43) 24.58	159.67	0.00

Table 6.39 Group means and significance levels of customer specifics in the future by segmentation strategy (using 7 customer specifics)

Variables (segmentation bases)	Cluster 1: Non-segmenting	Cluster 2: Segmenting	F Ratio	Significance (F Prob.)
Supplier loyalty	10.3	18.57	23.05	0.00
DMU	9.85	21.35	56.17	0.00
Purchasing quantities	12.87	25.81	61.23	0.00
Buying task	13.66	23.93	51.37	0.00
Product importance	21.89	32.26	74.86	0.00
Price sensitivity	24.43	30.59	13.54	0.00
Service sensitivity	24.79	32.17	19.83	0.00
Group (members) means	(47) 16.83	(54) 26.38	162.09	0.00

6.10 Tandem analysis for market segmentation

In the analysis stage of segmentation, Kotler (1991) suggested that researchers could apply factor analysis to the data collected from interviews to remove highly corrected variables and then apply cluster analysis to find the specified number of maximally different segments. This process of using factor analysis and then cluster analysis in market segmentation was also used by Doyle and Saunders (1985). The approach (factor analysis followed by cluster analysis) is sometimes termed "tandem analysis" and will be described in more detail in the next Chapter (Chapter 7).

In this section, the value of using tandem analysis is investigated for the 21 segmentation variables. The results of cluster analysis using all 21 segmentation variables were summarised in section 6.5. It was concluded that in the past, the present, and the future, there were two clusters which could be labelled "segmenting" and "non-segmenting". The results of factor analysis using all 21 segmentation variables were summarised in section 6.2. It was concluded that in the past, the present, and the future, factor analysis was appropriate since the KMO (Kaiser-Meyer-Olkin) measure of sampling adequacy was approximately 0.8, regardless of the time period. It was also concluded that five factors provided a good summary of the 21 segmentation variables for all three time periods. Having extracted five factors, Ward's hierarchical clustering method was used based on the five factors. The dendrograms obtained are shown in Figures 6.14, 6.15, and 6.16. Clearly, the result of the tandem analysis, regardless of the time period, is a very messy dendrogram with no evidence of any clusters. This implies that tandem analysis is not appropriate for this study. The appropriateness of tandem analysis in general is further examined in Chapter 7 using data sets simulated specifically for this study.

Figure 6.14 Dendrogram for tandem analysis using 5 factors extracted from all 21 segmentation variables relating to the past

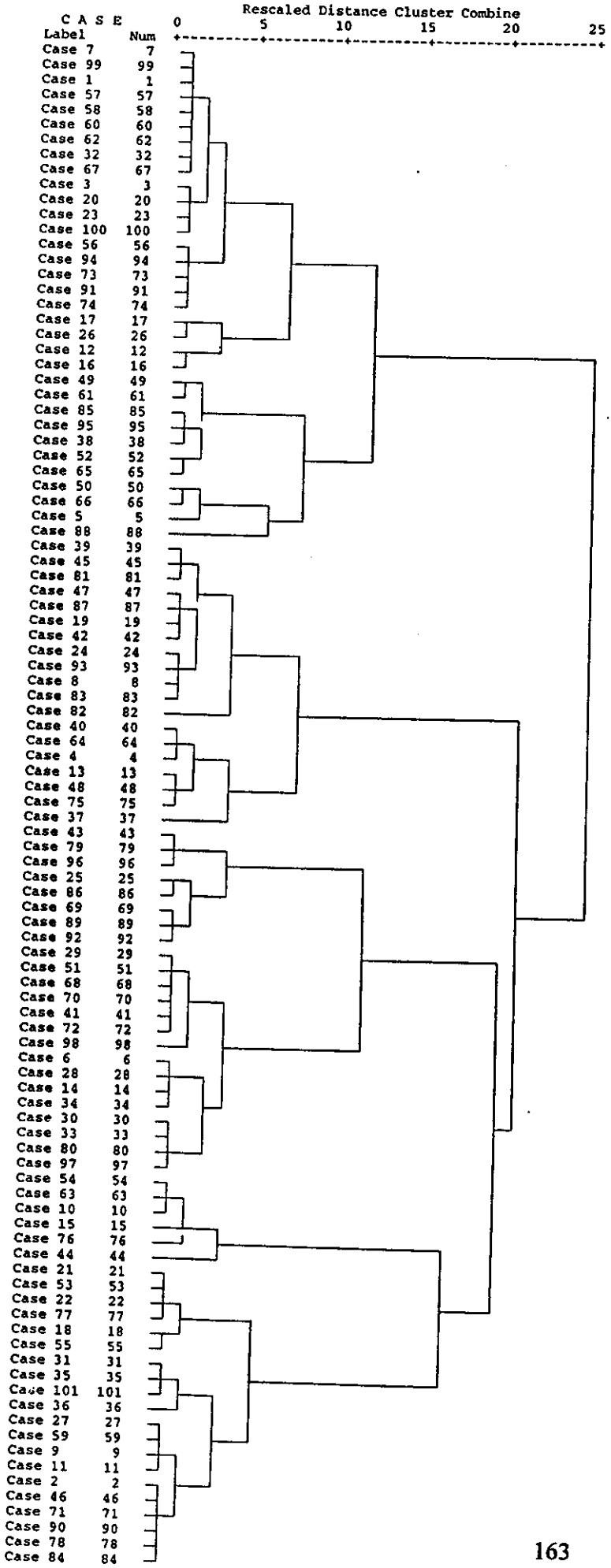


Figure 6.15 Dendrogram for tandem analysis using 5 factors extracted from all 21 segmentation variables relating to the present

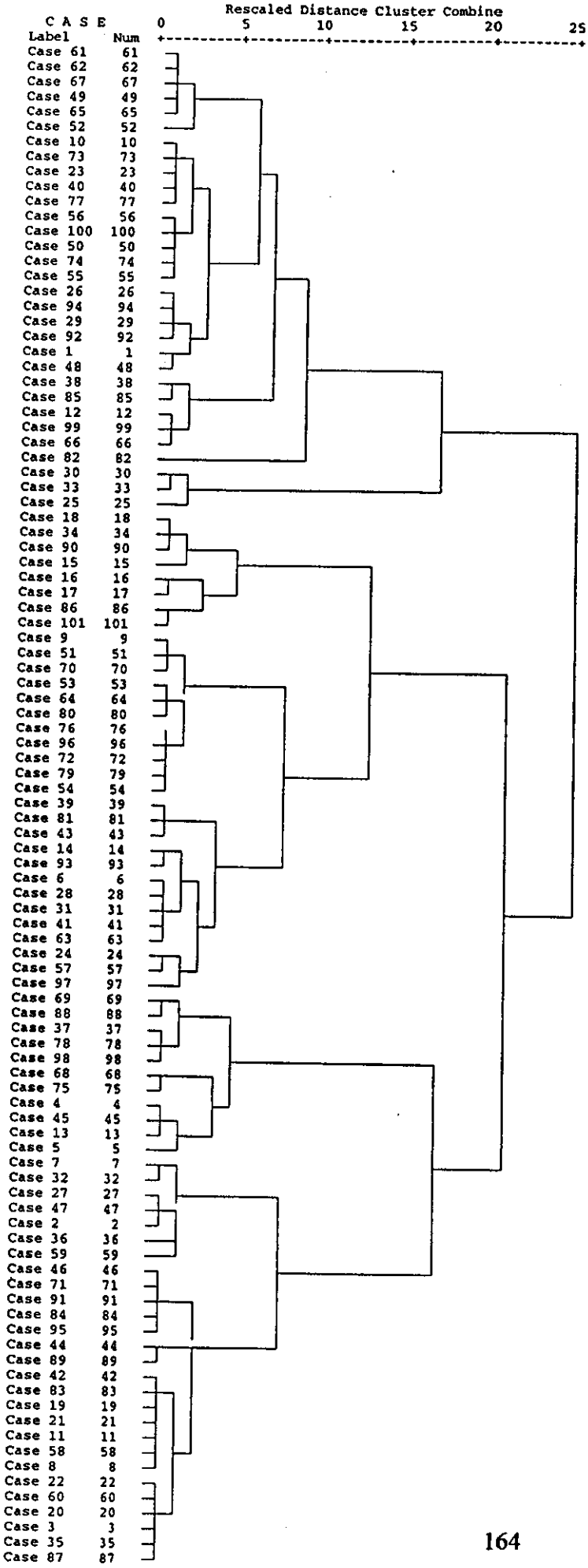
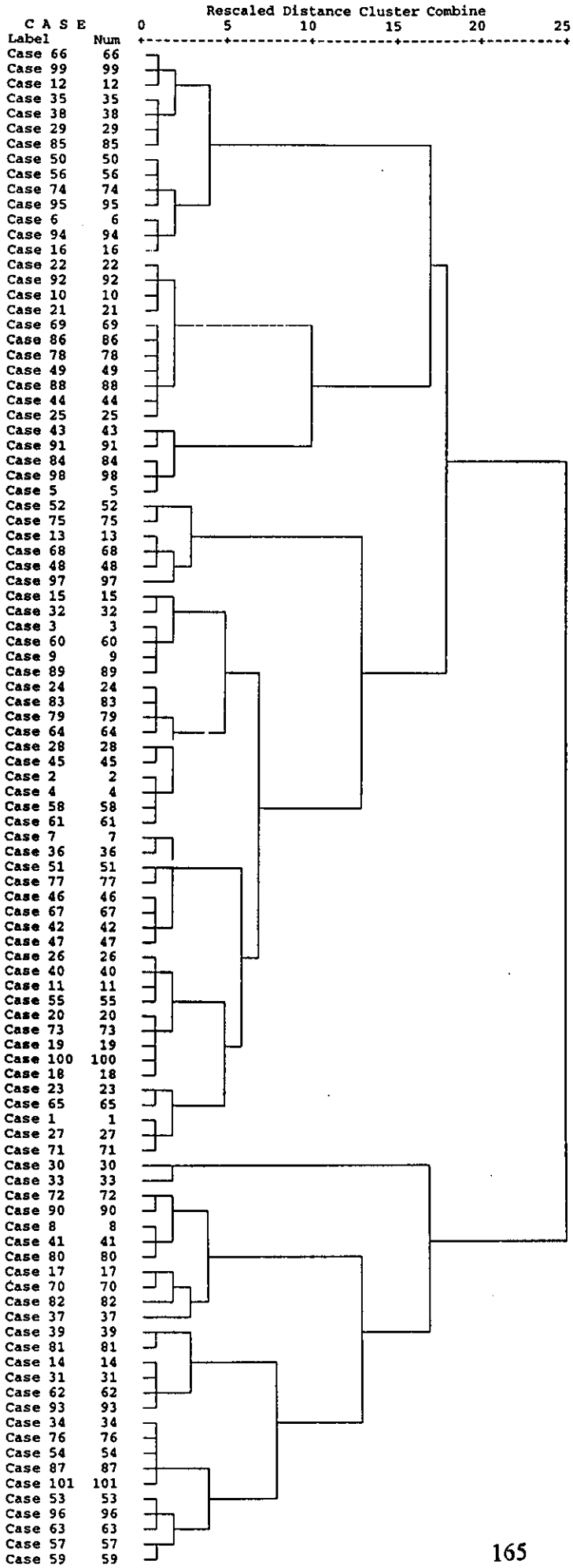


Figure 6.16 Dendrogram for tandem analysis using 5 factors extracted from all 21 segmentation variables relating to the future



6.11 Comparison of clustering results using different bases

As stated above, a number of different bases can be used for clustering companies into different groups. The results of clustering based on what the companies' said, however, are not the same as the results of clustering based on what the companies' did. A consequence of this inconsistency in the result of cluster analysis is that the choice of appropriate bases for clustering companies is clearly a critical issue in market segmentation. In this section, this study explores the cluster membership for each of the bases result and examines the relationships between cluster membership for the different bases so that a clearer picture can be obtained.

The results of analysing the group membership using different bases in the past, in the present, and in the future are listed in Tables 6.40, 6.41, and 6.42, respectively. The columns of the three tables are based on what the companies said and the companies were divided into two groups, non-segmenting and segmenting. The rows of the three tables are based on what the companies did and are divided into three main groups, according to the number of aspects the companies depended upon. From this two dimensional analysis, the importance of the different bases can be identified for each of the companies. For example in Table 6.40, companies 4, 6 and 75 were classified as non-segmenting based on what they said, however, they were classified as segmenting based on product attributes (part of what they did). This inconsistency may result from the three companies regarding a good performance in terms of product attributes as a necessary condition for competition in the textiles market rather than a strategy of market segmentation. On the other hand in Table 6.40, companies 76 and 79 were classified as segmenting based on what they said and based on what they did when the segmentation bases used focused on product attributes. The other cells in the three tables (Tables 6.40, 6.41, and 6.42) can be interpreted in the same way. In particular the 22 companies 2, 8, 19 and so on in Table 6.40 have been consistently classified as non-segmenting based on what they said and also on what they did.

Table 6.40 The relationship of group membership using different bases in the past

Results of clustering by using different combinations of segmentation bases (what the companies did)		Result of clustering by using 4 barriers and 6 issues questions (what the companies said)			
		Non-segmenting	Segmenting	Row total	Row %
Clustered using one aspect only	Segmenting on the basis of 7 product variables	4, 6, 75	76, 79	5	5
	Segmenting on the basis of 7 supplier variables	56, 66, 101	5	4	4
	Segmenting on the basis of 7 customer variables	9, 11, 14, 28, 30, 32, 33, 36, 42, 43, 57	58, 68	13	12.9
Clustered using a combination of two aspects	Segmenting on the basis of 7 product variables and 7 supplier variables	48	37, 64	3	3
	Segmenting on the basis of 7 supplier variables and 7 customer variables	49, 61, 98	20, 52, 65, 70, 88, 92, 95, 100	11	10.9
	Segmenting on the basis of 7 product variables and 7 customer variables	10, 15, 44, 54, 60, 63, 67, 69	62, 80	10	9.9
Clustered using all the three aspects	Segmenting on the basis of all the three aspects	1, 3, 7, 12, 18, 25, 73, 85, 86, 91, 99	13, 16, 17, 23, 26, 38, 50, 74, 89, 94	21	20.7
	Non-segmenting on the basis of all the three aspects	2, 8, 19, 21, 22, 29, 31, 34, 40, 45, 46, 47, 51, 59, 71, 78, 81, 83, 84, 87, 90, 96	24, 27, 35, 39, 41, 53, 55, 72, 77, 82, 93, 97	34	33.6
	Column total Column %	62 61.4	39 38.6	101	100

Table 6.41 The relationship of group membership using different bases in the present

Results of clustering by using different combinations of segmentation bases (what the companies did)		Results of clustering by using 4 barriers and 6 issues questions (what the companies said)			
		Non-segmenting	Segmenting	Row total	Row %
Clustered using one aspect only	Segmenting on the basis of 7 product variables	6, 15, 42, 54	79, 97	6	5.9
	Segmenting on the basis of 7 supplier variables	8, 11, 19, 31, 33, 36, 40, 46, 47, 67, 98	5, 13, 52, 58	15	14.9
	Segmenting on the basis of 7 customer variables	21, 22	27	3	3
Clustered using a combination of two aspects	Segmenting on the basis of 7 product variables and 7 supplier variables	9, 18, 30, 48, 51, 73, 90, 91	20, 37, 62, 70, 72, 80, 95	15	14.9
	Segmenting on the basis of 7 supplier variables and 7 customer variables	32, 49, 60, 61	23, 26, 50, 65, 92, 100	10	9.9
	Segmenting on the basis of 7 product variables and 7 customer variables	10, 71	77	3	3
Clustered using all the three aspects	Segmenting on the basis of all the three aspects	1, 3, 7, 12, 25, 29, 44, 56, 66, 69, 78, 84, 85, 86, 87, 99, 101	16, 17, 35, 38, 55, 74, 82, 88, 89, 94	27	26.7
	Non-segmenting on the basis of all the three aspects	2, 4, 14, 28, 34, 43, 45, 57, 59, 63, 75, 81, 83, 96	24, 39, 41, 53, 64, 68, 76, 93	22	21.7
	Column total Column %	62 61.4	39 38.6	101	100

Table 6.42 The relationship of group membership using different bases in the future

Results of clustering by using different combination of segmentation bases (what the companies did)		Result of clustering by using 4 barriers and 6 issues questions (what the companies said)			
		Non-segmenting	Segmenting	Row total	Row %
Clustered using one aspect only	Segmenting on the basis of 7 product variables	4, 14, 28, 42, 45, 47, 57, 81, 83	24, 39, 64, 68	13	12.9
	Segmenting on the basis of 7 supplier variables	8, 9, 10, 34, 84, 87, 90	17, 37, 44, 72, 80	12	11.9
	Segmenting on the basis of 7 customer variables	15, 30, 60, 63, 71, 101		6	5.9
Clustered using a combination of two aspects	Segmenting on the basis of 7 product variables and 7 supplier variables	2, 21, 43, 46, 48, 73, 91	5, 20, 62, 93	11	10.9
	Segmenting on the basis of 7 supplier variables and 7 customer variables	3, 6, 7, 11, 12, 18, 29, 32, 51, 56, 66, 69, 78, 85, 86, 99	16, 23, 35, 38, 50, 70, 74, 77, 88, 89, 94, 95, 100	29	28.7
	Segmenting on the basis of 7 product variables and 7 customer variables	75	52	2	2
Clustered using all the three aspects	Segmenting on the basis of all the three aspects	1, 19, 22, 25, 36, 40, 44, 49, 61, 67, 98	26, 27, 55, 58, 65, 92	17	16.8
	Non-segmenting on the basis of all the three aspects	31, 33, 54, 59, 96	13, 53, 76, 79, 82, 97	11	10.9
	Column total Column %	62 61.4	39 38.6	101	100

To aid understanding of the three tables, the results of using different bases in the past, the present and the future have been summarised using Venn diagrams (see Figures 6.17, 6.18, and 6.19).

As shown in Table 6.40, the results from the cluster analysis based on what the companies said (4 barriers and 6 issues) indicated that 62 textiles companies (61%) did not segment their markets whilst the remaining 39 companies (39%) did segment their markets. The Venn diagram on the left side of Figure 6.17 represents the inconsistency of what the companies said and what the companies did (in the past). Although all of the companies were classified as non-segmenting based on what they said, the diagram shows that there were 3 companies classified as segmenting based on product attributes (part of what they did). Similarly, the diagram shows that 3 of the companies were classified as segmenting based on supplier variables and that 11 of the companies were classified as segmenting based on customer variables (the other aspects of what they did). In addition, there was 1 company which performed well in both the product and the supplier variables, 3 companies which performed well in both the supplier and the customer variables, and 8 companies which performed well in both the product and the customer variables. There were also 11 companies which performed well in all three aspects (product, supplier, and customer variables). In total 40 companies were classified inconsistently and 62 − 40 = 22 companies (35.5 %) were classified consistently.

The Venn diagram on the right side of Figure 6.17 represents the consistency of what the companies said and what the companies did (in the past). All of the companies had been classified as segmenting based on what they said. The diagram shows that 2 of these companies performed well in terms of the product variables, 1 of these companies performed well in terms of the supplier variables and 2 of these companies performed well in terms of the customer variables. In addition, there were 2 companies which performed well in both the product and the supplier variables, 8 companies which performed well in both the supplier and the customer variables, and 2 companies which performed well in both the product and the customer variables. There were also 10 companies which performed well in all three aspects

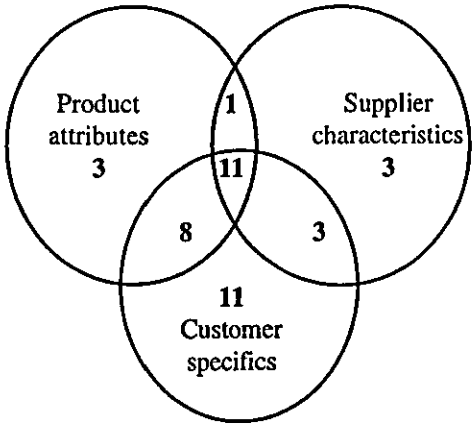
(product, supplier, and customer variables). In total 27 companies were classified consistently (69.2%).

Figures 6.18 and 6.19 can be interpreted in the same way and a summary of the proportion consistently classified for the past, the present, and the future is given in Table 6.43. Table 6.43 shows that the companies classified as segmenting based on what they said have higher rates for consistent classification than those classified as non-segmenting, regardless of the time period. Further, rates for consistent classification in the segmenting cluster (based on what companies said) are increasing over time. Conversely, the non-segmenting cluster (based on what companies said) has a decreasing rate for consistent classification.

This kind of trend could result from the different extent to which the companies face segmentation barriers and confusing issues. As shown previously in Table 6.3, the average group means of 4 barriers for segmenting companies, 2.12, is significantly smaller than the average group means of 4 barriers for non-segmenting companies, 4.04. Also, the average group means of 6 issues for segmenting companies, 2.55, is significantly smaller than the average group means of 6 issues for non-segmenting companies, 3.17. This suggested that segmenting companies could implement their segmentation strategy confidently because of fewer segmentation barriers and confusing issues facing them. Due to more confidence in implementing market segmentation, the segmenting companies could realise more definitely what they said and what they did in terms of segmentation strategy. As a result, rates for consistent classification in the segmenting cluster (based on what companies said) are increasing over time (from 69.2% up to 84.6%). On the contrary, due to facing more barriers and issues in implementing segmentation strategy, the non-segmenting companies were contradictory in what they said and what they did in terms of segmentation strategy. As a result, rates for consistent classification in the non-segmenting cluster (based on what companies said) are decreasing over time (from 35.5% down to 8.1%).

Figure 6.17 The relationship of group membership using different bases in the past

A: Non-segmenting cluster:
Consistency ratio = (62 - 40) ÷ 62 = 35.5 %



B: Segmenting cluster:
Consistency ratio = 27 ÷ 39 = 69.2 %

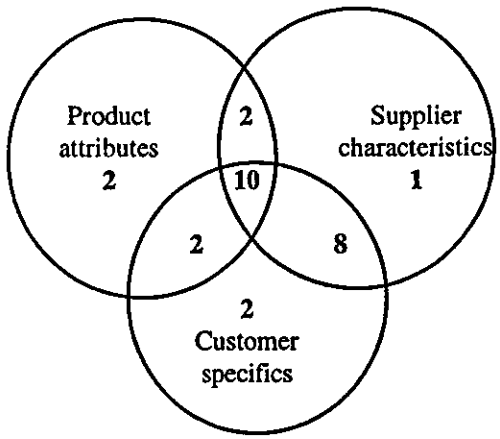
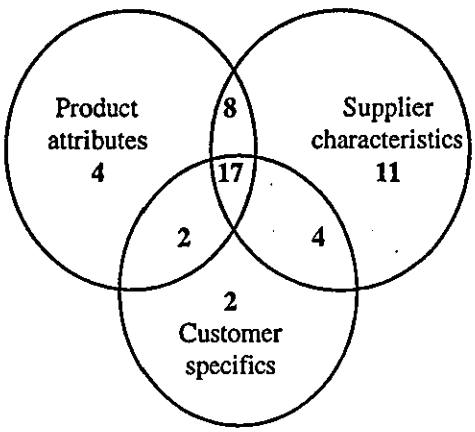


Figure 6.18 The relationship of group membership using different bases in the present

A: Non-segmenting cluster:
Consistency ratio = (62 - 48) ÷ 62 = 22.6 %



B: Segmenting cluster:
Consistency ratio = 31 ÷ 39 = 79.5 %

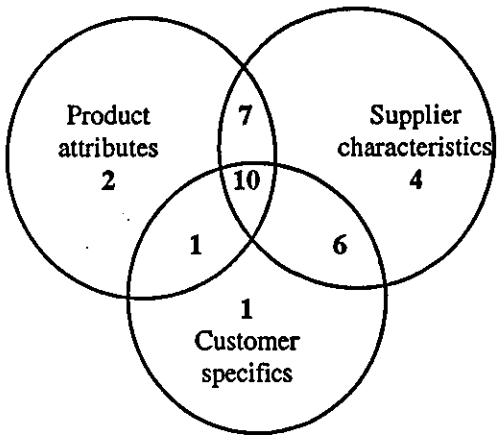
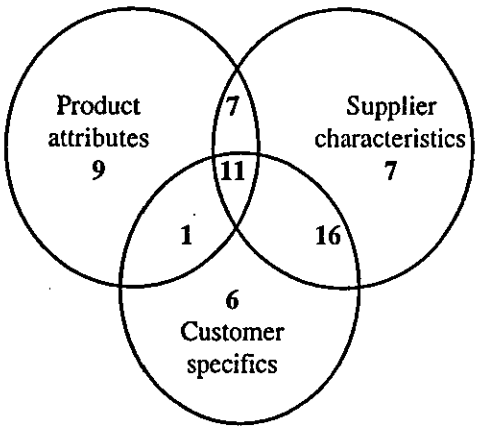


Figure 6.19 The relationship of group membership using different bases in the future

A: Non-segmenting cluster:
Consistency ratio = (62 - 57) ÷ 62 = 8.1 %



B: Segmenting cluster:
Consistency ratio = 33 ÷ 39 = 84.6 %

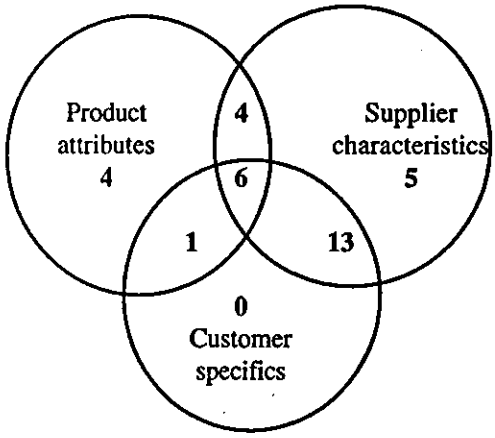


Table 6.43 Comparison of rates for consistent classification

Time period	Rates for consistent classification	
	Non-segmenting cluster	Segmenting cluster
Past	35.5 %	69.2 %
Present	22.6 %	79.5 %
Future	8.1 %	84.6 %

6.12 Importance- performance analysis

As stated in Chapter 5, twenty-one possible bases (7 product attributes, 7 supplier characteristics, and 7 customer specifics) were identified for segmenting the UK textiles market. Textiles companies in this study were asked two questions about each of the possible bases: (1) how important is the possible base; and (2) how well did the company perform for that base. In this section, the link between the importance of a possible base and the performance for that possible base is considered using importance-performance graphs.

