THE EFFECT OF CLIMATE ON THE CHOICE OF WOOL BASED FABRIC

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This thesis is presented as part of the requirements for the award of Master of Commerce degree of the Curtin University of Technology, Western Australia.

February 1999

Acknowledgements

I was inspired to do a masters degree by a feeling that my academic studies were still incomplete. I perhaps didn't consider the effect of enrolling in this assignment on others.

When H.Jackson Brown wrote

If you want to do something and you feel in your bones that it's the right thing to do, do it. Intuition is often as important as the facts.

did he know the support and patience that would be offered by family, close friends and supervisors. Thankyou to Kia, Craig, Sally, Nola, Jenny, Olive and Geoff for affording me both these qualities.

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Chapter 1 Introduction

1.1 The Position of the Australian Wool Industry

Over the last century the Wool Industry in Australia has been one of the mainstays of the Australian economy. To use Boston Consulting Group (Quinn, Mintzberg, James 1988) terminology, it was "the cash cow" while the nation developed other industries, "the stars", both primary and secondary.

As recently as 1961, wool exports were the highest export earner (Stoeckel 1991). There has been a sharp downturn in wool prices nationwide since 1988. Export earnings from raw wool declined from $5.7 billion in 1987-88 to around $2.5 billion in 1992-93 (International Wool Secretariat 1993) and the prospect is that depressed wool prices could persist for most of the 1990s (Curry 1993).

Wool fabric currently represents