The mean importance and the mean performance for the 101 companies in the survey are shown in Tables 6.44, 6.45, and 6.46. These means were then plotted to give importance-performance graphs, as shown in Figures 6.20, 6.21, and 6.22, for the past, the present, and the future, respectively.

The four quadrants of these importance-performance graphs can be interpreted as follows:

A. A worthy reward (upper right hand quadrant) Companies feel that these possible segmentation bases are very important and the companies' performance for these bases was very good. In other words, possible segmentation bases in this quadrant can be regarded as a reasonable allocation of resources.

B. Much ado about very little (lower right hand quadrant) The performance for these bases was very good but the bases are not considered important. As a result, possible segmentation bases in this quadrant are regarded as a waste of resources.

C. Marginal choice (lower left hand quadrant) The possible segmentation bases in this quadrant are rated low in terms of importance and performance. In terms of allocating resources, these bases should not be considered.

D. Promising effort (upper left hand quadrant) The possible segmentation bases in this quadrant are rated low in terms of performance, but customers attach great importance to

them. From a managerial perspective, improving performance for these bases should result in a high return.

For Figure 6.20, three possible segmentation bases (brand awareness, supplier loyalty, and DMU) were plotted in quadrant C. This means that in the past (before 1990) these three bases were "marginal choice" and hence were not considered to be useful bases for segmenting the UK textiles markets. One possible segmentation base (wide range of products) was plotted in quadrant B. This means that in the past a wide range of products was not regarded as an important feature in the textiles industry, yet companies had emphasised a wide range of products. Apart from these four possible segmentation bases, the other 17 bases were classified into quadrant A. This means that in the past these 17 bases were rated relatively highly for both importance and performance.

For Figure 6.21, only one possible segmentation base (brand awareness) was plotted in quadrant C and one base (supplier loyalty) was plotted in quadrant B, the other 19 bases were plotted in quadrant A. Similarly for Figure 6.22, all the possible segmentation bases were plotted in quadrant A except base 15 (supplier loyalty). These results suggest that the bases for segmenting the UK textiles markets are changing over time. For example, in the past and in the present brand awareness and DMU were identified as bases which were "marginal choice" so that there was no need to emphasis these, while in the future the two bases are expected to be "a worthy reward". Also, product range in the past was regarded as "much ado about very little" but it becomes "a worthy reward" in the present and in the future. This is because in the present and in the future there is a need to cater for increasing diversity in consumer needs so that a wide range of products is no longer seen as a misuse of resources but as a necessary condition for competition in the textiles industry. Supplier loyalty was identified as a "marginal choice" in the past and as "much ado about very little" in the present and in the future. This result suggests that customers in the textiles market are not significantly loyal to specific companies so that the resources used for improving supplier loyalty can be regarded as a waste of resources.

Aside from the specific bases mentioned above, the three charts show that both importance and performance are increasing over time for all of the possible segmentation bases. This enhances the conclusion stated in section 6.6 that more companies expect to segment in the future.

As a result, the fifth hypothesis presented in chapter 4 is not supported.

Reject H5: There is no difference among the groups of textiles companies which are identified on the basis of segmentation bases they used in the different time periods.

Table 6.44 Importance and performance ratings in the past

Possible base	Attribute description	Mean importance rating	Mean performance rating
1	Product quality	5.119	4.812
2	Price level	4.95	4.337
3	Brand awareness	2.624	2.931
4	Delivery time	4.693	4.535
5	Service level	4.772	4.673
6	Product aesthetics	4.228	4.059
7	Stability of quality	4.782	4.574
8	Product range	3.376	3.762
9	Financial stability	3.762	4.564
10	Salesperson's competence	4.05	4.15
11	Geographical coverage	3.683	4.178
12	Quick response	4.465	4.356
13	Reputation	4.97	4.861
14	Management quality	4.446	4.406
15	Supplier loyalty	3.386	3.386
16	DMU	3.158	3.079
17	Purchasing quantities	3.653	3.772
18	Buying task	3.693	3.713
19	Product importance	4.356	4.356
20	Price sensitivity	4.287	4.218
21	Service sensitivity	4.109	4.297

Figure 6.20 Importance-performance grid (in the past)

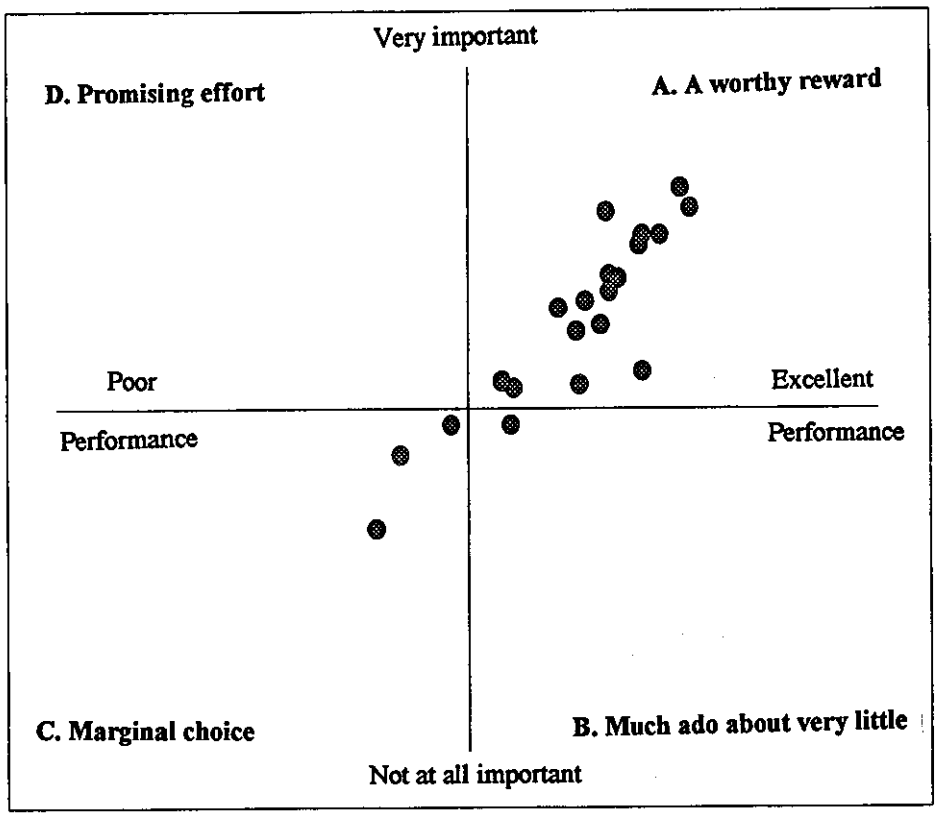


Table 6.45 Importance and performance ratings in the present

Possible base	Attribute description	Mean importance rating	Mean performance rating
1	Product quality	5.446	5.139
2	Price level	5.307	4.574
3	Brand awareness	3.277	3.366
4	Delivery time	5.317	5.109
5	Service level	5.347	5.139
6	Product aesthetics	4.644	4.436
7	Stability of quality	5.208	4.98
8	Product range	3.792	4.238
9	Financial stability	4.168	4.842
10	Salesperson's competence	4.733	4.683
11	Geographical coverage	4.069	4.495
12	Quick response	5.198	4.901
13	Reputation	5.01	5.099
14	Management quality	4.832	4.743
15	Supplier loyalty	3.337	3.644
16	DMU	3.545	3.634
17	Purchasing quantities	3.96	4.218
18	Buying task	3.95	4.337
19	Product importance	4.842	5.079
20	Price sensitivity	4.822	4.921
21	Service sensitivity	4.901	5.05

Figure 6.21 Importance-performance grid (in the present)

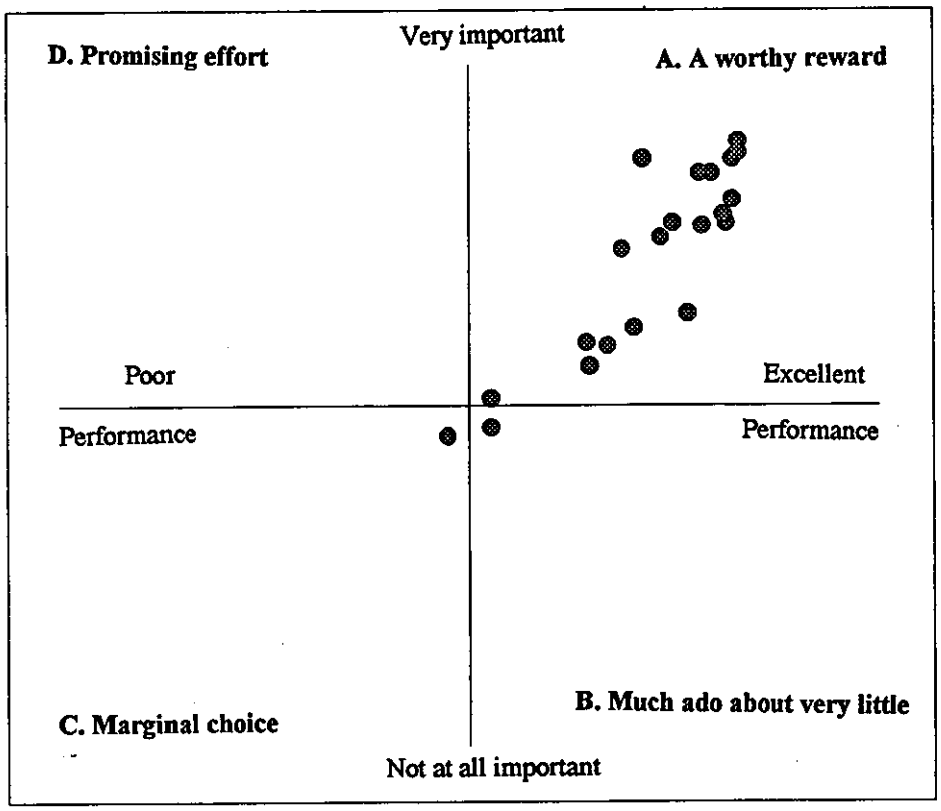
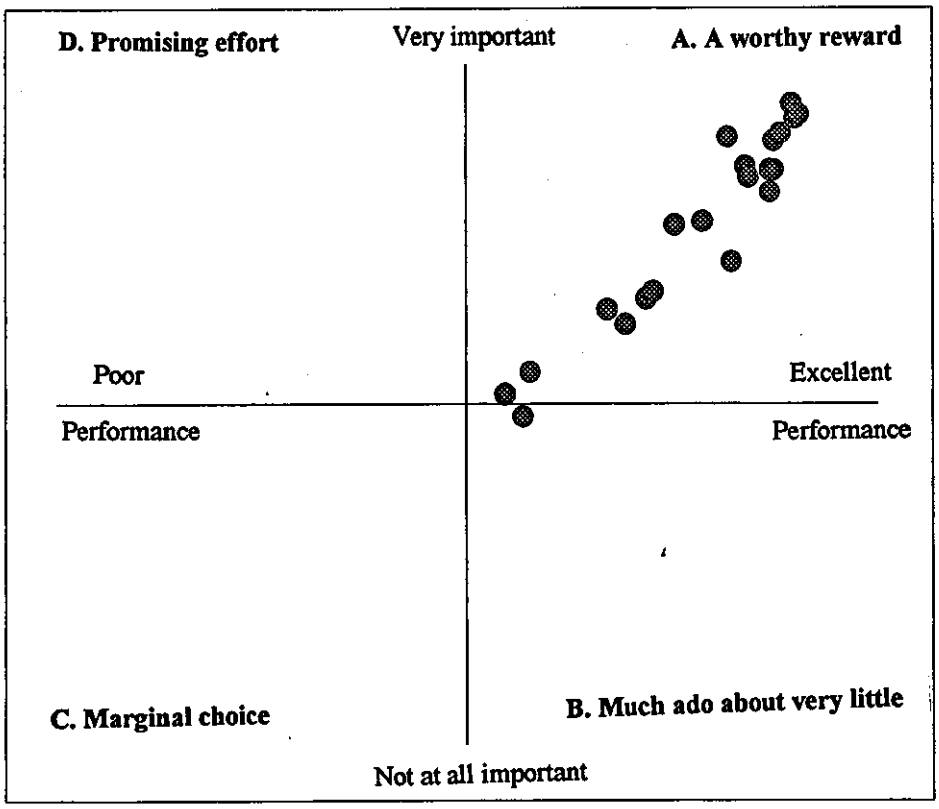


Table 6.46 Importance and performance ratings in the future

Possible base	Attribute description	Mean importance rating	Mean performance rating
1	Product quality	5.703	5.465
2	Price level	5.455	5.089
3	Brand awareness	3.564	3.733
4	Delivery time	5.594	5.485
5	Service level	5.624	5.515
6	Product aesthetics	4.822	4.762
7	Stability of quality	5.436	5.366
8	Product range	4.257	4.594
9	Financial stability	4.554	5.109
10	Salesperson's competence	4.842	4.931
11	Geographical coverage	4.317	4.644
12	Quick response	5.495	5.416
13	Reputation	5.218	5.366
14	Management quality	5.248	5.198
15	Supplier loyalty	3.416	3.842
16	DMU	3.743	3.881
17	Purchasing quantities	4.188	4.356
18	Buying task	4.089	4.465
19	Product importance	5.059	5.337
20	Price sensitivity	5.158	5.218
21	Service sensitivity	5.218	5.337

Figure 6.22 Importance-performance grid (in the future)



6.13 Conclusion

As stated in chapter 4, there are five main hypotheses in this study. This chapter has analysed the data in light of these hypotheses (and other ideas). The conclusions about the hypotheses are summarised in Table 6.47. In addition, chapter 8 also includes a summary of the findings.

Table 6.47 A summary of hypotheses testing

	Main hypothesis	Result	Section
H1	There is no difference in the extent to which textiles companies implement a segmentation strategy.	Reject	Section 6.4
	H1A There is no difference between SIC sectors and the extent to which textiles companies implement a segmentation strategy.	Accept	Section 6.6
	H1B There is no difference between geographic location and the extent to which textiles firms implement a segmentation strategy.	Accept	Section 6.6
	H1C There is no difference between company size and the extent to which textiles companies implement a segmentation strategy.	Accept	Section 6.6
H2	There is no difference between textiles companies who segment and those who do not segment in terms of product attributes.	Accept	Section 6.7
H3	There is no difference between textiles companies who segment and those who do not segment in terms of supplier characteristics.	Accept	Section 6.8
H4	There is no difference between textiles companies who segment and those who do not segment in terms of customer specifics.	Accept	Section 6.9
H5	There is no difference among the groups of textiles companies which are identified on the basis of segmentation bases they used in the different time periods.	Reject	Section 6.12

CHAPTER SEVEN CLUSTER ANALYSIS AND FACTOR ANALYSIS - SOME CONFUSING ISSUES

7.1 Introduction

Cluster analysis and factor analysis have been widely used in marketing research. However, researchers are very often confused by a variety of implementation issues. Some of the implementation issues for factor analysis, such as whether the data collected are suitable for factor analysis, how many factors should be used, and which variables are important for which factors, have been discussed in Chapter 5. For cluster analysis, implementation issues such as which measure should be used for calculating distances between objects, and which clustering method is appropriate, have also been discussed in Chapter 6. In addition to continuing these discussions of implementation issues relating to factor analysis and cluster analysis, this chapter will focus mainly on the value of combining factor analysis with cluster analysis. The process of using factor analysis prior to cluster analysis is sometimes termed "tandem analysis".

The remainder of this chapter is divided into five sections. The first section provides an introduction to factor analysis and cluster analysis and some introductory comments about tandem analysis. The second section discusses the way in which factor analysis and cluster analysis are linked for a given data set. The third section describes the simulation data used for exploring a variety of issues about factor analysis and cluster analysis. The fourth section presents the results of the simulation study using the simulation data. Finally several conclusions are made based on the simulation study.

7.2 The concepts of factor analysis and cluster analysis

The basic assumption of factor analysis is that the interrelationships between a set of observed variables are explicable in terms of a small number of underlying variables or factors (Everitt and Dunn, 1991, p. 241). Hence, factor analysis is a data simplification technique. As

described in chapter 5, given a data set with n observed variables, factor analysis attempts to reduce the number of variables to the number of factor n^f where n^f is significantly smaller than n (Hackett and Foxall, 1994). Cluster analysis, by comparison, is a way of sorting items into a small number of homogeneous groups. The primary use of cluster analysis in marketing has been for market segmentation (Punj and Stewart, 1983; Saunders, 1994b).

Factor analysis is often applied prior to cluster analysis, a process sometimes termed "tandem analysis" (for example Arabie and Hubert, 1994). According to Saunders (1994b), there are two benefits in doing this. First, factor analysis reduces the number of variables which have to be analysed by the cumbersome cluster analysis process. Second, the results from exploratory factor analysis can help the interpretation of the clusters. Examples of authors using, or recommending, this approach include Arnold (1979, p. 550), Doyle and Saunders (1985), Furse et al (1984), and Singh (1990). Punj and Stewart (1983, p. 144) suggest the use of "a preliminary principal components analysis with orthogonal rotation" as a method of correcting for interdependencies in the data.

However, the use of factor analysis prior to cluster analysis is not without its critics. Dillon et al (1989, p. 107) state that "there is no guarantee that components having the largest eigenvalues are the components that capture the most information on across group variation" and illustrate this comment with an empirical example. They conclude (Dillon et al, 1989, p. 111):

> In a battery of items, there can be a relatively large subset of items that share similarity but that individually or collectively contribute little to our understanding of the group structure in the data. In such an instance, the first component will reflect this subset of items, but the component itself will not account for across group differences. Also, there may be small subsets of items important in explaining how the groups are different but relatively independent of the other items making up the battery. In such an instance, these smaller subsets may be overlooked in a PCA because they will likely load on components that account for small percentages of the total variance.

Sneath (1980) showed that clusters embedded in a high-dimensional variable space will not be properly represented by a smaller number of orthogonal components. Milligan (1996, p. 348) simply comments that "the routine application of principal components or other factoring

techniques prior to clustering is naive". Arabie and Hubert (1994, p. 167) are even more outspoken in their conclusion that "tandem clustering (factor analysis followed by cluster analysis) is an outmoded and statistically insupportable practice".

One particular issue which is almost unreported in the literature is that the existence of clusters affects the apparent factor structure. This confusing effect is described in the next section. The follow section describes a simulation study to investigate the effect of the existence of clusters on the apparent factors and the extent to which tandem analysis might be appropriate. The results of the simulation study are given in section 7.5 and the chapter finishes with some conclusions in section 7.6.

7.3 Links between clusters and factors

The differing opinions about using "tandem clustering" can lead to marketing practitioners being confused. These differing opinions may result from overlooking the relationship between clusters and factors. The relationship arises because, for a given set of data, the existence of clusters will affect the apparent factor structure. In particular, the existence of clusters will give the impression that uncorrelated measurements are correlated. The existence of clusters may also lead to the conclusion that factor analysis is appropriate for a set of data (for example because the KMO measure of sampling adequacy is large) even though the measurements are uncorrelated. To examine the relationship between clusters and factors, the current study performs a simulation study which will be described in the following sections.

The simulation study consists of ten scenarios which will be described in detail in section 7.4. First, though, consider a very simple example. Suppose that a number of measurements have each been made on a number of items (respondents, for example companies) and suppose that the measurements (answers from a respondent) are independent. Then the observed correlations between the measurements will be small (random variation about zero), and there will be no evidence that factor analysis is appropriate (for example, the KMO measure of

sampling adequacy will be small). This is the situation in scenario 1 in the simulation study described below.

Now suppose that there are two clusters in the data and that items (respondents, for example companies) in cluster 1 can be characterised as having "high" scores and that items (respondents, for example companies) in cluster 2 can be characterised as having "low" scores. For a particular item (company), if the value for one particular measurement (say variable X) is high then the value for another measurement (say variable Y) will also tend to be high because of the cluster structure. Similarly for a different item (company), if the value for one particular measurement (say variable X) is low then the value for another measurement (say variable Y) will also tend to be low, again because of the cluster structure. Hence the observed correlations between the measurements will not be small (not random variation about zero) and there may be evidence that factor analysis is appropriate (for example, the KMO measure of sampling adequacy may be large). This situation is studied in three scenarios, namely scenarios 2, 3 and 4, in the simulation study described below.

For the situation in which there are two clusters, the effect of the clusters on the correlations can be analysed theoretically as follows (Chang, 1983):

Let y be a k dimensional random variable, that is y consists of the different variables which are used to measure the various items. Let a proportion p of the measurements be from cluster 1 and let the means of the measurements for cluster 1 be summarised as $\mu 1$. Let the remainder (proportion 1-p) of the measurements be from cluster 2 and let the means of the measurements for cluster 2 be summarised as $\mu 2$. Let the variances and covariances of the various measurements within each cluster (i.e. for cluster 1 and for cluster 2 separately) be summarised as the matrix Σ. Then the matrix summarising the variances and covariances of the mixture of measurements from cluster 1 and cluster 2 is given by (Chang, 1983):

$$V = p(1-p)dd' + \Sigma$$

where $d = \mu 1 - \mu 2$

(Formally, y is a k dimensional random variable with a mixture of two normal distributions with means $\mu 1$ and $\mu 2$, mixing proportions of p and (1-p) respectively and a common covariance matrix Σ).

In other words, the variances and covariances (or correlations) of the mixture of measurements from the two clusters depends not only on the variances and covariances (or correlations) for each of the clusters separately but also on the proportion from each cluster (p) and the distance between the clusters (d).

To make clear the mathematical model stated above, consider the following numerical example. Suppose that there are three measurements on each item (company) and that the three measurements are independent within each cluster. Suppose also that the measurements have been standardised so that the standard deviation for each of the measurements is one. Then the matrix summarising the variances and covariances for each of the clusters separately is:

$$\Sigma = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Suppose that the same number of items (companies) are used from each of the clusters so that the proportion from cluster 1 (p) is 0.5. Suppose also that the mean for each of the measurements for cluster 1 is two larger than the corresponding mean for cluster 2 so that

$$d = (2, 2, 2)$$

then $$dd' = \begin{bmatrix} 2 & 2 & 2 \end{bmatrix} \begin{bmatrix} 2 \\ 2 \\ 2 \end{bmatrix} = \begin{bmatrix} 4 & 4 & 4 \\ 4 & 4 & 4 \\ 4 & 4 & 4 \end{bmatrix}$$

and $\quad V = p\,(1\text{-}p)\,d\,d' + \Sigma = 0.5 \times 0.5 \times \begin{bmatrix} 4 & 4 & 4 \\ 4 & 4 & 4 \\ 4 & 4 & 4 \end{bmatrix} + \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix} + \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

As a result, $V = \begin{bmatrix} 2 & 1 & 1 \\ 1 & 2 & 1 \\ 1 & 1 & 2 \end{bmatrix}$

The matrix V is a matrix of variances and covariances. The matrix V can be standardised to become a matrix of correlations using the formula

$$Correlation(x,y) = \frac{Covariance(x,y)}{\sqrt{Variance(x)Variance(y)}}$$

where x and y are any of the variables. For example the correlation between the first variable and third variable is

$$\text{Correlation} = \frac{1}{\sqrt{2 \times 2}} = \frac{1}{2}$$

Calculating all of the correlations gives the following matrix of correlations:

$$C = \begin{bmatrix} 1.0 & 0.5 & 0.5 \\ 0.5 & 1.0 & 0.5 \\ 0.5 & 0.5 & 1.0 \end{bmatrix}$$

In other words, although the measurements are independent within each cluster, the theoretical correlation for the mixture of measurements for the two clusters is 0.5 for each of the pairs of measurements.

Other situations corresponding to scenarios 5 to 10, and the details of all the ten scenarios will be described in the next section.

7.4 Simulation data

The data used in this simulation study are based on the results of the pretesting questionnaire and hence there are only 18 variables (the final questionnaire had 21 variables, three of which were suggested by responses to the pretesting questionnaire). Each of the simulations consisted of 100 simulated observations for each of the 18 variables. Ten different scenarios were each simulated ten times.

Computer programs were written specifically for each of the scenarios. The computer programs used the NAG routine G05DDF which creates normal random numbers based on a specified mean and standard deviation. The random numbers were rounded so that the data used in the simulation study were simply the integers 1, 2, 3, 4, 5 and 6, the same as the responses from the questionnaire. Each of the simulations used a different random number seed to give different sets of random numbers and hence the results from the simulations are independent. In particular, the results for each of the scenarios are independent.

With a factor structure, the observed values of the variables are linked by the value of an underlying or latent variable. In order to simulate a factor structure, a value for the latent variable was simulated and this was added to each of the values for the variables belonging to that factor. As a result, if the value of the latent variable was "high", then all of the values of the variables belonging to that factor would tend to be "high" and vice versa.

Although the means vary according to the different scenarios, for example to simulate clusters, the (marginal) standard deviations are always the same.

The details of the ten scenarios are given below. In brief, there is a cluster structure only in scenarios 2 to 4, there is a factor structure only in scenarios 5 to 8 and scenarios 9 and 10 involve both a cluster structure and a factor structure. In scenario 1 there is no cluster structure and there is no factor structure, hence scenario 1 provides a baseline.

Scenario 1

In scenario 1 there is no cluster structure and there is no factor structure. The data used had the same (marginal) means and standard deviations as the responses from the pretesting questionnaires and these are given in Table 7.1. There should be no evidence of clusters or factors for this scenario.

Table 7.1 Means and Standard Deviations for Pretesting Questionnaire

Variable	Mean	Std. Deviation
1	5.188	0.911
2	3.375	1.628
3	3.938	1.124
4	3.375	1.310
5	5.000	1.033
6	4.500	1.095
7	3.750	1.291
8	3.813	1.471
9	4.313	1.250
10	4.625	1.025
11	4.688	1.138
12	5.375	0.719
13	4.000	1.366
14	4.438	1.031
15	4.063	1.124
16	5.000	0.816
17	4.500	0.516
18	4.938	0.998

Scenario 2

In scenario 2 there are two clusters, the means for the first six variables differed by one standard deviation between the clusters, the remaining twelve variables had the same means. Many authors including Punj and Stewart (1983) comment that including even one or two variables which do not contribute to distinguishing between clusters is likely to distort a

cluster solution. Hence it is expected that there will be no evidence of clusters for this scenario. However, there will be some correlation between the variables and it is expected that the value of the KMO measure of sampling adequacy will be increased.

Scenario 3

In scenario 3 there are two clusters, the means for all eighteen variables differed by one standard deviation between the clusters. Since all of the variables contribute to distinguishing between clusters it is expected that there will be clear evidence of clusters for this scenario. However, there will be some correlation between the variables and it is expected that the value of the KMO measure of sampling adequacy will be increased.

Scenario 4

In scenario 4 there are three clusters, the means for all eighteen variables differed by half a standard deviation between the first and second clusters and similarly between the second and third clusters. Hence, the means for all eighteen variables differed by one standard deviation between the first and third clusters. Since the separation between clusters was small, there were no prior expectations about the revealed cluster structure. Again because there will be some correlation between the variables, it is expected that the value of KMO will be increased.

Scenario 5

In scenario 5 there is one factor, the value for the latent variable being simulated from a normal distribution with mean zero and standard deviation 0.8. Only the first six variables belong to the factor, the remaining twelve variables were uncorrelated both with each other and with the one factor. This represents a weak factor structure and so it is expected that the value of the KMO measure of sampling adequacy will only be slightly increased. There should be no evidence of a cluster structure.

Scenario 6

In scenario 6, there is one factor, the value for the latent variable being simulated from a normal distribution with mean zero and standard deviation 0.8. All of the variables belong to the factor. This represents a much stronger factor structure than scenario 5 and it is expected that the value of the KMO measure of sampling adequacy will be much larger. As with scenario 5, there should be no evidence of a cluster structure.

Scenario 7

In scenario 7 there is a more complicated factor structure with two factors. The value for the first factor or latent variable was simulated from a normal distribution with mean zero and standard deviation 0.5, the first nine variables belong to this factor. The value for the second factor or latent variable was also simulated from a normal distribution with mean zero and standard deviation 0.5, the six variables numbered 7 to 12 belong to this factor so that there is some overlap with the first factor. For this scenario there should be evidence of a factor structure (for example, a large value for the KMO measure of sampling adequacy) but there should be no evidence of a cluster structure.

Scenario 8

In scenario 8 there is a similar two factor structure to scenario 7. The value for the first factor or latent variable was simulated from a normal distribution with mean zero and standard deviation 0.8, the first nine variables belong to this factor. The value for the second factor or latent variable was also simulated from a normal distribution with mean zero and standard deviation 0.5, the six variables numbered 7 to 12 belong to this factor so that there is some overlap with the first factor. For this scenario there should be stronger evidence of a factor structure (for example, a larger value for the KMO measure of sampling adequacy) but there should be no evidence of a cluster structure.

Scenario 9

In scenario 9, the factor structure is the same as the factor structure in scenario 8. However, two clusters were also defined with the means for the first six variables differing by one standard deviation between the clusters and the remaining twelve variables having the same means. For this scenario there should be strong evidence of a factor structure (for example, a large value for the KMO measure of sampling adequacy). However, it is unlikely that there will be evidence of a cluster structure since many of the variables do not contribute to distinguishing between clusters (see also the comments on scenario 2). The effect of tandem analysis for this scenario will be particularly interesting.

Scenario 10

In scenario 10, the factor structure is the same as the factor structure in scenarios 8 and 9. As in scenario 9 two clusters were defined, but in this scenario the means for all eighteen variables differed by one standard deviation between the clusters. For this scenario there should be strong evidence of a factor structure (for example, a large value for the KMO measure of sampling adequacy) and there should also be evidence of a cluster structure. The effect of tandem analysis for this scenario will be particularly interesting.

7.5 Simulation results

For each of the ten scenarios, ten sets of data were created, each set of data consisting of 100 values for each of eighteen variables. For each set of the 100 sets of data three questions are of interest:

(1) Are the results of the factor analysis as expected? For example, if the simulated data included one factor, is it likely that one factor would be identified?

(2) Are the results of the cluster analysis as expected? For example, if the simulated data included two clusters, is it likely that two clusters would be identified?

(3) What is the effect of using tandem analysis? That is what is the effect of using factor analysis and then using cluster analysis based on the results of the factor analysis?

Due to space constraints it is not possible to provide full results for each of the scenarios. In particular, it is not possible to include dendrograms for each of the 100 sets of data and so only typical results are shown where appropriate.

The factor analysis was carried out using SPSS for Windows. The factors were rotated using varimax rotation and the saved factors used the "regression" option.

The cluster analysis was carried out using Ward's method with Euclidean distance in SPSS for Windows.

Scenario 1

The values for KMO, maximum eigenvalue, and number of eigenvalues greater than one are given in Table 7.2. Using the conventional rules for factor analysis (KMO under 0.5 being unacceptable, under 0.6 being miserable, Stewart, 1981), there is no evidence of any factors which is consistent with the way in which the data was simulated.

Table 7.2 Summary of Scenario 1

Simulation	KMO	Maximum Eigenvalue	Eigenvalues greater than 1
1	0.39	1.64	9
2	0.47	1.76	7
3	0.52	2.24	8
4	0.46	1.82	8
5	0.44	1.90	8
6	0.43	1.87	8
7	0.46	1.87	8
8	0.49	1.85	8
9	0.49	1.93	7
10	0.45	1.82	8

The results of the cluster analysis show no evidence of any clusters which is consistent with the way in which the data was simulated. An example of a dendrogram for this scenario is given in Figure 7.1.

Hence the results of the factor analysis and the cluster analysis are as expected with no evidence of clusters or factors for this scenario. There is no need to consider tandem analysis as there is no evidence of any factors.

Scenario 2

The values for KMO, maximum eigenvalue, and number of eigenvalues greater than one are given in Table 7.3. Using the conventional rules for factor analysis (KMO under 0.5 being unacceptable, under 0.6 being miserable, Stewart, 1981), there is no evidence of any factors which is consistent with the way in which the data was simulated. Although there is only a weak cluster structure, this has had a small but statistically significant effect on the KMO measure of sampling adequacy. A two sample t test shows that there is evidence, significant at the 1% level, that the mean KMO value for scenario 2 (using the values in Table 7.3) is greater than the mean KMO value for scenario 1 (using the values in Table 7.3) ($t = 2.94$, 18 degrees of freedom, critical value at 1% is 2.878).

Figure 7.1 Typical Dendrogram for Scenario 1

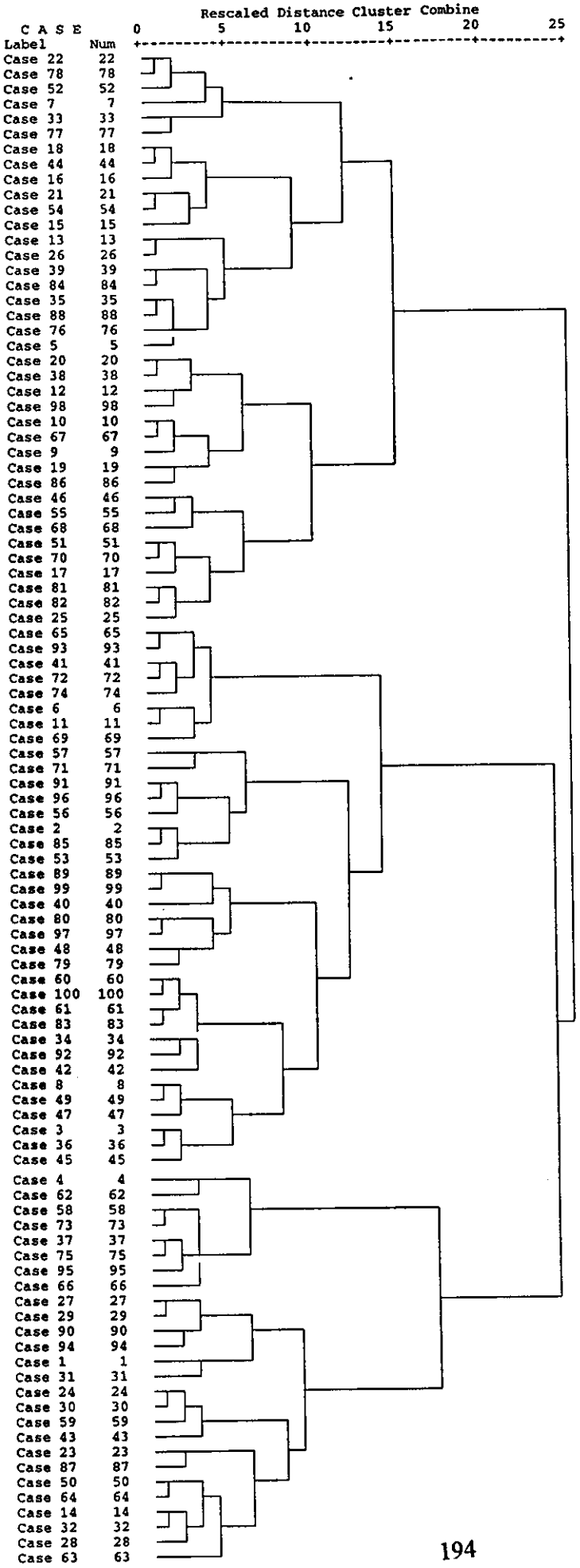


Table 7.3 Summary of Scenario 2

Simulation	KMO	Maximum Eigenvalue	Eigenvalues greater than 1
1	0.57	2.64	6
2	0.51	2.52	6
3	0.47	2.16	8
4	0.51	2.04	7
5	0.52	2.27	7
6	0.53	2.33	7
7	0.48	2.12	7
8	0.48	2.05	7
9	0.53	2.17	7
10	0.46	2.00	8

The results of the cluster analysis show that there are two clusters which is consistent with the way in which the data was simulated. An example of a dendrogram for this scenario is given in Figure 7.2. The data were generated so that the even numbered observations belonged to one cluster and the odd numbered observations belonged to the other cluster. For the dendrogram in Figure 7.2 the cluster membership can be summarised as follows:

Cluster 1 8 Odd 39 Even

Cluster 2 42 Odd 11 Even

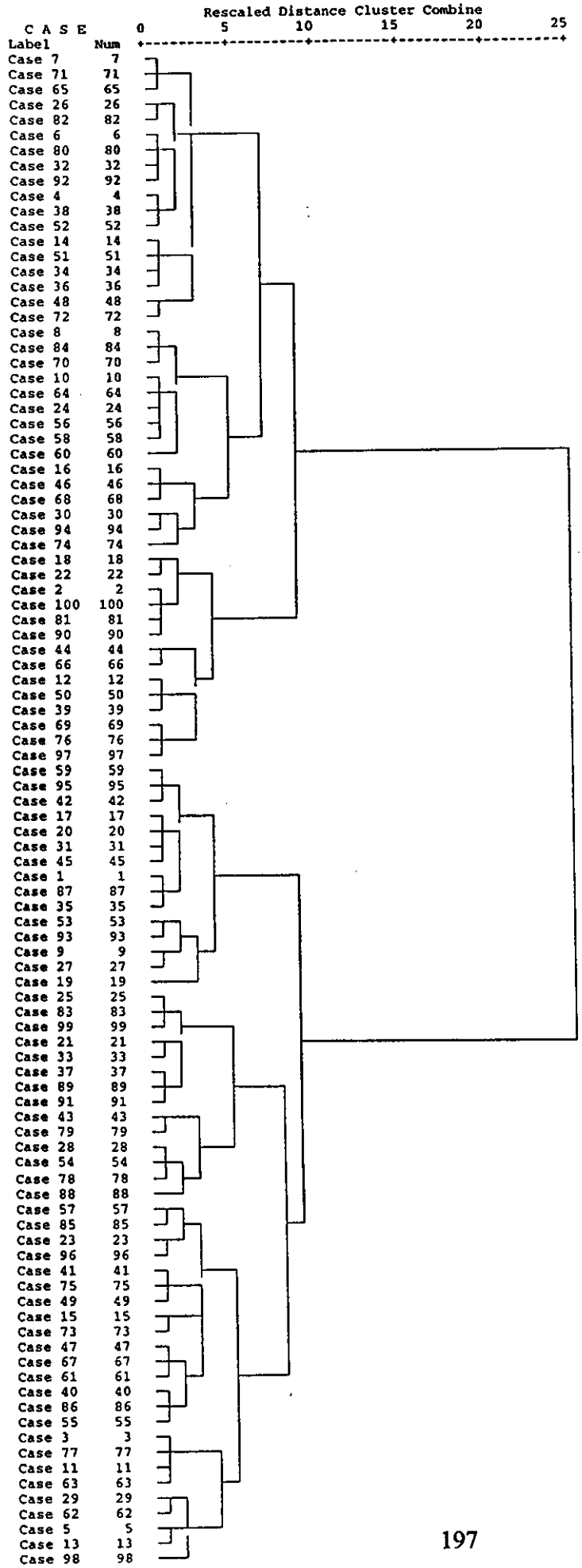
Hence $42 + 39 = 81$ individuals have been clustered correctly.

For all 10 simulations, the average number of individuals clustered correctly was 75.1%; the maximum was 81% and the minimum was 67%.

Given the weak cluster structure (only six of the eighteen variables contributed to the cluster structure) these results are very encouraging. Punj and Stewart (1983) commented that "including even one or two variables which do not contribute to distinguishing between clusters is likely to distort a cluster solution". These results show that Punj and Stewart may be worrying too much about the effect of variables which do not contribute to distinguishing between clusters.

Hence the results of the factor analysis are as expected with no evidence of factors for this scenario. However, there is good evidence of clusters for this scenario. There is no need to consider tandem analysis as there is no evidence of any factors.

Figure 7.2 Typical Dendrogram for Scenario 2



Scenario 3

The values for KMO, maximum eigenvalue, and number of eigenvalues greater than one are given in Table 7.4. Using the conventional rules for factor analysis (KMO over 0.7 being middling, Stewart, 1981), there is clear evidence of a factor structure which is not consistent with the way in which the data was simulated. Using the conventional rule that the number of factors is equal to the number of eigenvalues greater than one (e.g. Hair et al, 1992) would suggest about five factors when there are no factors in the data.

Table 7.4 Summary of Scenario 3

Simulation	KMO	Maximum Eigenvalue	Eigenvalues greater than 1
1	0.79	4.42	5
2	0.73	3.99	7
3	0.76	4.26	6
4	0.65	3.67	6
5	0.73	4.11	6
6	0.68	4.13	6
7	0.79	4.89	7
8	0.75	4.26	6
9	0.76	4.29	6
10	0.74	4.20	6

The results of the cluster analysis clearly show that there are two clusters, an example of this is given in Figure 7.3. Again the data were generated so that the even numbered observations belonged to one cluster and the odd numbered observations belonged to the other cluster. For the dendrogram in Figure 7.3 the cluster membership can be summarised as follows:

Cluster 1 6 Odd 48 Even

Cluster 2 44 Odd 2 Even

Hence 44 + 48 = 92 individuals have been clustered correctly.

For all 10 simulations, the average number of individuals clustered correctly was 94.2%; the maximum was 99% and the minimum was 90%.

However, using tandem analysis with the number of factors equal to the number of eigenvalues greater than one, the clear cluster structure is lost, an example of this is given in Figure 7.4. If a two cluster solution is investigated for the dendrogram in Figure 7.4, then the cluster membership can be summarised as follows:

Cluster 1	35 Odd	20 Even
Cluster 2	15 Odd	30 Even

Hence the number of individuals which have been correctly clustered has been reduced from 92 to 65 by using tandem analysis.

For all 10 simulations, the average number of individuals clustered correctly was 75.4%; the maximum was 88% and the minimum was 64%.

Hence the results of the factor analysis are not as expected and using tandem analysis destroys a clear cluster structure.

Figure 7.3 Typical Dendrogram for Scenario 3 (Original Measurements)

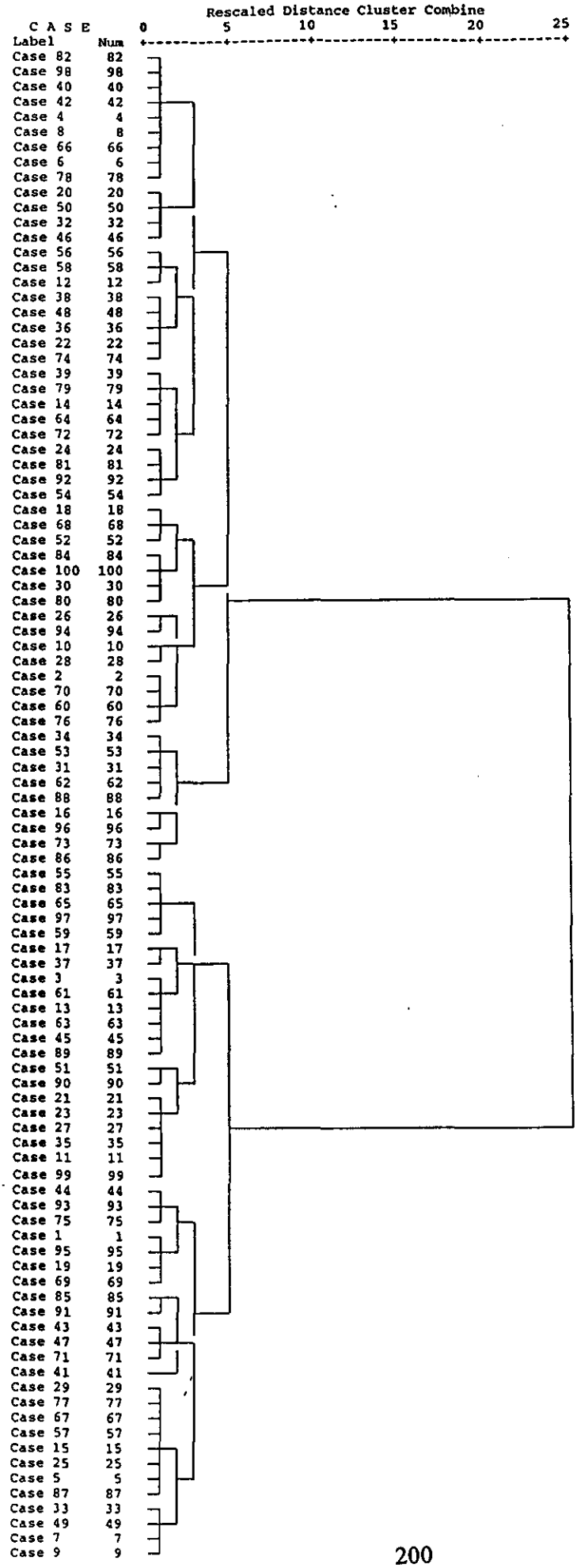
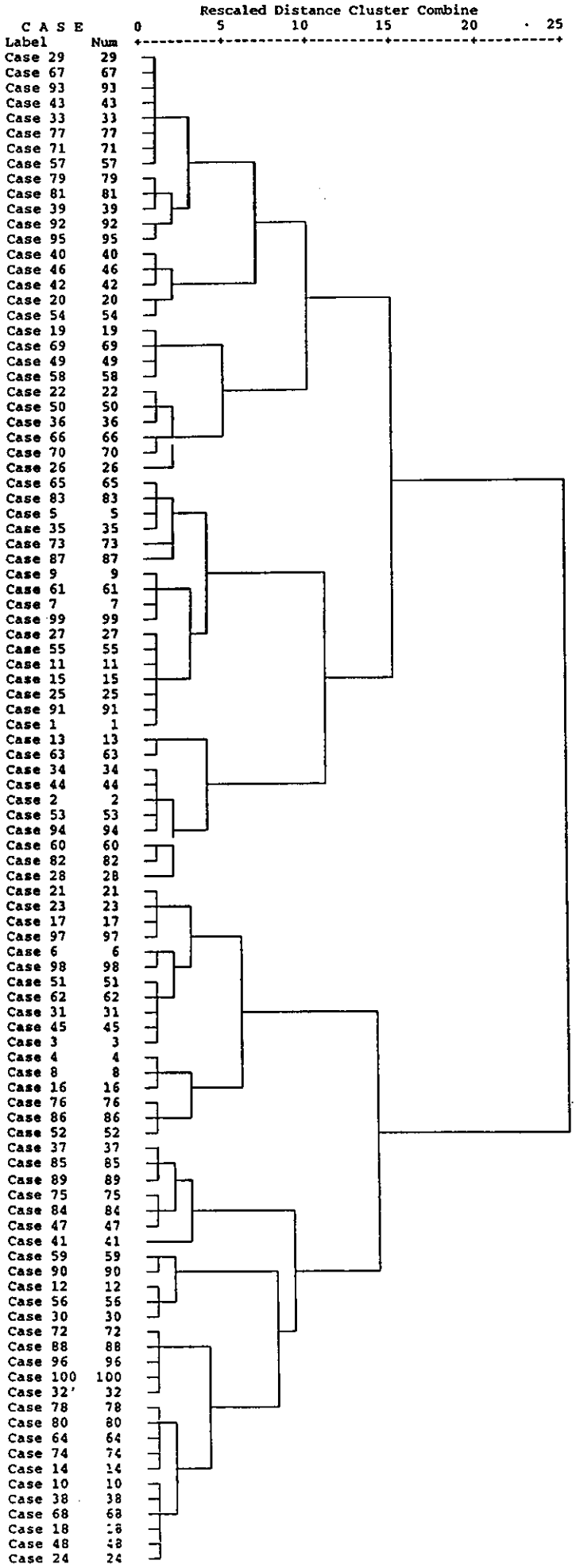


Figure 7.4 Typical Dendrogram for Scenario 3 (Five Extracted Factors)



Scenario 4

The values for KMO, maximum eigenvalue, and number of eigenvalues greater than one are given in Table 7.5. Using the conventional rules for factor analysis (KMO over 0.6 being mediocre, over 0.7 being middling, Stewart, 1981), there is some evidence of a factor structure which is not consistent with the way in which the data was simulated. Using the conventional rule that the number of factors is equal to the number of eigenvalues greater than one (e.g. Hair et al, 1992) would suggest about six factors when there are no factors in the data.

Table 7.5 Summary of Scenario 4

Simulation	KMO	Maximum Eigenvalue	Eigenvalues greater than 1
1	0.66	3.42	6
2	0.66	3.15	6
3	0.68	3.49	6
4	0.67	3.28	7
5	0.69	3.46	7
6	0.71	3.71	6
7	0.71	3.89	7
8	0.65	3.45	6
9	0.73	3.85	7
10	0.66	3.52	6

Although there are three clusters in the data simulated in this scenario, the results of the cluster analysis clearly show that there are two clusters, an example of this is given in Figure 7.5. It appears that the clusters are too close together for Ward's method to find three separate clusters. Again, using tandem analysis with the number of factors equal to the number of eigenvalues greater than one, the clear cluster structure is lost, an example of this is given in Figure 7.6.

Hence the results of the factor analysis are not as expected and using tandem analysis destroys a clear cluster structure.

Figure 7.5 Typical Dendrogram for Scenario 4 (Original Measurements)

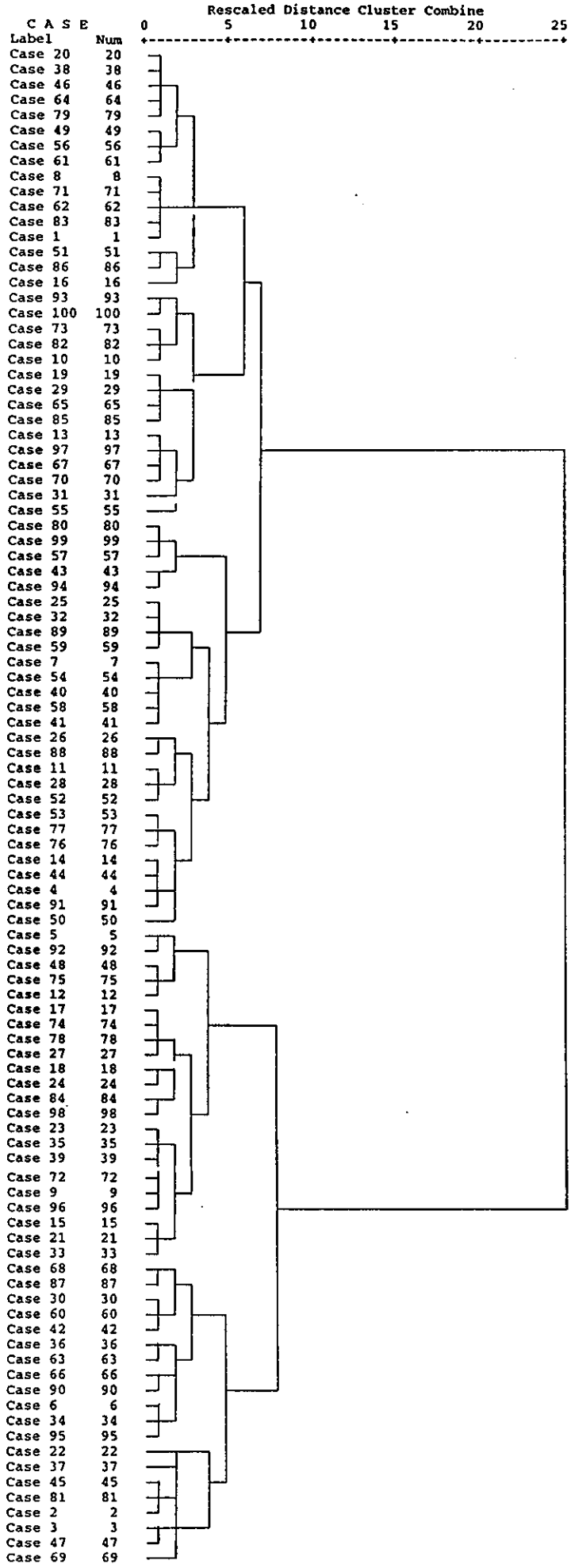
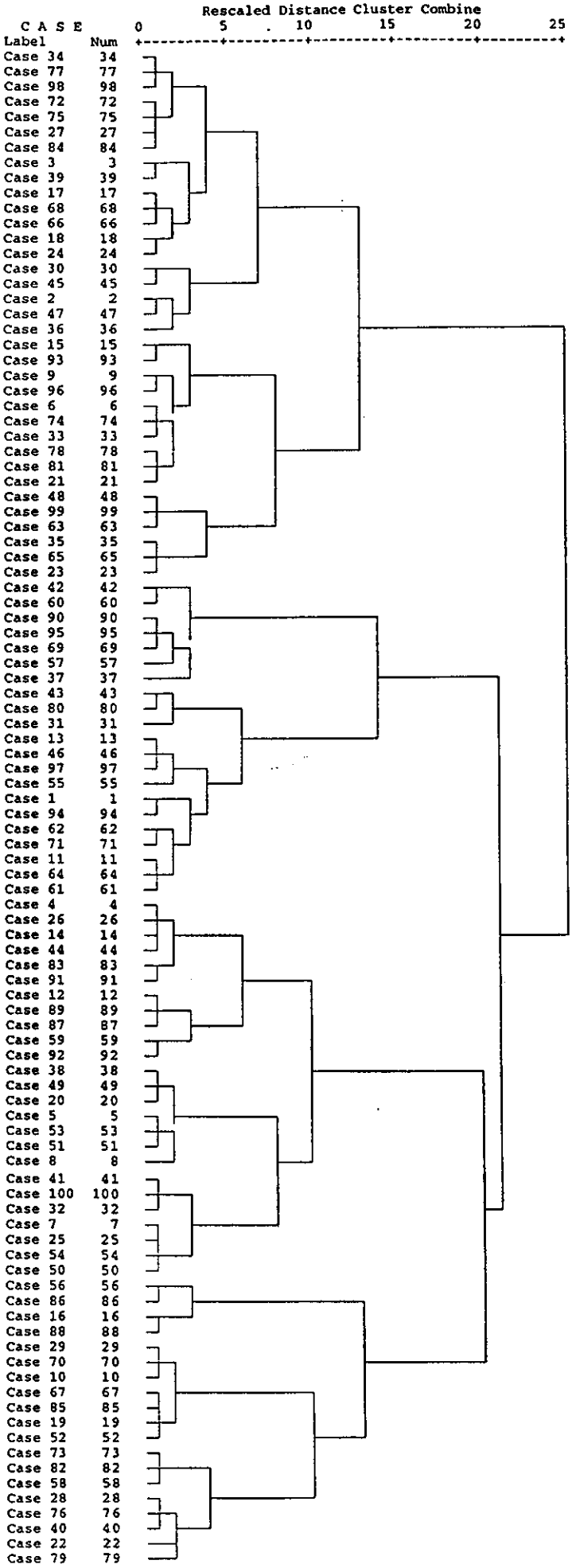


Figure 7.6 Typical Dendrogram for Scenario 4 (Six Extracted Factors)



Scenario 5

The values for KMO, maximum eigenvalue, and number of eigenvalues greater than one are given in Table 7.6. Using the conventional rules for factor analysis (KMO over 0.6 being mediocre, over 0.7 being middling, Stewart, 1981), there is some evidence of a factor structure which is consistent with the way in which the data was simulated. Using the conventional rule that the number of factors is equal to the number of eigenvalues greater than one (e.g. Hair et al, 1992) would suggest about seven factors when there is only one factors in the data.

Table 7.6 Summary of Scenario 5

Simulation	KMO	Maximum Eigenvalue	Eigenvalues greater than 1
1	0.65	3.39	7
2	0.67	3.66	6
3	0.64	3.02	7
4	0.70	3.55	7
5	0.65	3.51	7
6	0.71	3.77	7
7	0.62	3.23	7
8	0.67	3.30	7
9	0.68	3.39	7
10	0.67	3.38	7

The results of the cluster analysis show clear evidence of two clusters which is not consistent with the way in which the data was simulated. An example of a dendrogram for this scenario is given in Figure 7.7. The number of individuals which have been correctly clustered cannot be calculated since there are no clusters in the data.

Hence the results of the factor analysis are as expected in that there is evidence of a factor structure. A practical problem in this situation is that several factors are likely to be identified when, in fact, there is only one factor.

Another practical problem in this situation is that the results of the cluster analysis are not as expected. The way in which the data was simulated included no clusters, but there is clear evidence of two clusters.

Using tandem analysis with the number of factors equal to the number of eigenvalues greater than one, the clear picture is lost, an example of this is given in Figure 7.8. In this case tandem analysis correctly leads to the conclusion that there are no clusters in the data.

Figure 7.7 Typical Dendrogram for Scenario 5 (Original Measurements)

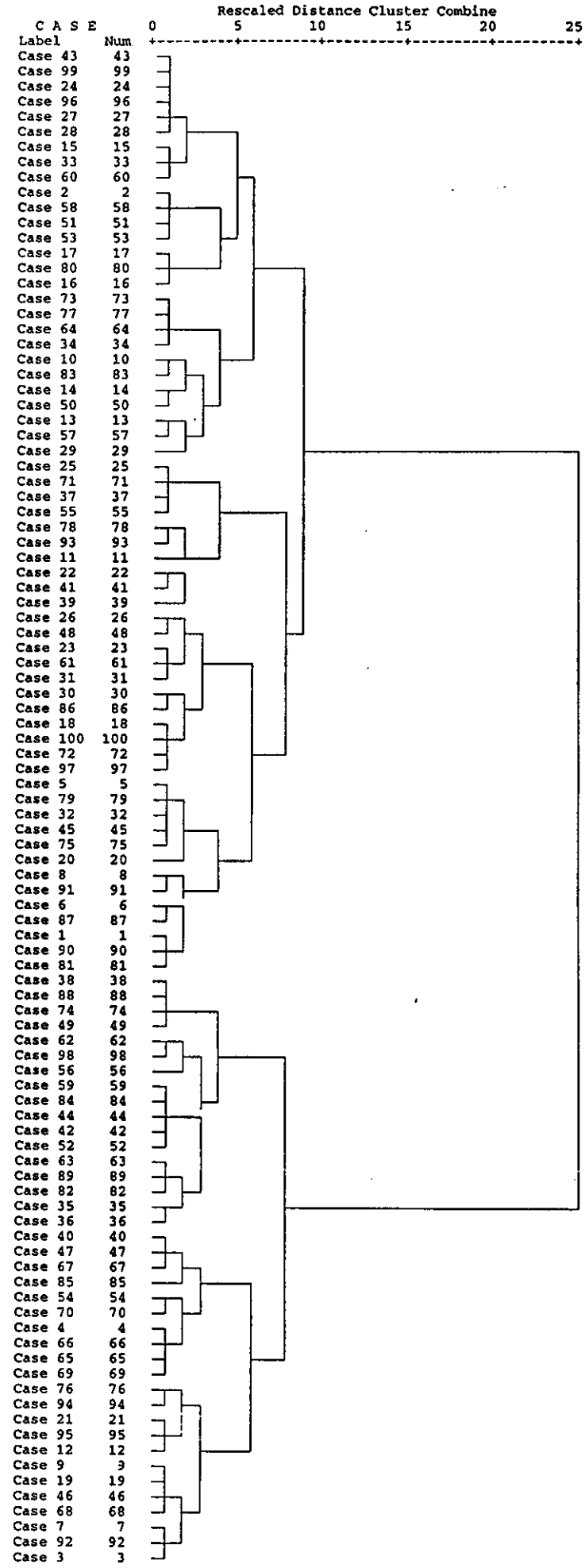
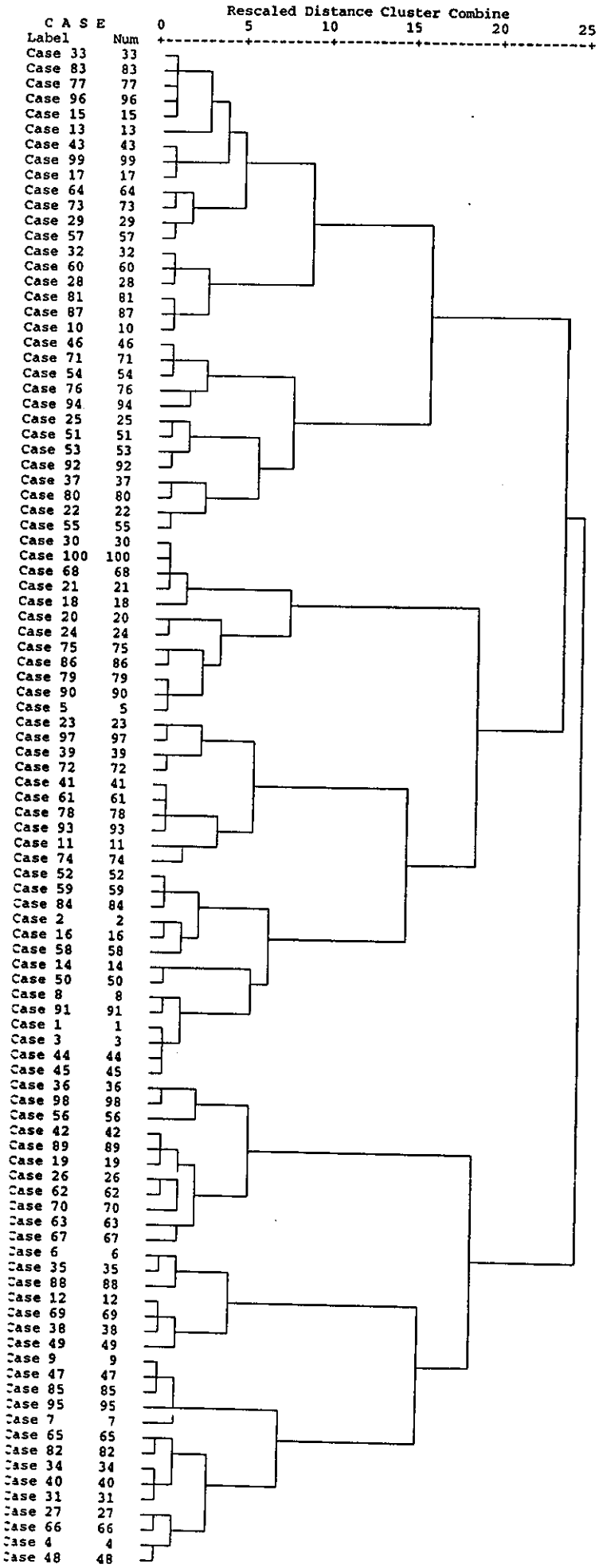


Figure 7.8 Typical Dendrogram for Scenario 5 **(Seven Extracted Factors)**



Scenario 6

The values for KMO, maximum eigenvalue, and number of eigenvalues greater than one are given in Table 7.7. Using the conventional rules for factor analysis (KMO over 0.9 being marvellous, Stewart, 1981), there is very clear evidence of a factor structure which is consistent with the way in which the data was simulated. Using the conventional rule that the number of factors is equal to the number of eigenvalues greater than one (e.g. Hair et al, 1992) would suggest exactly one factor which is the number of factors in the data.

Table 7.7 Summary of Scenario 6

Simulation	KMO	Maximum Eigenvalue	Eigenvalues greater than 1
1	0.95	9.64	1
2	0.94	10.0	1
3	0.94	9.65	1
4	0.94	9.04	1
5	0.93	9.42	1
6	0.94	10.1	1
7	0.94	9.47	1
8	0.95	9.88	1
9	0.93	8.40	1
10	0.93	9.60	1

The results of the cluster analysis show clear evidence of two clusters which is not consistent with the way in which the data was simulated. An example of a dendrogram for this scenario is given in Figure 7.9. The number of individuals which have been correctly clustered cannot be calculated since there are no clusters in the data. Also, using tandem analysis with one factor extracted suggests the existence of two clusters which is not consistent with the way in which the data was simulated, an example of this is given in Figure 7.10.

Hence the results of the factor analysis are as expected in that there is evidence of a factor structure. A practical problem in this situation is that the results of the cluster analysis are not as expected. The way in which the data was simulated included no clusters, but there is clear evidence of two clusters.

Figure 7.9 Typical Dendrogram for Scenario 6 (Original Measurements)

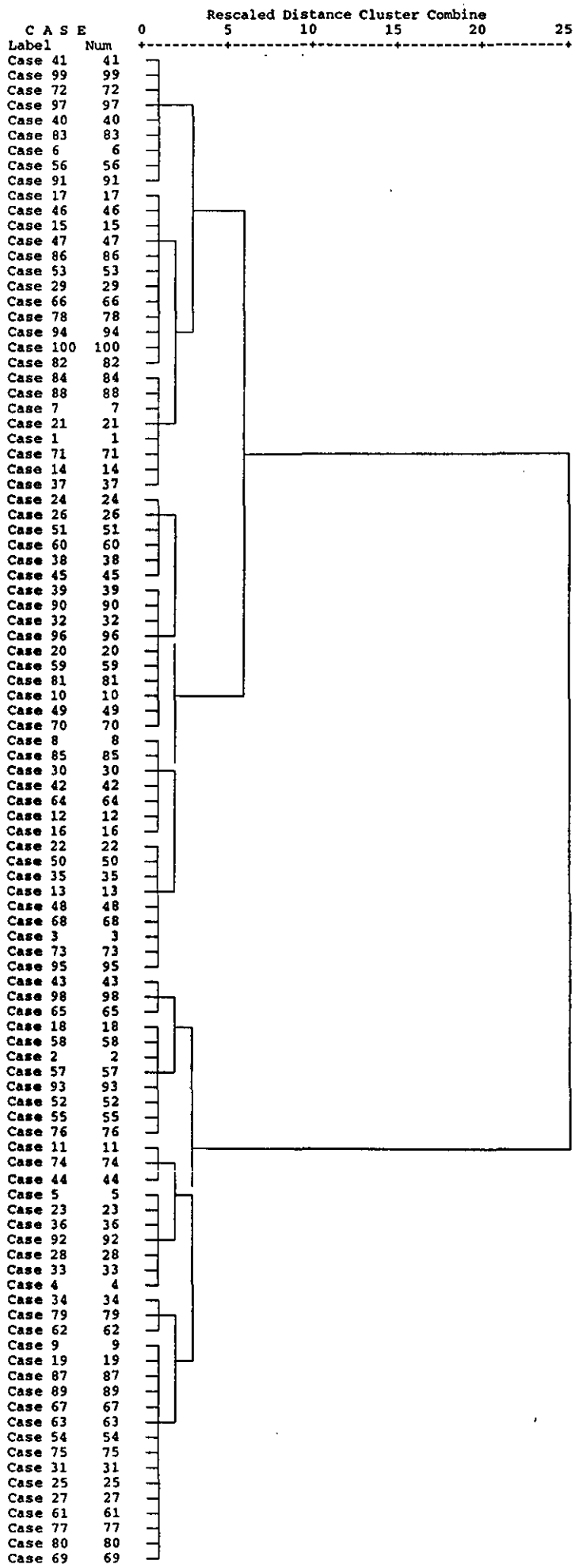
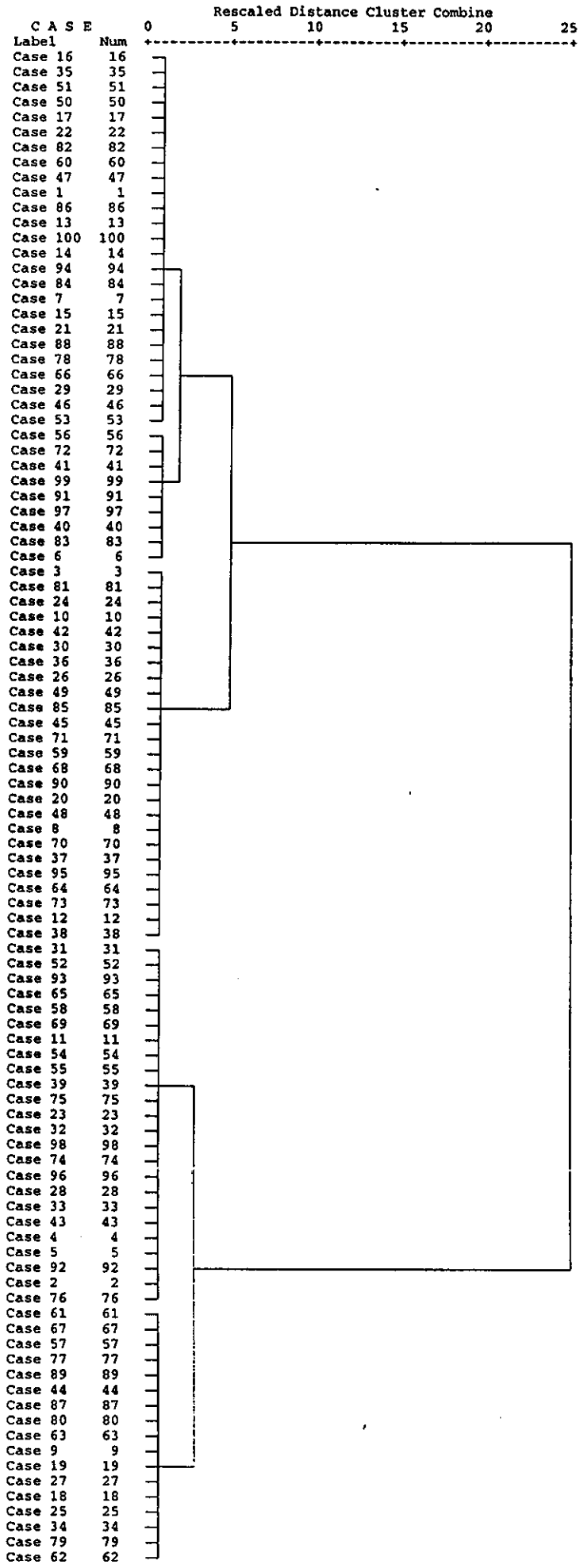


Figure 7.10 Typical Dendrogram for Scenario 6 (One Extracted Factor)



Scenario 7

The values for KMO, maximum eigenvalue, and number of eigenvalues greater than one are given in Table 7.8. Using the conventional rules for factor analysis (KMO over 0.5 being miserable, Stewart, 1981), there is some evidence of a factor structure which is consistent with the way in which the data was simulated. Using the conventional rule that the number of factors is equal to the number of eigenvalues greater than one (e.g. Hair et al, 1992) would suggest about seven factors when there are only two factors in the data.

Table 7.8 Summary of Scenario 7

Simulation	KMO	Maximum Eigenvalue	Eigenvalues greater than 1
1	0.56	2.28	7
2	0.48	2.03	8
3	0.58	2.77	7
4	0.62	3.10	7
5	0.60	2.96	6
6	0.56	2.32	7
7	0.56	2.69	7
8	0.56	2.54	7
9	0.60	2.77	7
10	0.59	3.00	7

The results of the cluster analysis show no evidence of any clusters which is consistent with the way in which the data was simulated. An example of a dendrogram for this scenario is given in Figure 7. 11. Similarly, using tandem analysis with the number of factors equal to the number of eigenvalues greater than one, there is no evidence of any clusters in the data, an example of this is given in Figure 7.12.

Hence the results of the factor analysis and the cluster analysis are as expected in that there is evidence of a factor structure but there is no evidence of a cluster structure. A practical problem in this situation (as with scenario 5) is that several factors are likely to be identified when, in fact, there are only two factors.

Figure 7.11 Typical Dendrogram for Scenario 7 (Original Measurements)

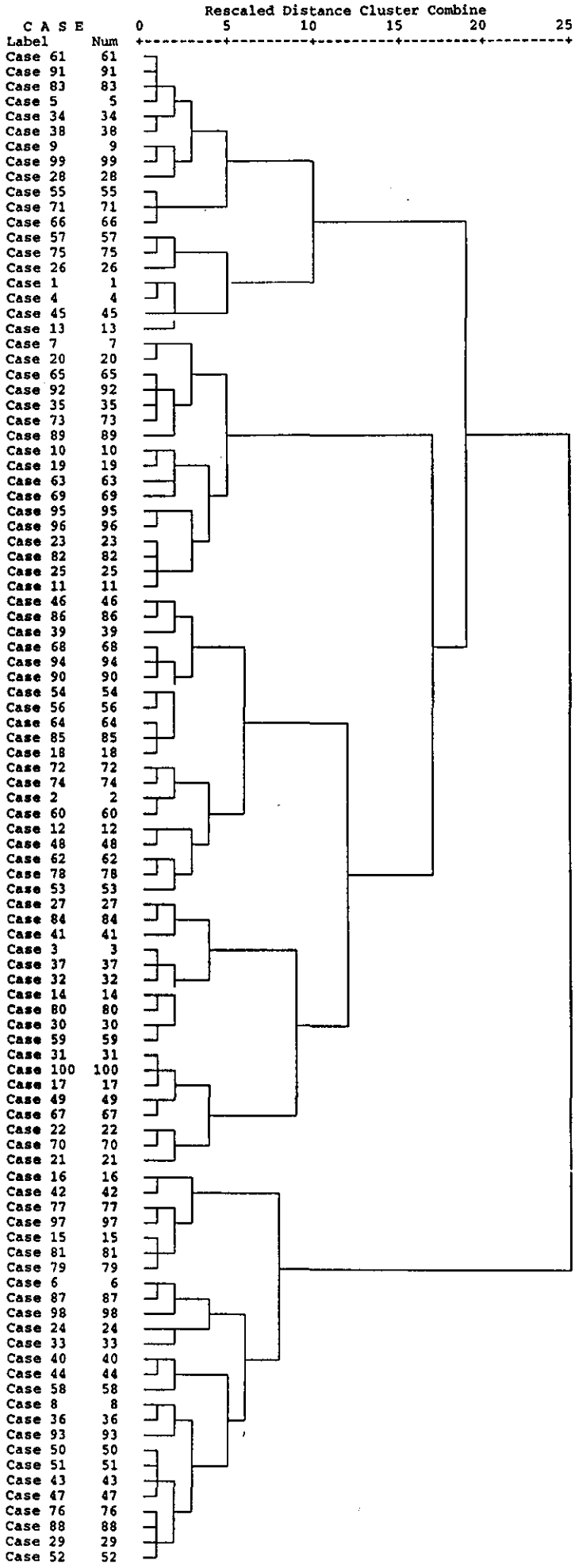
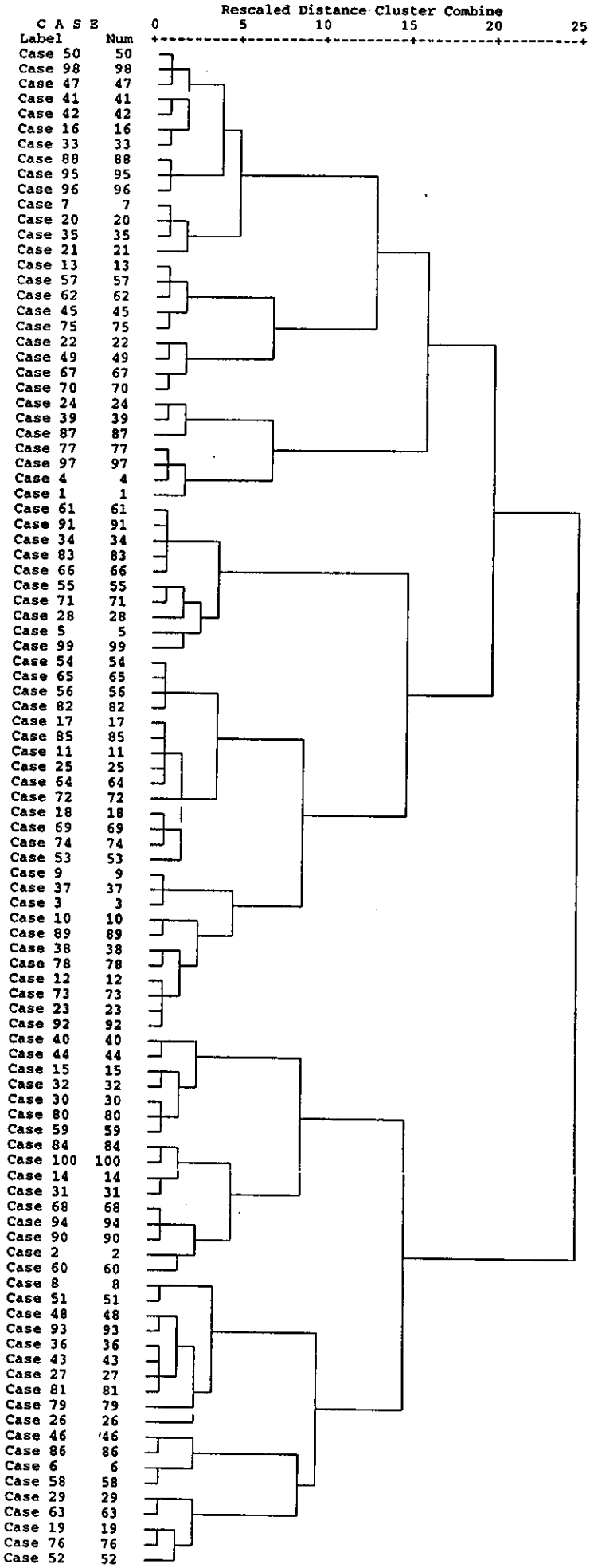


Figure 7.12 Typical Dendrogram for Scenario 7 (Seven Extracted Factors)



Scenario 8

The values for KMO, maximum eigenvalue, and number of eigenvalues greater than one are given in Table 7.9. Using the conventional rules for factor analysis (KMO over 0.7 being middling, Stewart, 1981), there is some evidence of a factor structure which is consistent with the way in which the data was simulated. Using the conventional rule that the number of factors is equal to the number of eigenvalues greater than one (e.g. Hair et al, 1992) would suggest about six factors when there are only two factors in the data.

Table 7.9 Summary of Scenario 8

Simulation	KMO	Maximum Eigenvalue	Eigenvalues greater than 1
1	0.78	4.83	6
2	0.78	4.59	7
3	0.76	4.23	6
4	0.72	3.95	6
5	0.77	4.59	5
6	0.80	4.64	6
7	0.77	4.67	6
8	0.77	4.63	6
9	0.79	4.82	6
10	0.77	4.64	6

The results of the cluster analysis show no evidence of any clusters which is consistent with the way in which the data was simulated. An example of a dendrogram for this scenario is given in Figure 7. 13. Similarly, using tandem analysis with the number of factors equal to the number of eigenvalues greater than one, there is no evidence of any clusters in the data, an example of this is given in Figure 7.14.

Hence the results of the factor analysis and the cluster analysis are as expected in that there is evidence of a factor structure but there is no evidence of a cluster structure. A practical problem in this situation (as with scenario 5 and scenario 7) is that several factors are likely to be identified when, in fact, there are only two factors.

Figure 7.13 Typical Dendrogram for Scenario 8 (Original Measurements)

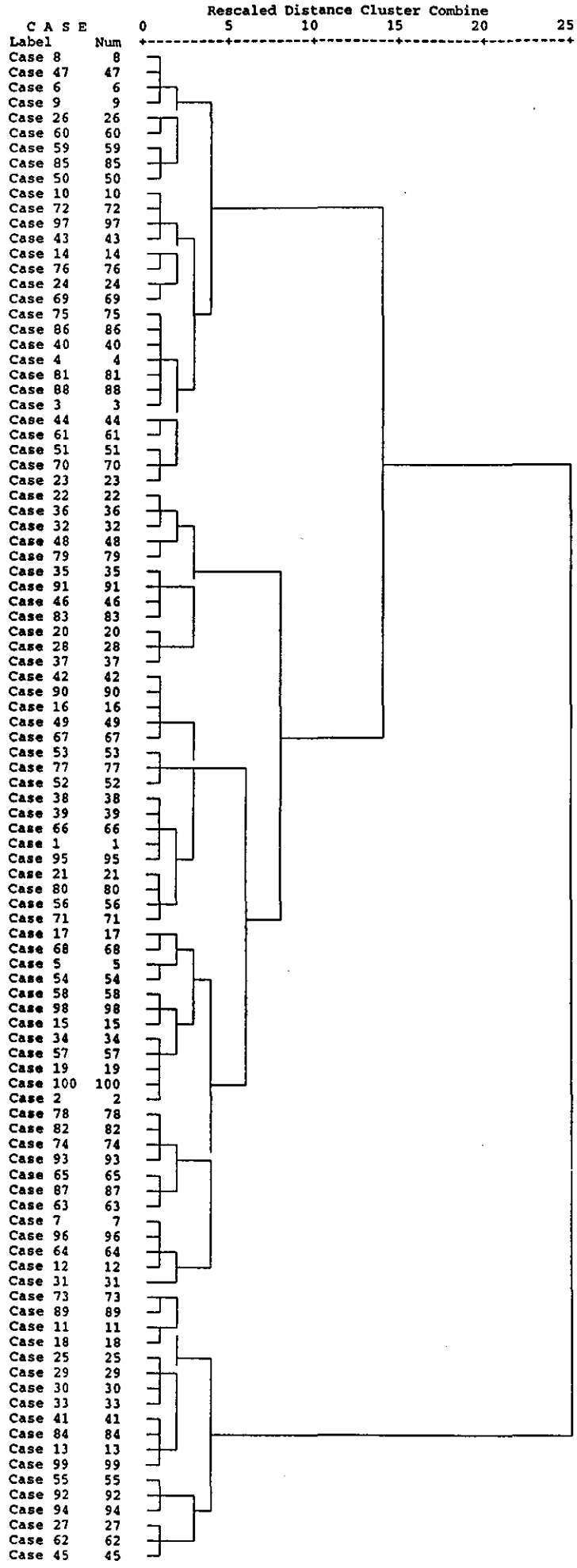
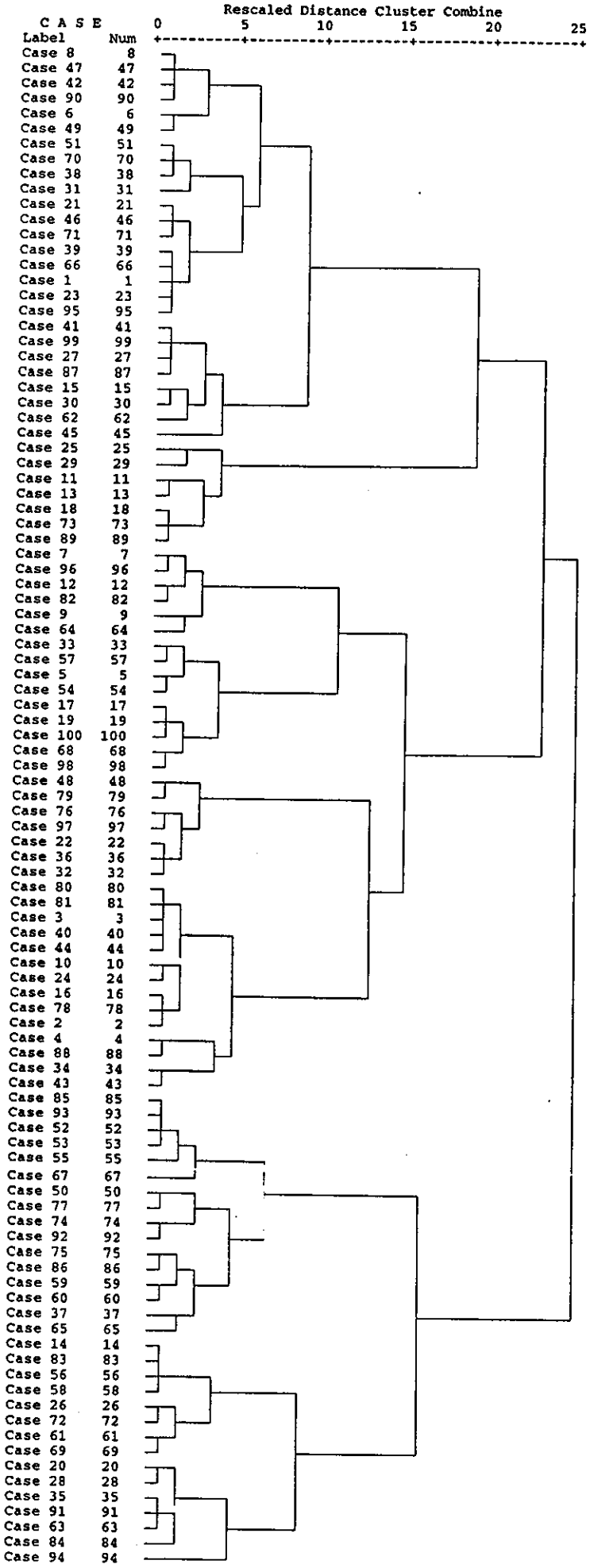


Figure 7.14 Typical Dendrogram for Scenario 8 (Six Extracted Factors)



Scenario 9

The values for KMO, maximum eigenvalue, and number of eigenvalues greater than one are given in Table 7.10. Using the conventional rules for factor analysis (KMO over 0.7 being middling, Stewart, 1981), there is some evidence of a factor structure which is consistent with the way in which the data was simulated. Using the conventional rule that the number of factors is equal to the number of eigenvalues greater than one (e.g. Hair et al, 1992) would suggest about six factors when there are only two factors in the data.

The weak cluster structure has had no obvious effect on the apparent factor structure. In particular there is no evidence, significant effect at the 5% level, of a difference between the KMOs for scenario 8 and those for scenario 9 (t = 0.00, 18 degrees of freedom). Similarly, there is no evidence, significant at the 5% level, of a difference between the maximum eigenvalues for scenario 8 and those for scenario 9 (t = 0.16, 18 degrees of freedom).

Table 7.10 Summary of Scenario 9

Simulation	KMO	Maximum Eigenvalue	Eigenvalues greater than 1
1	0.75	4.79	7
2	0.81	4.55	6
3	0.72	4.30	6
4	0.75	4.26	6
5	0.78	4.66	6
6	0.75	4.46	7
7	0.81	4.81	6
8	0.80	5.46	6
9	0.77	4.18	6
10	0.77	4.35	6

The results of the cluster analysis clearly show that there are two clusters, an example of this is given in Figure 7.15. As before, the data were generated so that the even numbered observations belonged to one cluster and the odd numbered observations belonged to the other cluster. For the dendrogram in Figure 7.15 the cluster membership can be summarised as follows:

Cluster 1	23	Odd	41 Even
Cluster 2	27	Odd	9 Even

Hence 41 + 27 = 68 individuals have been clustered correctly. It appears that the factor structure has "damaged" the cluster structure since without the factor structure (scenario 2) there was a higher number of individuals, 81, correctly clustered.

For all 10 simulations, the average number of individuals clustered correctly was 67.1%; the maximum was 78% and the minimum was 58%.

However, using tandem analysis with the number of factors equal to the number of eigenvalues greater than one, the clear cluster structure is lost, an example of this is given in Figure 7.16.

Hence the results of the factor analysis and the cluster analysis are as expected in that there is evidence of both a factor structure and a cluster structure. However, using tandem analysis destroys the cluster structure.

Figure 7.15 Typical Dendrogram for Scenario 9 (Original Measurements)

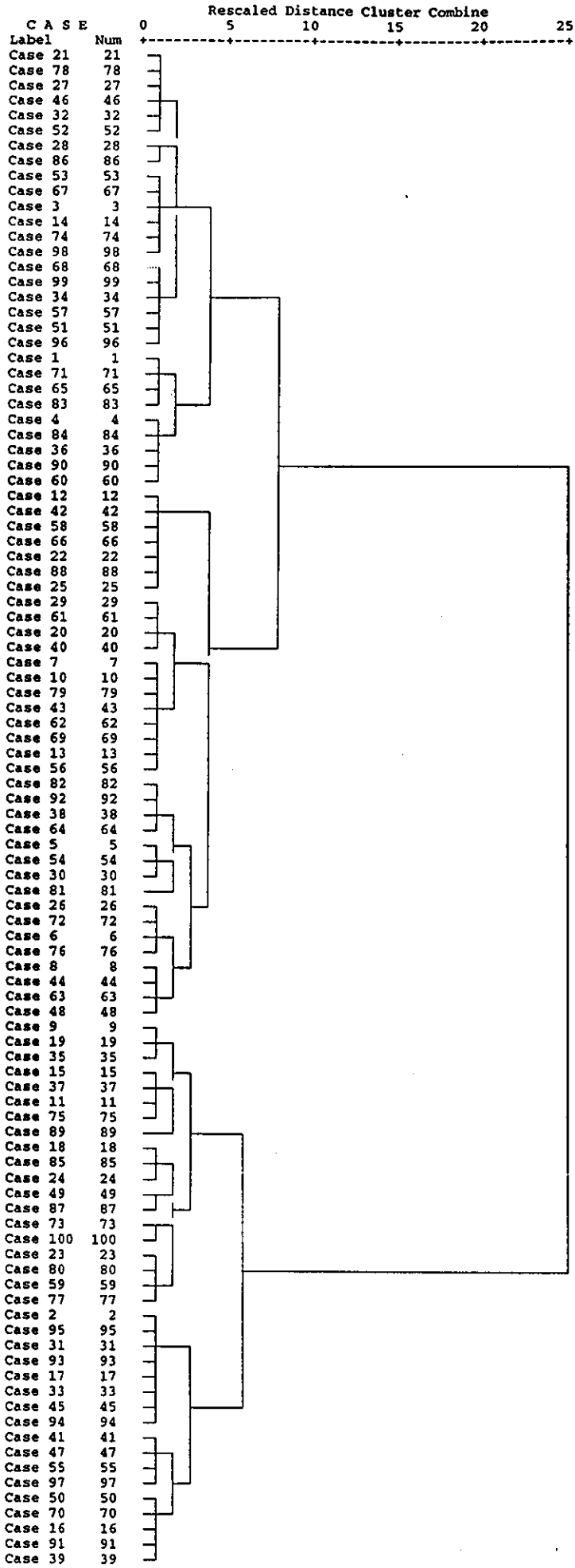
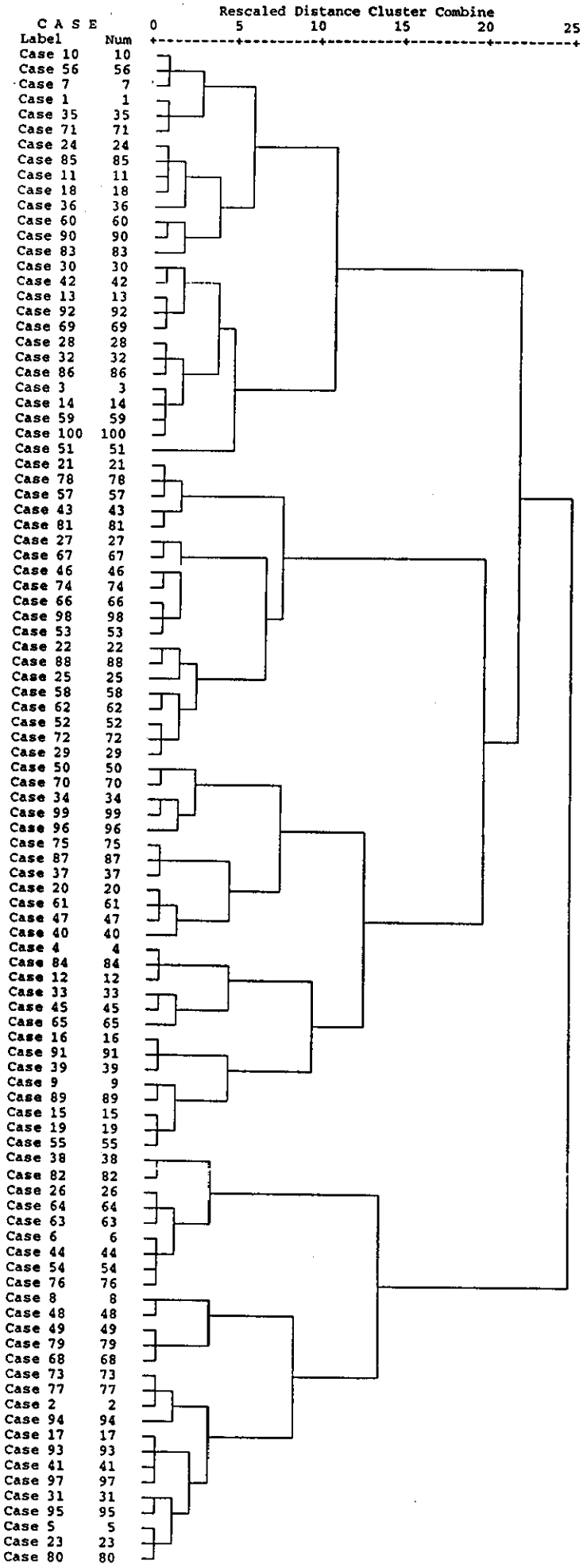


Figure 7.16 Typical Dendrogram for Scenario 9 (Seven Extracted Factors)



Scenario 10

The values for KMO, maximum eigenvalue, and number of eigenvalues greater than one are given in Table 7.11. Using the conventional rules for factor analysis (KMO over 0.8 being meritorious, Stewart, 1981), there is clear evidence of a factor structure which is consistent with the way in which the data was simulated. Using the conventional rule that the number of factors is equal to the number of eigenvalues greater than one (e.g. Hair et al, 1992) would suggest about four factors when there are only two factors in the data.

The cluster structure has had a noticeable and statistically significant effect on the KMO measure of sampling adequacy. A two sample t test comparing the KMOs for scenario 8 with those for scenario 10 is significant at the 0.1% level (t = 10.92, 18 degrees of freedom critical value at 0.1% is 3.922). Similarly, the cluster structure has had a noticeable and statistically significant effect on the maximum eigenvalue. A two sample t test comparing the maximum eigenvalues for scenario 8 with those for scenario 10 is significant at the 0.1% level (t = 12.13, 18 degrees of freedom, critical value at 0.1% is 3.922).

Table 7.11 Summary of Scenario 10

Simulation	KMO	Maximum Eigenvalue	Eigenvalues greater than 1
1	0.88	6.60	3
2	0.85	6.14	4
3	0.85	6.26	5
4	0.86	6.16	4
5	0.89	7.07	4
6	0.87	6.31	4
7	0.87	5.67	5
8	0.84	6.15	6
9	0.88	6.70	4
10	0.85	6.38	5

The results of the cluster analysis clearly show that there are two clusters, an example of this is given in Figure 7.17. Again, the data were generated so that the even numbered observations belonged to one cluster and the odd numbered observations belonged to the

other cluster. For the dendrogram in Figure 7.17 the cluster membership can be summarised as follows:

Cluster 1	13	Odd	47	Even
Cluster 2	37	Odd	3	Even

Hence 47 + 37 = 84 individuals have been clustered correctly. Again it appears that the factor structure has "damaged" the cluster structure since without the factor structure (scenario 3) there was a higher number of individuals, 92, correctly clustered.

For all 10 simulations, the average number of individuals clustered correctly was 79.8%; the maximum was 92% and the minimum was 65%.

However, using tandem analysis with the number of factors equal to the number of eigenvalues greater than one, the clear cluster structure is lost, an example of this is given in Figure 7.18.

Hence the results of the factor analysis and the cluster analysis are as expected in that there is evidence of both a factor structure and a cluster structure. However, using tandem analysis destroys the cluster structure.

Figure 7.17 Typical Dendrogram for Scenario 10 (Original Measurements)

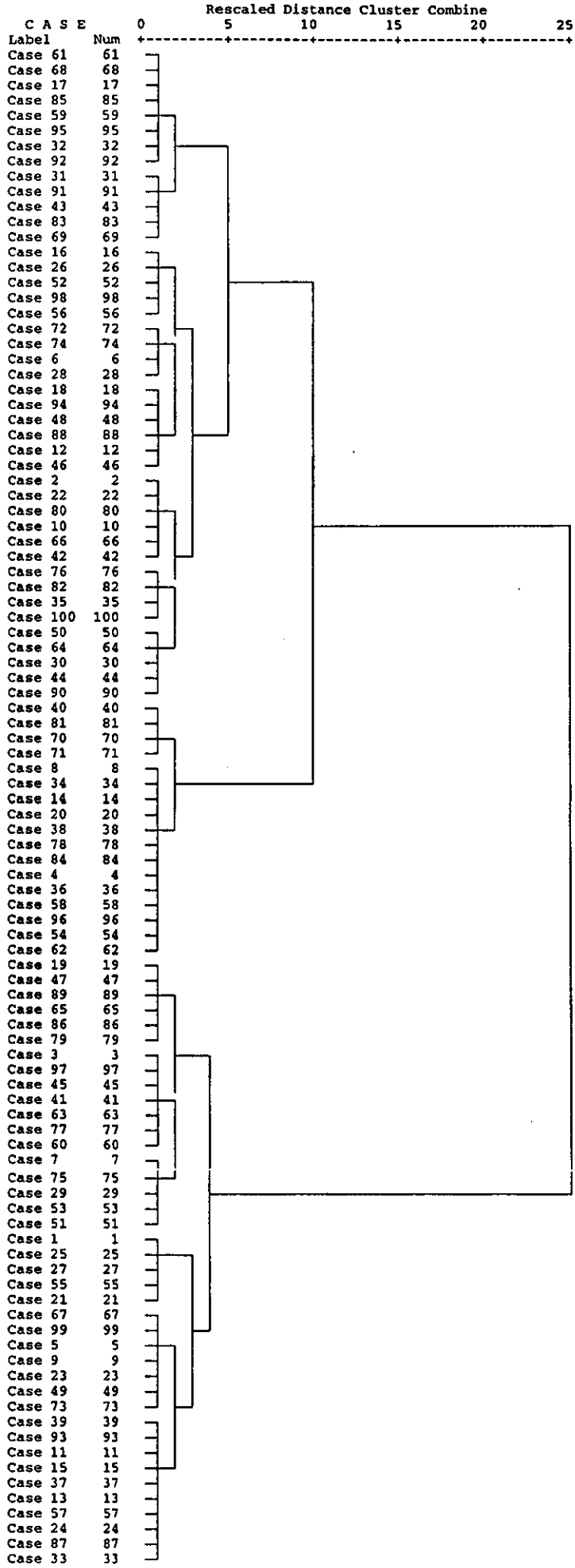
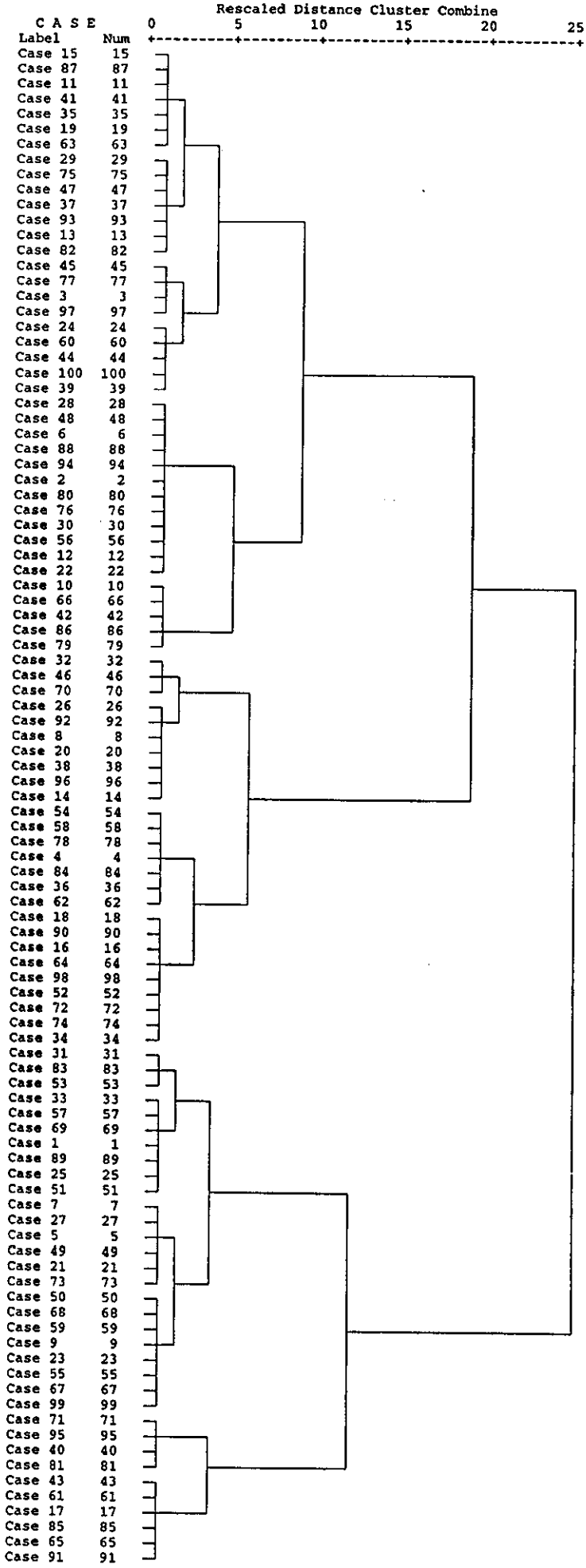


Figure 7.18 Typical Dendrogram for Scenario 10 (Three Extracted Factors)



7.6 Conclusions

A summary of the simulation data and simulation results for each scenario is given in Table 7.12. From the simulation study it can clearly be seen that:

(1) Using tandem analysis can destroy a clear cluster structure, this is most clearly seen in scenarios 3, 4 and 10.

(2) The existence of clusters in the data affects the perceived factor structure, this is most clearly seen in scenarios 3 and 4.

(3) Including variables that do not contribute to distinguishing between clusters in a cluster analysis can weaken a cluster solution, this can be seen in scenarios 2 and 9.

(4) The guidelines suggested by Stewart (1981) are sensible. In particular, if the value of KMO is less than 0.5 then factor analysis should not be considered.

As Milligan (1996, p. 348) commented "the routine application of principal components or other factoring techniques prior to clustering is naive". Before a cluster analysis is undertaken, clear thought needs to be given to whether the clusters are embedded in a high-dimensional variable space (in which case the original variables should be used for the cluster analysis) or whether the clusters are embedded in a low dimensional factor space (in which case the use of factors may be appropriate). In either case, before a cluster analysis is undertaken, clear thought needs to be given to the expected contribution of each variable or factor to distinguishing between clusters, and any variables or factors which do not contribute to distinguishing between clusters should be omitted from the analysis.

Table 7. 12 A summary of simulation data and simulation results

Scenario	Structure of factors simulated		Typical results of factor analysis	Structure of clusters simulated		Typical results of cluster analysis	
	No. of factors	Variables involved in factors		No. of clusters	The difference of means between clusters	Using original variables	Tandem clustering
1	0	N/A	0	0	N/A	0	No need
2	0	N/A	0	2	1 σ for V1-V6 between two clusters	2	No need
3	0	N/A	5	2	1 σ for all 18 variables between two clusters	2	Lost clear cluster picture
4	0	N/A	6	3	For all 18 variables, 0.5 σ between cluster 1 and cluster 2; 0.5 σ between cluster 2 and cluster 3; 1 σ between cluster 1 and cluster 3.	2	Lost clear cluster picture
5	1	F1= {V1,..., V6}, $\sigma = 0.8$	7	0	N/A	2	Leading to no clusters correctly
6	1	F1={V1,..., V18}, $\sigma = 0.8$	1	0	N/A	2	2
7	2	F1= {V1,..., V9}, $\sigma = 0.5$; F2={V7,..., V12}, $\sigma = 0.5$	7	0	N/A	0	0
8	2	F1= {V1,..., V9}, $\sigma = 0.8$; F2={V7,..., V12}, $\sigma = 0.5$	6	0	N/A	0	0
9	2	The same as scenario 8	6	2	1 σ for V1-V6 between two clusters	2	Lost clear cluster picture
10	2	The same as scenario 8	4	2	1 σ for all 18 variables between two clusters	2	Lost clear cluster picture

CHAPTER EIGHT SUMMARY AND CONCLUSIONS

8.1 Introduction

Market segmentation is generally recognised as a dominant concept in marketing literature and practice (Wind, 1978, p. 317). However, most segmentation studies have been conducted for consumer markets. Although the concept of segmentation and most of the segmentation research methods which have been suggested are equally applicable to industrial markets, few applications of segmenting industrial markets have been reported in the industrial marketing literature. This is due to a variety of reasons which have been described in chapter 2.

As stated in chapter 1, the textiles industry is vital because it supplies not only the basic human need of clothing but also specific needs for almost every other industry. Although its importance has been reduced by some of the emerging industries, the textiles industry is by no means a sunset industry. To revive the historical prosperity of the textiles industry, several publications have focused on addressing the technological and macro-economical aspects of the textiles industry. Unfortunately, a comprehensive exploration of the segmentation strategy for the textiles industry has been overlooked.

Unlike the previous studies, this study explored the segmentation strategies and bases used in the textiles industry by collecting data using an empirical survey of the UK textiles industry. This empirical study also investigated confusing issues affecting successful implementation of a segmentation strategy in the textiles industry so that it can provide guidelines and a framework for marketing practitioners and for future research.

The remainder of this chapter is divided into four sections. The first section summarises the findings of this study, including the results of the empirical survey, the investigation of alternative views on segmentation, and the simulation study. The second section summarises the particular contributions of this study. The third section addresses the potential limitations of this study. Finally, some possible directions for future research are suggested.

8.2 Summary of research findings

A table showing which hypotheses were accepted and which hypotheses were rejected was given in chapter 6 (Table 6.47). This section gives a broader summary of the research findings.

8.2.1 Results of the empirical study

Based on the literature review and the interviews with textiles experts, five critical research questions relating to segmenting textiles markets were examined in this study:

(1) Do UK textiles companies implement a market segmentation strategy? (see chapter 4 and also hypothesis H1)

(2) What are the confusing issues hindering marketing managers from implementing a segmentation strategy in the UK textiles industry? (see chapters 2 and 3)

(3) Does the implementation of a segmentation strategy depend on a company's demographics? (see chapter 4 and also hypotheses H1A, H1B and H1C)

(4) Do the segmentation bases used depend on a company's demographics? (see chapter 4 and also hypotheses H2, H3 and H4)

(5) Do the segmentation bases and strategies vary over time? (see chapter 3 and also hypothesis H5)

To answer the research questions above, a postal questionnaire was designed and mailed to 280 UK textiles companies. There were 101 usable responses (36.1%). The data collected from the returned questionnaires was analysed using factor analysis, cluster analysis, ANOVA, and cross-tabs.

Based on the data collected from the returned questionnaires, the answers to the five critical research questions can be summarised as follows:

(1) From this survey less than 40% of textiles companies implement a market segmentation strategy. This finding was supported by the follow-up interviews in which eight out of the ten interviewees agreed with this figure. Two lessons can be learnt from this finding. Firstly, this result implies that research assuming all companies implement a market segmentation strategy is not valid (e.g., Abratt, 1993). Secondly, market segmentation is not necessarily an appropriate strategy for all companies. This is consistent with previous studies such as Young, Ott and Feigin (1978). In particular, some companies might follow other strategies, such as price leadership as price can be the most influential factor in the market. For example, compared with producing gingham, the manufacturing process and production know-how for producing piece-dyed fabrics are much simpler. This means that competitors in the piece-dyed market may follow a strategy of mass production along with mass marketing seeking the competitive advantage of price leadership.

(2) From this survey five critical confusing issues have been found:

(a) a failure to properly understand the scope and relevance of segmentation,

(b) a lack of support from senior management,

(c) the extra costs incurred by segmentation,

(d) resistance from other functional groups,

(e) an unstable membership of segments over time.

This means that companies which could benefit from segmenting their markets need to overcome some potential implementation barriers. In particular, the companies may need to invest in more training so that they properly understand the actual context of market segmentation; this has been described in chapter 3. In addition, it is also crucial that companies reconcile the needs of other functional groups with the aspirations of the marketing department so that resources can be allocated efficiently. Given that support from senior management is also a key factor for a successful segmentation strategy, marketing practitioners need to put more effort into explaining and promoting the usefulness of market segmentation to senior management. In particular, the long-term

benefits need to be emphasised. The emphasis on short-term objectives, such as sales and profit, needs to be overcome so that the segmentation analysis can be translated into practice successfully. As for the issues of the extra costs incurred by segmentation and the stability of market segments, these should not be seen as excuses for not implementing a segmentation strategy. These issues were discussed in Chapter 3, and management, particularly, senior management, needs to gain a deeper understanding of the nature and benefits of market segmentation.

(3) and (4) From this survey there is no evidence that demographics affect the usage of a segmentation strategy and the segmentation bases used by a company. The results seem to be inconsistent with some authors (e.g., Cheron and Kleinschmidt, 1985) who argued that larger companies have greater familiarity with segmentation. In fact, it is quite possible that smaller companies will find it is easier to implement a segmentation strategy because of their simpler organisational structure and the existence of less barriers within the companies. On the other hand, larger companies may have the advantage of more competent, professional marketing managers to help them to implement a segmentation strategy. Therefore, it is possible that the failure of smaller companies to implement a segmentation strategy may result from unfamiliarity with the nature and benefits of market segmentation whereas the failure of larger companies to implement a segmentation strategy may result from organisational issues including the use of companies' resources. Regarding geographical location, the current sample is limited by the geographical area covered by the survey and the findings need to be further examined using a wider range of geographical locations.

(5) From this survey there is evidence that the segmentation bases and strategies vary over time. It has been found that brand awareness was useful as a segmentation base in the past but is not considered a useful segmentation base for the present and for the future. This may result from an increase in competition which has resulted in other variables, such as price, service, quality and product range, needing to be given more weight. Another segmentation base whose usefulness varies over time is product range; it was regarded as " much ado about very little" in the past but becomes "a worthy reward" in

the present and in the future. This is because in the present and in the future there is a growing need to cater for the increasing diversity in consumer needs so that a wide range of products is no longer seen as a misuse of resources but as a necessary condition for competition in the textiles industry.

Apart from these changes in which segmentation bases are useful, there is also evidence that more companies will segment in the future. This is consistent with the increasing importance over time of all of the segmentation bases used by the current study. This may also reflect an increasing awareness of segmentation as a strategy.

8.2.2 Alternative views on segmentation

Based on the investigation of alternative views on segmentation (see chapter 3), there are four groups of alternative views on segmentation identified by the current study. A number of findings relating to the four groups of alternative views can be summarised as follows:

(1) Ambiguous cognition in market segmentation: The term "market segmentation" has been defined in a variety of ways. The confusing use of the term is exacerbated by the use of new terminology, such as "product segmentation" and "brand segmentation". Further, it seems that the real problem is not segmentation but targeting and positioning.

(2) Dynamic issues of segmentation studies: The criticisms about the stability of segmentation studies over time are not true. In fact, a number of factors, such as bases used for segmenting markets, consumer mobility, and business competition should be taken into account, when the stability of segments is evaluated.

(3) Stability of grouping techniques: Criticisms of the method of finding market segments should not be taken as criticisms of market segmentation itself. The poor use of cluster analysis does not mean that there are no segments. A number of guidelines for

good cluster analysis have been given by academics and should be used in segmentation studies.

(4) Implementation considerations of segmentation strategy: It is not sensible to give up using a promising marketing strategy, such as segmentation, without conducting a careful cost-benefit analysis.

8.2.3 Simulation study

The findings based on the simulation study can be summarised as follows:

(1) Using tandem analysis can destroy a clear cluster structure. This means that clustering objects using the factors extracted from a factor analysis may not necessarily be appropriate for a given data set. This result is similar to the conclusions from some previous studies (e.g., Sneath, 1980; Arabie and Hubert, 1994; Milligan, 1996). However, tandem analysis does not always lead to an incorrect conclusion. For example, as can be seen in Table 7.12, for scenario 5 using tandem analysis with the number of factors equal to the number of eigenvalues greater than one, tandem analysis correctly leads to the conclusion that there are no clusters in the data. Instead of concluding that tandem analysis is naive (e.g., Milligan, 1996) or outmoded (Arabie and Hubert, 1994), the current study suggests that the need for tandem analysis is dependent on the dimensional variable space in which the clusters are embedded. That is, if the clusters are embedded in a high-dimensional variable space, the original variables should be used for the cluster analysis rather than using the factors extracted using factor analysis. By contrast, if the clusters are embedded in a low dimensional factor space, the use of the factors extracted using factor analysis may be appropriate. In any case careful thought needs to be given to the expected nature of the clusters. It may be appropriate to carry out cluster analysis using firstly the original variables and separately the factors extracted using factor analysis, where there is uncertainty about the expected nature of the clusters.

(2) Including variables that do not contribute to distinguishing between clusters in a cluster analysis can weaken a cluster solution. This means that selecting variables is a crucial procedure before using clustering algorithms (e.g., hierarchical and nonhierarchical). In general, three basic approaches, inductive, deductive and cognitive, can be used for the selection of variables. However, there is little evidence about which approach is best for cluster analysis. Ketchen and Shook (1996) suggested that the approach used for selecting variables should depend on the study's purpose. From a practical perspective, this suggestion is unhelpful as it is too vague and flexible.

It has been suggested that including even one or two variables which do not contribute to distinguishing between clusters is likely to distort a cluster solution (e.g. Punj and Stewart, 1983). In the current study, cluster analysis seemed to work well when only six of the eighteen variables in the cluster analysis contributed to the cluster structure. This suggests that Punj and Stewart (1983) may be worrying too much about the effect of variables which do not contribute to distinguishing between clusters. Nevertheless, this does not mean that practitioners can choose whatever variables they want, noise variables (variables which do not contribute to distinguishing between clusters) do affect a cluster solution.

One simple guideline for marketing managers for selecting variables is the principle suggested by Churchill (1979). The principle is that the variables used should be clearly focused on the current problem and hence that there should be a clear delineation between what is included and what is excluded.

(3) The guidelines suggested by Stewart (1981) are sensible. In particular, if the value of KMO is less than 0.5 then factor analysis should not be considered. As for determining the number of factors, this study suggests that good practice should consider both the criteria of eigenvalues greater than one and a distinct break in the scree plot. Certainly, the correlation matrix should be studied before factor analysis is

carried out (for example by using the KMO measure of sampling adequacy) to ensure that factor analysis is appropriate for the data set.

(4) Two main disadvantages of SPSS for running cluster analysis were found by the current study. Firstly, too many default values in the SPSS software package need to be changed to follow best practice. As mentioned in Chapter 3, cluster analysis requires substantial input from users. The main decisions that need to be made by users of SPSS include selecting a clustering approach (K-means, hierarchical etc.), selecting a clustering method (e.g., nearest neighbour, furthest neighbour or Ward's method), and selecting a distance measure (e.g., squared Euclidean distance, Euclidean distance, or Pearson correlation). These subjective choices have been criticised as arbitrary and leading to a lack of stability (e.g. Hoek, Gendall and Esslemont, 1993). Given the literature on best practice for cluster analysis, including Ward's hierarchical clustering method being endorsed as more accurate than others in recovering clusters (e.g., Esslement and Ward, 1989; Doyle and Saunders, 1985), SPSS should be revised to include best practice as the default.

Secondly, the procedure for running K-means clustering properly is too complicated for many users to follow. K-means clustering using centroids obtained using Ward's method is suggested as an alternative method for validating Ward's hierarchierical clustering (Ketchen and Shook, 1996). However, it is difficult to use the centroids obtained using Ward's method to start K-means clustering in SPSS. In order to use K-means clustering following best practice the following steps need to be carried out:

(i) Ward's hierarchierical clustering needs to be run in order to decide on the number of clusters and to calculate the centroids for those clusters.

(ii) K-means clustering needs to be run using the number of clusters identified from Ward's hierarchierical clustering and saving the cluster centroids from K-means clustering.

(iii) Users need to open the file of cluster means saved from K-means clustering and they need to change those means by typing the cluster means calculated using Ward's hierarchierical clustering. This file of means is then saved and provides a file with the correct format for use as initial centroids for K-means clustering.

(iv) K-means clustering needs to be run again using the new means (i.e. the initial centroids are read from the new file).

(v) The results of the two clustering methods should be compared using the Chi-squared test (crosstabs).

Obviously, the procedure described above is not easy to implement and the SPSS software needs developing so that it is more user friendly. In particular the SPSS software needs developing so that following best practice is easy.

8.2.4 Follow-up interviews

In order to validate the findings from the postal survey, a series of questions relating to segmentation practice were developed and used in the follow-up interviews. In total, five questions were used in the follow-up interviews:

1. Do you believe that big companies are more likely to implement a segmentation strategy? (The interviewees were also asked to explain their answer).
2. Do you think that textiles companies producing different products (for example, man-made fibres & fabrics manufacturers and carpets manufacturers) should use different bases to segment their markets?
3. Do you think that a company should adjust its segmentation bases and strategies over time?
4. Do you believe that less than 40% of UK textiles companies currently implement a market segmentation strategy?
5. Does your company currently implement a segmentation strategy?

A total of ten marketing managers took part in the follow-up interviews. Six out of the ten interviewees were from non-segmenting companies based on the results obtained from analysing their postal questionnaire. The other four interviewees were from segmenting companies.

The first question refers to the possible relationship between company size and segmentation practice. Not surprisingly, the opinions from the interviewees varied. Five out of the ten interviewees did not believe that there was a positive relationship between company size and segmentation practice. These interviewees believed that big companies are less likely to implement a segmentation strategy, because the companies are likely to prefer mass production with lower priced products to maintain and increase their market shares. By contrast, the other five interviewees believed that there was a positive relationship between company size and segmentation practice. These interviewees believed that larger companies would be more confident and able to adopt a segmentation strategy.

The second question refers to the possible relationship between product groups (SIC sector) and segmentation practice. Again, the opinions from the interviewees varied. Four out of the ten interviewees did not think that segmentation practice would be affected by the company's SIC sector, because market segmentation should depend on the nature of the customer rather than on the nature of the products. By contrast, three interviewees thought that there would be a relationship between SIC sector and segmentation practice. The other three interviewees were not sure about this relationship.

The third question refers to the stability of segmentation strategy. Nine out of the ten interviewees agreed that companies should adjust their segmentation bases and strategies over time and only one company was not sure about this. For example, one interviewee said "segmenting customers on order size was useful in the past but we cannot survive just depending on them now". As for the frequency with which a segmentation strategy should be reviewed, it was suggested that the frequency depends on the nature of your products. The bases and strategies for some fashion items may need to be changed every six months while

the bases and strategies for products with more complex manufacturing processes, such as man-made fibres, may change much less frequently. It was suggested that targeting and positioning different customers is not always a matter of buying more advanced machinery, but may simply involve tightening up workplace practices.

The fourth question refers to the extent to which the UK textiles companies have implemented a segmentation strategy. Eight out of the ten interviewees believed that less than 40% of textiles companies had implemented a market segmentation strategy. This result has already been discussed in section 8.2.1.

The last question was designed to investigate the consistency between what the companies said and what the companies did. In terms of what the companies said, six out of the ten interviewees gave answers which were consistent with their company's results obtained from analysing their postal questionnaire. The other four interviewees described their companies as segmenting companies in the follow-up interviews, whereas they were classified as non-segmenting companies based on their postal questionnaire. This lack of consistency again shows that there are a number of confusing segmentation issues in the real world which results in ambiguous cognition of market segmentation.

In summary, the answers from the ten follow-up interviews support the results from analysing the data collected in the postal survey.

8.3 Contributions of this study

This study makes several contributions to the literature on industrial market segmentation and the literature on the textiles industry. This is probably the first empirical research performed on the UK textiles industry studying the segmentation strategies used. There have been several publications studying the issues of industrial market segmentation and there have been

other publications studying the problems facing textiles companies. However, no empirical study has studied segmentation issues in the textiles industry.

A second contribution to the research literature is the empirical study of the extent to which industrial companies implement segmentation strategies. This is probably the first empirical research on this issue to be conducted in an industrial market context.

Third, this research has discovered a number of critical confusing issues which hinder marketing managers from implementing a segmentation strategy. This research has also identified the important segmentation bases for the textiles industry and classified a number of confusing issues in industrial market segmentation. Hence this research has also provided future researchers with a practical perspective on effective implementation of market segmentation and provides a framework for future study of industrial market segmentation.

Finally, this research provides industrial marketing practitioners with general guidelines for implementing a segmentation strategy. By identifying the important bases and clarifying the confusing issues for segmenting a market, industrial marketers are able to plan their course of action more effectively. This research also shows that industrial marketers should consider the dynamic changes of useful segmentation bases before making any strategic decisions concerning them.

8.4 Limitations of this study

This study has three limitations. The first limitation is related to the nationality of the sample questioned. The sample covered only the UK textiles industry. This is in part due to the difficulty of obtaining data about segmentation issues around the world. Thus, the conclusions of this research may not generalise to the textiles industry globally.

Secondly, the findings of this study may apply only to the textiles industry. Whether the results concerning the confusing issues in segmenting industrial markets can be extended to other industries is a matter of speculation.

Finally, there may be other factors (barriers and issues) which influence the extent to which industrial companies implement a segmentation strategy and which have not been included in the present research. More research is needed to identify critical factors (barriers and issues) which were not included in this study, if there are any.

8.5 Recommendations for future research

This research investigated a number of confusing issues, including the possible bases for segmenting the UK textiles market, the extent to which textiles companies implement a segmentation strategy, and the critical factors (barriers and issues) affecting successful implementation of a segmentation strategy. A number of future research areas can be derived from this research.

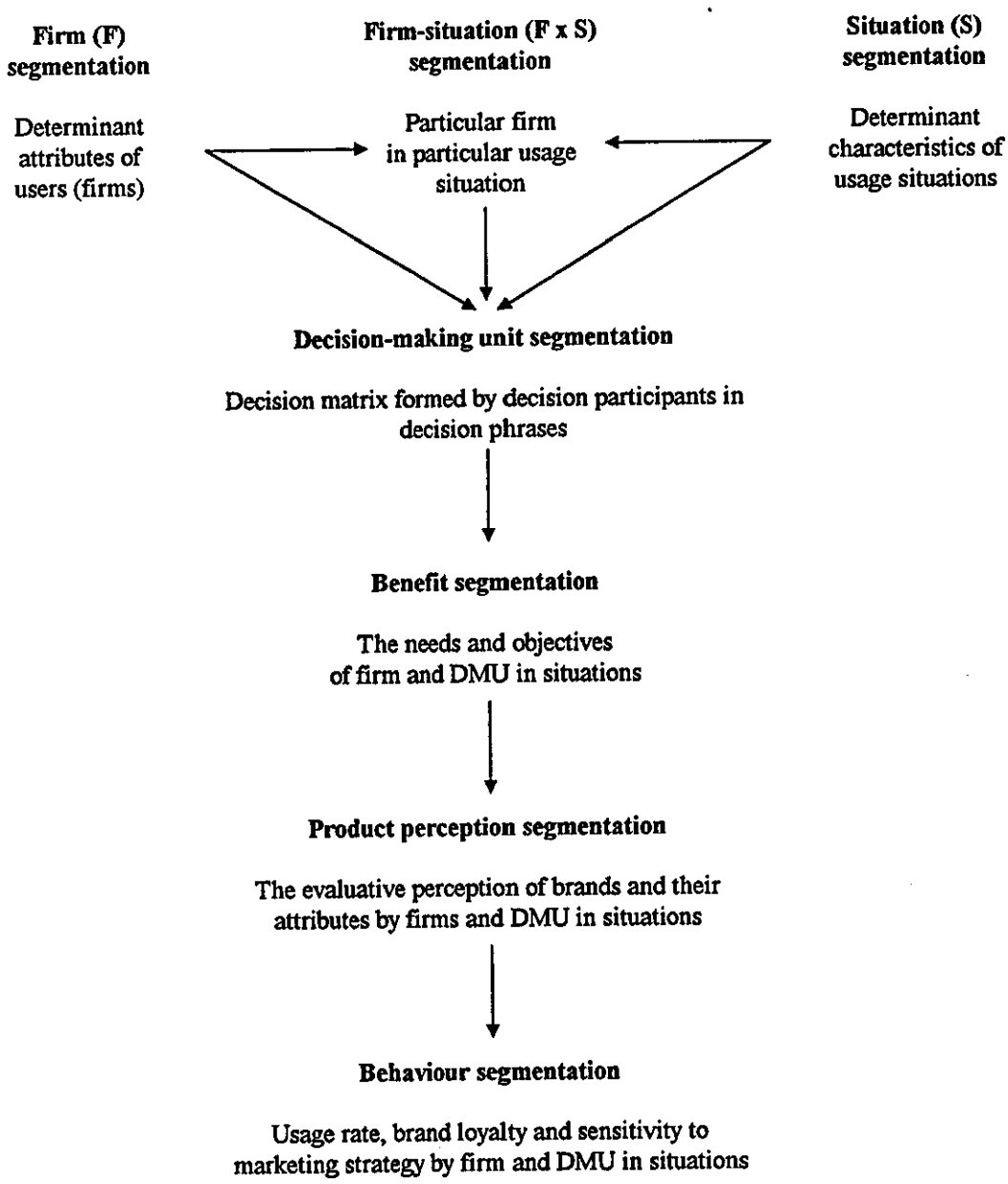
The first promising research area is to study the links between business performance and segmentation strategy. In this study it has been found that there was no difference between the two groups of companies (segmenting and non-segmenting) in terms of annual turnover. The links between other operating indexes, such as ROI (return of investment), rate of net profit, and segmentation strategies need to be researched.

The second promising research area is further simulation studies for clarifying practical issues concerning factor analysis and cluster analysis. The simulation study reported in chapter 7 could be expanded, for example to consider a wider range of factor structures. For example, the range of factor structures could be expanded to include the case where all of the variables belong to one of a small number of factors. Also the effect of different values for the standard deviation of the latent variables could be considered. In addition the effect of noise variables on cluster solutions could be explored in more detail. In the current study cluster analysis

seemed to work well when only six of the eighteen variables contributed to the cluster structure. This suggests that Punj and Stewart (1983) may be worrying too much about the effect of variables which do not contribute to distinguishing between clusters.

The third promising research area is the integration of bases for segmenting industrial markets. As stated in chapter 4, Dickson (1982) proposed a framework which linked personal traits and usage situations with benefits sought for integrating segmentation bases in a consumer market. Realising the dynamic nature of segmentation bases, this study presents a framework (Figure 8.1) for segmenting industrial markets which was constructed on the basis of the literature review and using the findings of the current study together with the author's experience working in industrial purchasing.

Figure 8.1 A possible framework (Firm-situation-DMU benefit situation) for segmenting industrial markets



Firm segmentation refers to segmenting an industrial market according to the firms' characteristics, such as company size, geographic location, and SIC code. As mentioned in chapter 2, firms' characteristics are the segmentation bases used most often in practice but they do not necessarily provide an adequate basis for segmenting an industrial market. Nevertheless, this does not mean that firm segmentation is not useful. Once firms have been classified into segments on the basis of other bases, such as the usage situations they are

facing, the benefits they are seeking, and the like, it may be sensible to segment based on firms' characteristics. In this way, a reasonably deep understanding of the firms who make up each segment can be obtained.

Situation segmentation refers to segmenting an industrial market according to the firms' buying situations. Firm-situation segmentation means that segmenting an industrial market is based on linking the firms characteristics and the firms' buying situations. Using firm-situation segmentation groups of specific firms in particular usage situations can be identified.

Decision-making unit (DMU) segmentation refers to segmenting industrial firms based on functional involvement in the phases of the purchasing decision process. The types of DMU may be linked to the firm's characteristics and the situations faced by the firm, as well as their combinations (i.e. firm-situation). In terms of firm's characteristics, for example, the DMU of a small company may be very simple with the majority of purchasing decisions being made by the owners or partners themselves. By contrast, a large company's DMU may be much more complex with purchasing decisions being made by a variety of participants, including both company personnel and external personnel. In terms of situations faced by the firm, the importance of purchasing decisions will directly influence the size and composition of the DMU, as well as the behaviour of the DMU (Cardozo, 1980, p. 272). Indeed, it is normal for decisions involving large sums of money to pass through more organisational levels for funding approval than decisions involving only small sums of money.

The concept of benefit segmentation was discussed in chapter 2. What needs to be stressed is that the benefits sought (needs) are formed by linking the objectives of the customer (firm) with the needs of the DMU. Product perception segmentation refers to segmenting an industrial market according to the evaluative perception of a brand and the brand's attributes recognised by the DMU of the customer (firm) in different situations. Lastly, behaviour segmentation refers to segmenting an industrial market according to the buying behaviour of the DMU of a specific customer (firm) in a specific situation. For example, the buying

behaviour may depend on the usage rate (light or heavy user) and the degree of loyalty to the supplier and these can be used as bases for segmenting an industrial market at this stage.

In summary, Dickson's model can be applied to industrial market segmentation by adding the key component DMU into the model. This gives a possible conceptual framework, called firm-situation-DMU benefit segmentation (see Figure 8.1), for segmenting industrial markets. Important questions about this model include:

(1) Is adding the DMU into the model necessary?

(2) Are there other components that need adding into (or indeed removing from) the model or is adding the DMU into the model sufficient?

(3) How does the model based on Dickson's model compare in practice with the model used in the current study? In particular, is the extra complexity helpful in practice?

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Appendix 5.1

Paper Presented in EMAC

Exploring Confusing Issues in Industrial Market Segmentation

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Abstract

The facts that markets are heterogeneous and customers are different give the reason for segmenting markets. Industrial marketing is different from consumer marketing. It requires understanding both the natures of demand of its customers and that of its customer's customers all across the marketing channel. This paper reviews the literature as regards segmentation issues of industrial marketing and reveals that some crucial but confusing problems remain with practitioners in the real-world. Market segmentation can either be a profitable strategy for industrial marketers by using an "ideal" model or it can be of little help to marketers. Both have been illustrated in some published articles. A methodology is proposed to clarify how industrial marketers implement their segmentation strategy and hence to provide some constructive suggestions for bridging the gap between the academics and practitioners.

Keywords: Industrial markets; segmentation strategy; segmenting bases and approaches.

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1. Background to Research

Diversity or heterogeneity is the rule rather than an exception on both the supply and demand sides of real-world markets, because variation exists in the products of an industry, and not all consumers have the same desire or the same ability to shop rationally. The facts that markets are heterogeneous and customers are different give the reason for segmenting markets. Since the term "market segmentation" was first coined and defined by Wendell Smith (1956), increasing attention has been given to this concept. Nevertheless, most of the research on segmentation has focused on consumer markets rather than on industrial markets in terms of the number of articles published.

Compared with consumer marketing, the nature of the product and the nature of the consumer in industrial marketing is very different. According to Webster (1991), industrial goods can be classified into construction, heavy equipment, light equipment, components and subassemblies, raw materials, processed materials, maintenance, repair, and operating supplies, and services. Industrial customers consist of manufacturing firms, processing firms, and distributor. Industrial customers' purchases reflect their expectations about future demands for their goods and services. This kind of derived demand is an important feature of industrial marketing. To obtain a feasible industrial marketing strategy, a marketer needs to understand both the natures of demand of its customers and that of its customer's customers.

Concerning the concept of industrial market segmentation, Frederick (1934) first noted:

> The first step in analysing an industrial market is to divide the whole market into its component parts. Any particular group of prospective or present users of a product to whom a concentrated advertising and sales appeal may be made should be considered as a component market. (Cited from Plank, 1985, p. 79)

Yankelovich (1964, p. 149) used three markets - adding machines, computers, and light trucks - as examples to explain the usefulness of segmentation in industrial markets. Wind and Cardozo (1974, p. 159) gave two examples - spray painting and finishing equipment, and high quality metal components - to illustrate that market segmentation can indeed be a profitable strategy for industrial marketers by using an "ideal" segmentation model (i.e.,

two-stage model). They stressed that the company officials attributed the increase of sales in this case wholly to the new market segmentation. Johnson and Flodhammer (1980, p. 203) described three conditions for examining the market segmentation that is appropriate for industrial firms. They are (1) products are heterogeneous, (2) products are applicable to a variety of industries, and (3) customers are heterogeneous. Doyle and Saunders (1985) developed a segmentation and positioning marketing strategy for a basic raw material producer switching into a speciality chemicals' market. They gave the evidence in terms of market share and total profit to show that the company's strategy had a significant impact on the market. From these examples, there seems to be no doubt that segmentation is necessary as a market strategy. However, Young, Ott, and Feigin (1978, p. 411) argued that markets should not be segmented at all in the case of (1) product categories with low sales volume, (2) products for which sales are skewed to a small group of heavy users, and (3) brands dominating a market. Mahajan and Jain (1978, p. 340), also gave an example to illustrate that it is not appropriate to segment the market in case of limited availability of resources. Garda (1981, p. 242) stressed that segmentation strategy in industrial markets is subject to three constraints: each segment should be large enough, each segment should be identifiable by measurable characteristics and each segment should be characterised by a distinctive set of customers buying factors. In addition, Cheron and Kleinschmidt (1985, p. 109) suggest that costs should also be taken into account before beginning to implement market segmentation. In some cases, the direct costs associated with segmentation are too high. This is particularly the case with product policy decision; it is possible that the benefit received from segmentation will be smaller than the cost of implementing it. Therefore, the first crucial but confusing problem in the real-world is:

> Whether or not a market needs to be segmented, and under what conditions the market should do or should not do.

In practice, when an industrial marketer intends to segment his or her markets, choosing appropriate segmenting bases and approaches is also a controversial issue. In many cases, the same industrial products have multiple applications, and several different products might be used in the same application. In other words, the industrial market is very heterogeneous and complex. Further, industrial firms often have complex purchasing decision processes. Also, most segmentation studies have been conducted for consumer

markets rather than industrial goods. Wind and Cardozo (1974) conducted an exploratory survey examining segmentation practises in industry. Their survey reveals that industrial market segmentation is used mainly after the fact, to explain why a marketing program did or did not work instead of developing effective marketing programs. They also summarise that industrial marketers are more prone to choosing "second choice" segmentation bases - such as geographic location of potential customers and size of purchase - than to choosing the more useful bases - such as some of the characteristics of the decision-making units or buying centres - because the former is easier to analyse. Therefore, the authors suggest a two-step approach for segmentation. The first step involves construction of macrosegments by using industry (SIC codes), geographic location, or other observable characteristics; which are easy to obtain from secondary sources. Once macrosegments are developed, they are further divided (i.e., microsegmentation) on the basis of the characteristics of decision-making units. For developing a managerially meaningful microsegmentation strategy, Choffray and Lilien (1978) proposed a four-step process for measuring decision-making units. Shapiro and Bonoma (1984) also presented a "nested" approach to generalise Wind and Cardozo's approach to many stages. Moving from the outer nest toward the inner, these segmentation bases are: demographics, operating variables, customer purchasing approaches, situational factors, and personal characteristics of the buyers. To expand better overall market strategies at a general level, Cheron and Kleinschmidt (1985) proposed a conceptual framework to combine segmentation both in consumer markets and in industrial markets through a microsegmentation variable common to them. Combining with these step approaches and segmenting bases, it is obvious that the priority of choosing bases is from easier to complex. On the other hand, Moriarty and Reibstein (1986) argue that a logical alternative is to begin the segmentation by grouping consumers or organisations based directly on measures of benefits sought. These segmenting bases and approaches are by no means exhaustive. Furthermore, because customers' needs and competitors' activities are constantly changing, the choice of appropriate bases and approaches for industrial marketers is not an easy job. As Wind (1978) comments, probably there is not one best segmentation basis for all possible situations. In particular, the bases and approaches for segmenting an industrial market can range from the fairly simple to the extremely complex. It seems to be that industrial market segmentation is not purely scientific. Therefore,

empirical research which attempts to identify how industrial marketers implement their schemes for different situations should be also worthwhile.

According to Webster (1978, p. 24), industrial marketing, due to its complexity, needs more modern management science tools. Industrial managers appear to be much more capable of appreciating fairly advanced statistical and computer based techniques than their colleagues in consumer goods business (Doyle and Saunders, 1985, p.32). As a general rule, by employing powerful modern computers, a number of statistical techniques, such as factor analysis, cluster analysis, discriminant analysis, conjoint analysis should easily be used. With regard to conjoint analysis, Wittink, Vriens and Burhenne (1994, p. 47) have recently reviewed its commercial use; they stressed that much of the recent growth in the use of conjoint analysis may be attributable to the availability of software. However, very few articles have focused on the practical applications of these statistical techniques for segmenting industrial markets. One successful application was reported by Doyle and Saunders (1985), they emphasised the application of multivariate statistical procedures, including factor analysis and cluster techniques. Factor analysis was used to determine if the customers' choice criteria could be reduced into a few dimensions. Using these summarised factors, clustering methods were then employed to determine whether the complex product applications could be group into segments. These segments were then evaluated using statistical validation procedures. If such approaches are to be used, then specific computer skills are needed by industrial marketers. On the other hand, these techniques in some cases are used in a wrong way or misunderstood, such as the misapplication of factor analysis (Steward, 1981). Perhaps this is because either practitioners are afraid of complex statistical techniques or academicians overestimate the ability of practitioners. Therefore, it is also arguable whether or not the managers in industrial companies have sufficient technical background for using these statistical techniques.

As stated above, some confusing practical issues are often faced by industrial companies attempting to apply the academic "market segmentation" concept in practice. Referring to work by McKinsey and Company (international management consultants), Webster (1991) concluded that industrial marketers in general have difficulty developing and implementing niche marketing strategies. Sales volume and short-term profit pressures cause them to

resist a critical appraisal of marketing approaches and not to develop long term strategic aims. Webster (1991) also commented that they place too much emphasis on the segmentation task itself rather than on fully considered strategies for implementing segmentation. In addition, probably due to not having a thorough understanding of how to resegment markets, many companies end up with too few segments and therefore inadequate opportunities to achieve real competitive advantage, or too many segments and therefore confusion and misdirection. As McDonald (1991) observed, the contextual problems surrounding the process of marketing planning are so complex and so little understood, that effective marketing planning rarely happens. Therefore, to make clear if industrial companies' success in their markets can be attributed to their employing of segmentation strategy and how they tackle these confusing issues should be both an interesting and helpful task.

2. Objectives

The above mentioned issues which exist in the real world probably hinder practitioners from implementing an optimum segmentation strategy; that is why the study will attempt to provide some possible answers for them. The objectives of this research can be described as follows:

(1). To examine the need and conditions for segmentation in industrial markets.

(2). To identify a group of variables and approaches which are currently adopted most often by industrial marketers.

(3). To recognise the statistics and computer backgrounds of industrial marketers so that it can be used as a guide for bridging the gap between academic study and practical application.

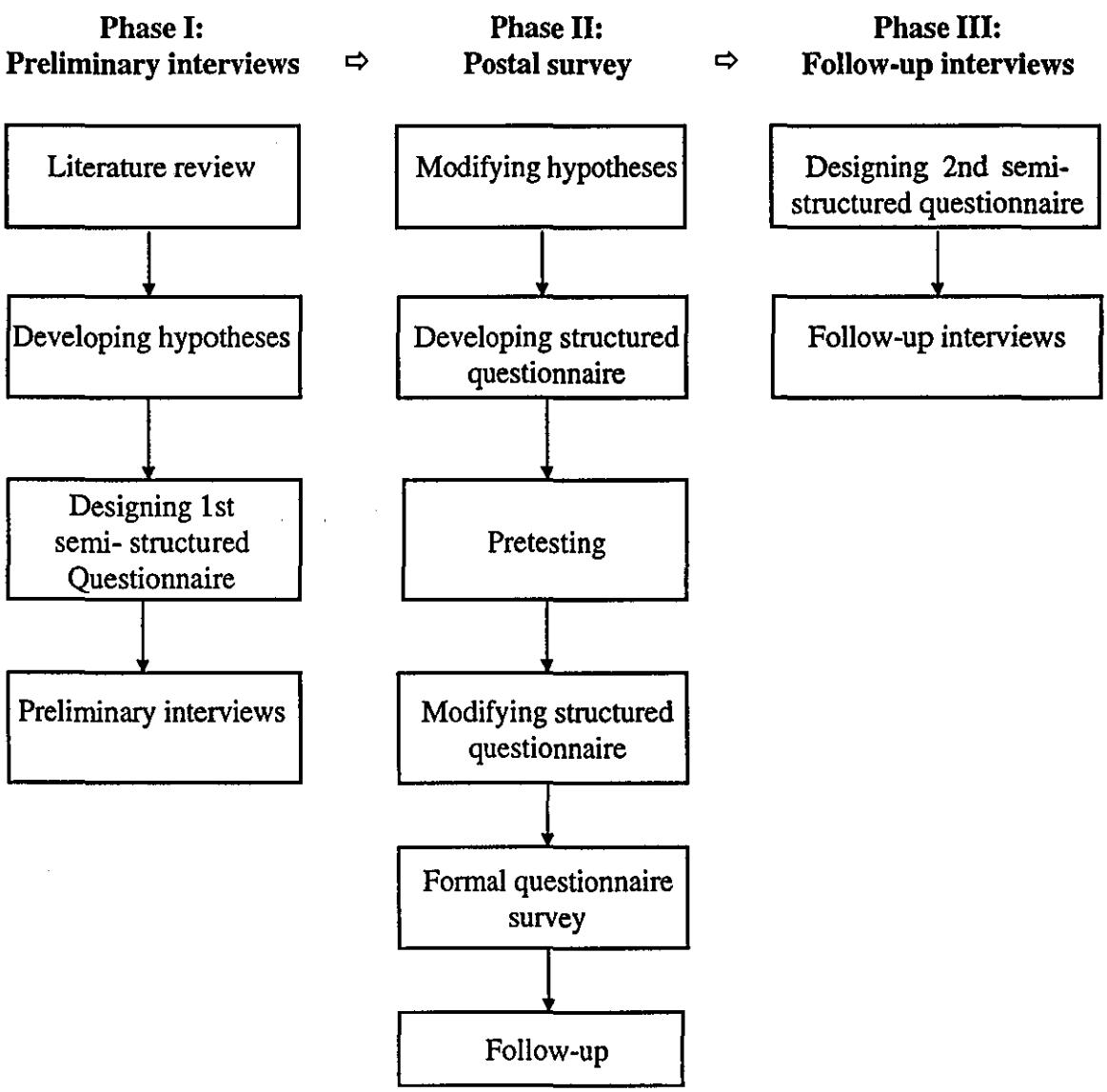
(4). To generate recommendations for tackling confusing issues in industrial market segmentation.

3. Research Design

(1) **Method:**

Research methodologies used by the marketing researchers in the UK can be classified into three groups: qualitative, semi-structured, and structured (Saunders, 1994 a, p. 360). The qualitative approach using case studies or in-depth personal interviews is particularly useful for gaining understanding and will be used in the early stages of hypothesis development. For getting sufficiently large samples for valid multivariate analysis, a survey using a structured mail questionnaire is the most conventional marketing research method. This study will follow a three-phase research methodology (Figure 1) to minimise the limitations of the different methodologies.

Figure 1 The three-phase research methodology



Phase I: **Preliminary interviews.** From a recent study of interviewing in industrial marketing research, Jobber and Bleasdale (1987) concluded that the in-depth interview was extensively used to gather qualitative information, and telephone and face-to-face interviews were widely used to gather quantitative data. Following this result, a number of in-depth interviews will be held with chief marketing executives. These interviews will be semi-structured and exploratory in nature, covering questions like attitudes towards segmentation, and implementation issues. The interviews will be helpful for developing the research hypotheses which were originally constructed during the literature review.

Phase II: **Postal survey.** The response rate to postal surveys fell from a mean response of 37% (obtained by Pearce in 1966) to 24% surveyed in 1985 by Bleasdale. Although a variety of techniques for stimulating response rates have been proposed by academics (e.g., Jobber and Bleasdale, 1987; Jobber and Saunders, 1993; Wittink et al., 1994), the fact of low response rates is still a problem for researchers. The study in this phase attempts to develop a comprehensive approach. That is, the sampling frame chosen will be the industrial companies who exhibit their products at the NEC (National Exhibition Centre). The research instrument used will be the structured questionnaire which will have been developed from the literature review and modified in light of the findings from phase I above. For assuring the quality of the study, this questionnaire will then be pilot-tested with a number of respondents from the sampling frame. With respect to the survey method, the questionnaire will be used in the face to face interviews at the NEC. For those respondents who are too busy to response immediately, a stamped and addressed envelope will be given to them. Before leaving the specific stands, showing a sincere attitude, getting their phone number, and giving a commitment to mail a copy of the survey result to them should help obtain their co-operation. On the basis of the pilot survey, the valuable feedback will be used to modify the questionnaire. The modified questionnaire will then be used as the instrument for conducting the formal survey in the same way at the NEC. It is recognised that telephone follow-up might be necessary if the response rate is not satisfactory.

Phase III: **Followed-up interviews.** Subsequent to the comprehensive survey, a further in-depth interview may be used so as to add a further qualitative dimension to the findings. Results from the qualitative and quantitative research will be integrated to present a more complete picture.

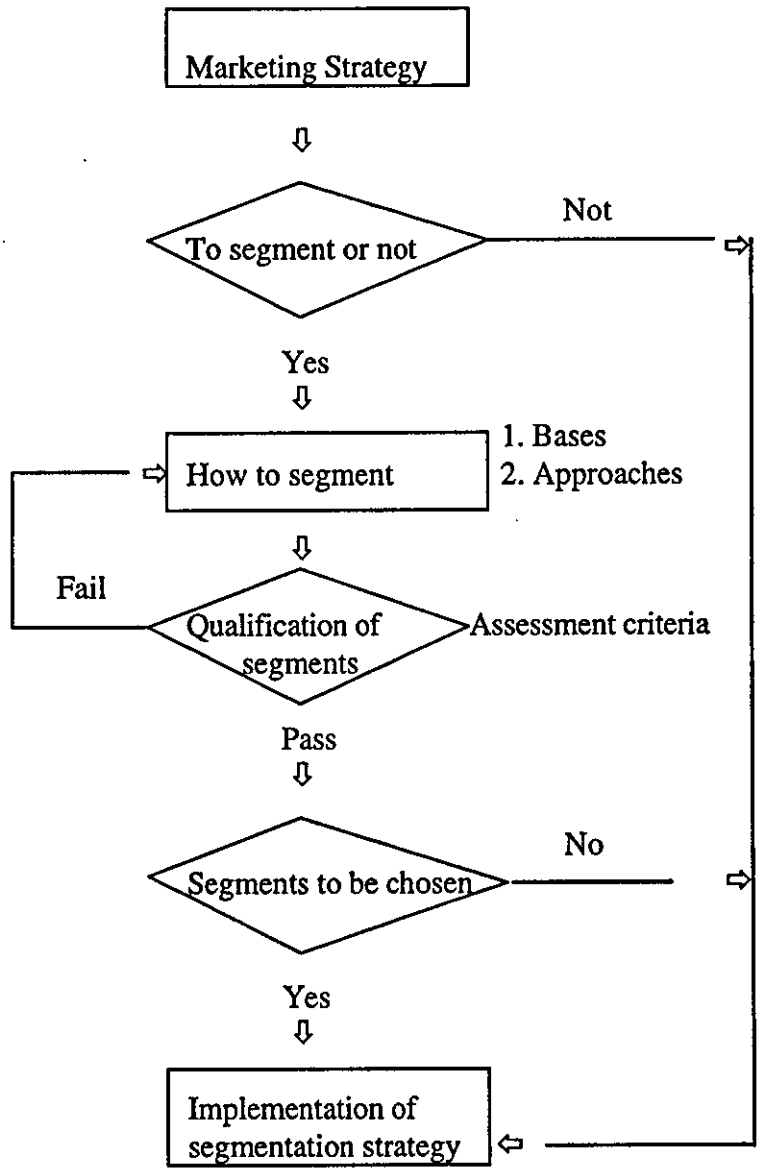
(2) **Proposed analysis:**

In order to generate a clear result, factor analysis (Crawford and Lomas, 1980; Hackett and Foxall, 1994) should be helpful for extracting meaningful information from the data collected; in addition, for the purpose of identifying groups, cluster analysis (Punj and Stewart, 1983; Saunders, 1980 and 1994 b) can be used. Other basic statistical methods such as testing hypotheses will also be needed in processing the data. Finally, the validity and reliability of the measurement instruments will also be examined (Green, Tull and Albaum, 1988) to ensure the quality of the research.

4. Research framework and discussion

Based on the five basic managerial decisions concerning industrial marketing segmentation proposed by Wind and Thomas (1981), Flodhammar (1988, p 6) presented a nine step segmentation approach including both quantitative and qualitative data analysis procedures for modelling the implementation of a segmentation strategy. On the basis of their suggestions, this study will follow the following conceptual framework (Figure 2) to clarify some confusing issues mentioned above.

Figure 2 The conceptual framework for exploring confusing issues in industrial market segmentation



At the heart of every marketing strategy is market segmentation (Webster, 1991, p. 96). The first step of segmentation strategy is to evaluate whether or not the market needs to be segmented (Wind and Thomas, 1981). As mentioned above, different theories concerning the segmentation decision have been proposed by academics. Information from the preliminary interviews and the structured questionnaires survey will answer the question of to segment or not. Once it has been decided that a market need to be

segmented, the next problem is to choose the segmentation bases and to identify the segments. For qualifying the appropriateness of segments, Kotler (1991) proposed four criteria as general guidelines, namely measurability, substantiality, accessibility, and actionability. Johnson and Flodhammer (1980) also presented four criteria (measurable, available, predictive, and usage) for evaluating the attractiveness of industrial segments. If the segments do not meet these criteria, then the previous step needs repeating. The second question, how to segment, can be solved through these procedures of choosing and qualifying. Further, the ability of practitioners to tackle the complicated industrial marketing problems, and how advanced statistical and computer based techniques are being used in the real-world will also be clarified. A recent study, Mitchell (1993), concluded that the use of multivariate statistical techniques is invaluable for identifying psychographic segments, and that the most useful techniques are factor, cluster and discriminant analysis. Their use, however, is fraught with difficulties. In addition, Jenkins and McDonald (1994) proposed a market segmentation matrix to discriminant between segmentation approaches in organisations. By acknowledging the inherently internal realities of how organisations segment their markets it is helpful for researchers to close the gap between theory and practice in this fundamental area of marketing. From the empirical research, these confusing issues will be made clearer. Having identified the segment(s), the organisation will then be able to develop marketing programmes (product pricing, distribution channels, service policies, and so on) tailored to each.

5. References

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Appendix 5.2

The Questionnaire for Interviews with Experts

Loughborough University Business School
1996 Segmentation Survey in the Textiles Industry

The aim of this questionnaire is to explore issues in *market segmentation* and to provide an applicable model for industrial marketers. Your contribution to this survey would be very much appreciated. All replies will be treated in the strictest confidence.

Section 1: General Information - about yourself

Q1. Your name:

_____

Q2. Your job title:

_____

Q3. How long have you been working in the present company?

_____ years.

Section 2: General Information - about your organisation

Q4. What is the main business activity of your organisation?	1☐ *Spinning* 2☐ *Dyeing* 3☐ *Weaving* 4☐ *Knitting* 5☐ *Finishing* 6☐ *Making-up* 7☐ *Other (please specify_____)*
Q5. Approximately how many employees are there in your organisation?	1☐ *1- 49* 2☐ *50- 99* 3☐ *100- 249* 4☐ *250- 499* 5☐ *500-999* 6☐ *1000 or more*
Q6. Approximately how many customers are there in your organisation?	1☐ *1- 49* 2☐ *50- 99* 3☐ *100- 249* 4☐ *250- 499* 5☐ *500-999* 6☐ *1000 or more*
Q7. Is your organisation:	1☐ *Mainly British owned* 2☐ *Jointly British and foreign owned* 3☐ *Mainly Foreign owned (please specify owner's country)* _____
Q8. Approximately what is your organisation's annual turnover?	1☐ *Under £1 million* 2☐ *£1 - £9 million* 3☐ *£10 - £49 million* 4☐ *£50 - £99 million* 5☐ *£100 - £200 million* 6☐ *over £200 million*

Section 3. The Segmentation Bases Used by the Textiles Firms

I am particularly interested in the bases that your company used to segmenting your markets. What are the bases that your company divided the market into two or more groups of customers, each group containing customers with similar needs.

Q9. About Product Attributes (Please specify)

_____

_____

Q10. About Company's Characteristics (Please specify)

_____

_____

Q11. About Buyer's Specifics (Please specify)

_____

_____

Section 4. The Implementation of Market Segmentation in the Textiles Industry

Q12. Your company has selected one or more of these groups as your company's target markets.

1☐ *Yes* 2☐ *No* 3☐ *Don't know*

Q13. Your company has developed different products/services and related marketing activities to meet the needs of these selected markets.

1☐ *Yes* 2☐ *No* 3☐ *Don't know*

Q14. What sort of barriers prevent your company from implementing the strategy of market segmentation?

_____

_____

Section 5. Suggestions about this study

I also very keen to collect opinions from you about this study. What are the suggestions that you feel the study should take into consideration?

Q15. Methodology (Please specify) _____

Q16. Others (Please specify) _____

Section 6. Many thanks for your co-operation and help

Appendix 5.3

Formal Questionnaire for Postal Survey

Loughborough University Business School
1996 Segmentation Survey in the Textiles Industry

The aim of this questionnaire is to explore issues in ***market segmentation*** and to provide an applicable model for industrial marketers. Your contribution to this survey would be very much appreciated. All replies will be treated in the strictest confidence. Please answer each question by putting a (✓) in the appropriate box (❑).

The definition in the box below may assist you in answering the questions.

Segmentation	refers to the process of: ***dividing*** a market into two or more groups of customers, each group containing customers with similar needs; ***selecting*** one or more of these groups as a company's target market; and then ***developing*** the company's products/services and related marketing activities to meet the needs of these selected markets.

Section 1: General Information - about your company (*Business Unit*)

Q1- Q5	End of **1989**	End of **1995**	Beginning of **2000**
What are the main products of your company? (please tick as appropriate)	1❑ *Man-made fibres & fabrics* 2❑ *Woollen yarns & fabrics* 3❑ *Cotton yarns & fabrics* 4❑ *Industrial fabrics* 5❑ *Carpets & rugs* 6❑ *Knitted fabrics, goods & hosiery* 7❑ *Dyeing/finishing* 8❑ *Others (please specify)* _____	1❑ *Man-made fibres & fabrics* 2❑ *Woollen yarns & fabrics* 3❑ *Cotton yarns & fabrics* 4❑ *Industrial fabrics* 5❑ *Carpets & rugs* 6❑ *Knitted fabrics, goods & hosiery* 7❑ *Dyeing/finishing* 8❑ *Others (please specify)* _____	1❑ *Man-made fibres & fabrics* 2❑ *Woollen yarns & fabrics* 3❑ *Cotton yarns & fabrics* 4❑ *Industrial fabrics* 5❑ *Carpets & rugs* 6❑ *Knitted fabrics, goods & hosiery* 7❑ *Dyeing/finishing* 8❑ *Others (please specify)* _____
How many employees?	1❑ *1- 49* 2❑ *50- 249* 3❑*250 or more*	1❑ *1- 49* 2❑ *50- 249* 3❑*250 or more*	1❑ *1- 49* 2❑ *50- 249* 3❑*250 or more*
How many customers?	1❑ *1- 49* 2❑ *50- 249* 3❑*250 or more*	1❑ *1- 49* 2❑ *50- 249* 3❑*250 or more*	1❑ *1- 49* 2❑ *50- 249* 3❑*250 or more*
Where is your main production base?	1❑ *England* 2❑ *Wales* 3❑ *Scotland* 4❑ *Northern Ireland*	1❑ *England* 2❑ *Wales* 3❑ *Scotland* 4❑ *Northern Ireland*	1❑ *England* 2❑ *Wales* 3❑ *Scotland* 4❑ *Northern Ireland*
What is the annual turnover?	1❑ *Under £3 million* 2❑ *£3 - £10 million* 3❑*over £10 million*	1❑ *Under £3 million* 2❑ *£3 - £10 million* 3❑*over £10 million*	1❑ *Under £3 million* 2❑ *£3 - £10 million* 3❑*over £10 million*

Section 2. The Segmentation of the Textiles Market before 1990

❶ Your products' attributes

Please rate the **importance** of the following attributes which might influence your customers' buying behaviour **before 1990**.

Also, please indicate the **competitive position** for each attribute of your products in the industry **before 1990**.

Q6a-g	Not at all important					Very important	Very weak					Very strong
Product quality	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Price level	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Brand awareness	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Delivery time	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Service level	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Product aesthetics (style, colours, material, etc.)	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Stability of product quality	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐

❷ Your company's characteristics

Please rate the **importance** of the following characteristics which might influence your customers' buying behaviour **before 1990**.

Also, please indicate the **competitive position** for each attribute of your products in the industry **before 1990**.

Q7a-g	Not at all important					Very important	Very weak					Very strong
A wide range of products	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Financial stability	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Salesperson's competence	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Geographical coverage	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Quick response system	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Reputation	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Overall management quality	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐

❸ Your customers' buying specifics

Please rate the level of **significance** for the following factors referring to your customers' specifics **before 1990**.

Also, please indicate the **degree** to which your company focused on each factor **before 1990**.

Q8a-g	Not at all significant					Very significant	Not at all					Very strongly
Brand loyalty to supplier	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Complexity of decision making	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Purchasing quantities (order size)	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Familiarity with the buying task	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Product importance	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Response to price change	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Response to service change	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐

Section 3. The Segmentation of the Textiles Market at Present

❶ Your products' attributes

Please rate the **importance** of the following attributes which might influence your customers' buying behaviour **at Present.**

Also, please indicate the **competitive position** for each attribute of your products in the industry **at Present.**

Q9a-g	Not at all important					Very important	Very weak					Very strong
Product quality	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Price level	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Brand awareness	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Delivery time	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Service level	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Product aesthetics (style, colours, material, etc.)	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Stability of product quality	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐

❷ Your company's characteristics

Please rate the **importance** of the following characteristics which might influence your customers' buying behaviour **at Present.**

Also, please indicate the **competitive position** for each attribute of your products in the industry **at Present.**

Q10a-g	Not at all important					Very important	Very weak					Very strong
A wide range of products	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Financial stability	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Salesperson's competence	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Geographical coverage	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Quick response system	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Reputation	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Overall management quality	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐

❸ Your customers' buying specifics

Please rate the level of **significance** for the following factors referring to your customers' specifics **at Present.**

Also, please indicate the **degree** to which your company focused on each factor **at Present.**

Q11a-g	Not at all significant					Very significant	Not at all					Very strongly
Brand loyalty to supplier	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Complexity of decision making	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Purchasing quantities (order size)	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Familiarity with the buying task	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Product importance	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Response to price change	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Response to service change	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐

Section 4. The Segmentation of the Textiles Market for Year 2000

❶ Your products' attributes

Please rate the **importance** of the following attributes which might influence your customers' buying behaviour **for year 2000.**

Also, please indicate the **competitive position** for each attribute of your products in the industry **for Year 2000.**

Q12a-g	Not at all important					Very important	Very weak					Very strong
Product quality	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Price level	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Brand awareness	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Delivery time	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Service level	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Product aesthetics (style, colours, material, etc.)	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Stability of product quality	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐

❷ Your company's characteristics

Please rate the **importance** of the following characteristics which might influence your customers' buying behaviour **for Year 2000.**

Also, please indicate the **competitive position** for each attribute of your products in the industry **for Year 2000.**

Q13a-g	Not at all important					Very important	Very weak					Very strong
A wide range of products	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Financial stability	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Salesperson's competence	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Geographical coverage	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Quick response system	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Reputation	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Overall management quality	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐

❸ Your customers' buying specifics

Please rate the level of **significance** for the following factors referring to your customers' specifics **for Year 2000.**

Also, please indicate the **degree** to which your company intends to focus on each factor **for Year 2000.**

Q14a-g	Not at all significant					Very significant	Not at all					Very strongly
Brand loyalty to supplier	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Complexity of decision making	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Purchasing quantities (order size)	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Familiarity with the buying task	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Product importance	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Response to price change	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐
Response to service change	1☐	2☐	3☐	4☐	5☐	6☐	1☐	2☐	3☐	4☐	5☐	6☐

Section 5. Segmenting, Targeting And Positioning in the Textiles Market

Q15	Barriers to segmentation	Please rate the **extent** to which you agree with the following.					
		Strongly disagree					Strongly agree
a	A failure to properly understand the scope and relevance of segmentation is a barrier to segmentation in your company.	1☐	2☐	3☐	4☐	5☐	6☐
b	A lack of support from senior management is a barrier to segmentation in your company.	1☐	2☐	3☐	4☐	5☐	6☐
c	The extra costs incurred by segmentation are a barrier to segmentation in your company.	1☐	2☐	3☐	4☐	5☐	6☐
d	Resistance from other functional groups (e.g., production and finance department) is a barrier to segmentation in your company.	1☐	2☐	3☐	4☐	5☐	6☐
	Issues in segmentation	Strongly disagree					Strongly agree
e	Membership of segments is not stable over time so that the segmentation is not an effective strategy for your company.	1☐	2☐	3☐	4☐	5☐	6☐
f	Target marketing is not superior to mass marketing in terms of overall profit for your company.	1☐	2☐	3☐	4☐	5☐	6☐
g	Target marketing is not superior to product-variety marketing in terms of overall profit for your company.	1☐	2☐	3☐	4☐	5☐	6☐
h	We have divided our market into two or more groups of customers, each group containing customers with similar needs.	1☐	2☐	3☐	4☐	5☐	6☐
i	We have selected one or more of these groups as our target markets.	1☐	2☐	3☐	4☐	5☐	6☐
j	We have developed different products/services and related marketing activities to meet the needs of these selected markets.	1☐	2☐	3☐	4☐	5☐	6☐

Section 6. Many thanks for your help

We would like to send you a report on the research findings, please put your name/address here.

Name: Mr/Mrs/Ms
Address:

Now please return the questionnaire to Loughborough University Business School in the envelope provided.

Appendix 5.4

Comments from Interviews with Textiles Experts

Appendix 5.4

A Preliminary Interview with Dr. Ruo and Dr. Shaw

19/1/96 in Dr Ruo's house (Loughborough)

Key comments referring to the semi-structured questionnaire:

1. Textile industry is a good case indeed for segmentation research. It has played a very important role in Britain, Taiwan, developed countries and developing countries since the industrial revolution.
2. It is worthwhile for asking the data with three different periods as long as the data required can be acquired effectively.
3. The textiles marketing executives are very busy for their business. The questionnaire should be kept as short as possible so that they can answer easily.

Suggestions from the two knowledgeable persons:

1. To join the Textile Economics Group in which members have the opportunity to make the acquaintance of many general managers. That is, it is very helpful for getting co-operation from practitioners who will fill in the questionnaires.
2. The following institutions should be very helpful organisations in which information about the UK textile industry available.
   ❶ Society of Dyers and Colourists (Bradford)
   ❷ The Textile Institute (Manchester)
3. It should be very helpful to have a meeting with Dr Shaw's supervisors, Dr Peter Kilduff and Dr Kent Jackson, in Leeds University. They are now taking the responsibility for dealing with some projects relating to the textile industry. Hopefully, they will be able to introduce a few marketing practitioners to help my research. Once those potential respondents are introduced, the preliminary interview, pilot survey, and formal survey are expected to conduct smoothly.
4. It is suggested that *Journal of the Textile Institute* should be useful for understanding its past, present and future.

Suggestions in Revising Questionnaire:

1. A clearer definition for market segmentation should be added at the beginning of the questionnaire. It will be a good way to reduce the difference due to lack of clarity of measuring instruments, e.g., ambiguous terms which might be interpreted differently by respondents.
2. The questions refer to the potential bases used for segmenting the textiles markets can be extended into three different periods, the past, the present, and the future, so that the dynamic issues of potential segmentation bases used by textiles marketers can be explored.
3. Q4 ⇨ What are the main activities of your company?
   Q5 ⇨ How many employee?; Q6 ⇨ How many customers?
   Q7 ⇨ Who owns the company?; Q8 ⇨ What are the turnover?

A Preliminary Interview with Dr Kilduff and Mr Wong
21st March 1996 in Leeds University

Questions and answers relating to questionnaire survey:

1. Where can the listing of UK textile firms be found (available for sampling)?

- In CBI UK Kompass (The 1995/1996 United Kingdom company information, the Authority on British Industry).
- In CD-ROM by using the FAME (Financial Analysis Made Easy: a data base of the UK's top public and private companies) system.

2. How to classify the sectors for the UK textile companies?
(How to determine the appropriate research population or sampling frame?)

- According to the experience of Mr. Wang, the UK textiles industry can be divided into three main groups, namely textile mill product, textile machinery, and clothing.
- Mr. Wang adopted the first group (textile mill product) as the sampling frame by using the data base of FAME in which around 2000 firms would be found. On the basis of 10 % sampling, he mailed 200 questionnaires to the respondents. Around 30 % (60 copies) response rate was acquired by using the mail survey and a telephone follow up.

3. Does the questionnaire look like appropriate for vertical integration companies only?

- It should not be. However, it seems that classifying textiles firms on the basis of product groups is more sensible than identifying them by their main activities. It is suggested that the classification of textiles firms adopted by Kompass is available.

4. Does the questionnaire make sense to respondents?

- It should be. The terms used seem to be easy to understand.

5. Are there textile practitioners who can be involved in the pilot survey next month?

- Yes, there are! A textile meeting, held in Leeds University every three months, is coming up by the end of next month (29th April, 1996). What a wonderful chance it is! Thanks to Dr Kilduff, who would like to send the 25 managers the questionnaires on the behalf of the author.

Appendix 5.5

The Covering Letter Accompanying the Formal Questionnaire

Appendix 5.5

Addressee's name
Company name
Street address
POST TOWN
County
Postcode

Direct Line: 01509 263171
Fax: 01509 223960
E-mail: C.K.LIN@LBORO.AC.UK

Date

Dear

I am a member of the Textile Institute and a full time doctoral student at Loughborough University Business School, undertaking research into the topic of industrial market segmentation. I am writing in the hope that you will give me the benefit of your experience in this research.

As you know, during the past few decades, increasing international competition and changing consumer requirements have brought pressures for companies who would like to succeed in the textiles industry. In order to cater for disparities in customer needs, manufacturers have adopted a number of marketing strategies, such as innovation, the flexibility to produce a wide range of styles (in small batches), and shorter lead times. Each strategy, however, requires considerable investment of company resources. Given that resources are limited, how to allocate them properly becomes a crucial issue in the real world. Fortunately, it can also be a very good opportunity for companies. For example, because of the differences in local culture and the level of industrial development, companies can strengthen their competitive advantages by optimising the allocation of resources. Therefore, my study attempts to examine market segmentation in the textiles market from a dynamic perspective and then to propose the key factors for success in the textiles industry.

I know you from the membership of the Textile Institute. I realise that you have a broad knowledge and experience in this industry. I am now at the stage of data collection and I am particularly keen to gather practical experience from textiles experts, like you. I should be very grateful if you would complete my questionnaire and send it back to me. I also understand that confidentiality is of the utmost importance to your company. I shall always treat any information from the questionnaire as confidential.

I look forward to hearing from you.

Yours sincerely

Edward Lin
Research Student
Loughborough University Business School

Encs: A questionnaire for the 1996 segmentation survey in the textiles industry with a **freepost** envelope provided.

Appendix 5.6

The Follow-up Letter Send to the Respondent

Appendix 5.6

Addressee's name
Company name
Street address
POST TOWN
County
Postcode

Direct Line: 01509 263171
Fax: 01509 223960
E-mail: C.K.LIN@LBORO.AC.UK

Date

Dear

About two weeks ago I wrote to you asking for your opinions about the implementation of segmentation strategy in the UK textiles industry. As of today I have not yet received your completed questionnaire.

As you know, a number of segmentation approaches have been proposed by academics during the past few decades. However, the previous empirical studies which aimed to reconcile the theories with practical applications were inadequate. Further, compared to other industries, the marketing studies which focused on the textiles industry are much fewer. Some academics perhaps regard the textile industry as a sunset industry which is not worthy of study. As a basic industry for providing the necessary clothing and housing products, however, the importance of the textiles industry cannot be ignored. With the rapid changes in technology and consumer's needs, and the fact that customs barriers are disappearing (the system of quotas for imports will be eliminated by the year 2005), the textiles industry is again an area which is very rich in opportunities and which is waiting for dynamic and courageous business people. Not surprisingly, some textiles experts begin to favour the textiles industry as a sunrise industry.

I am writing to you again because of the significance each questionnaire has to the usefulness of this study. Your company was drawn through a scientific sampling process in which every company in the UK had an equal chance of being selected. In order for the results of this study to be truly representative of the opinions of all textiles companies it is essential that each company in the sample return their questionnaire.

Your co-operation would be greatly appreciated.

Yours sincerely

Edward Lin
Research Student
Loughborough University Business School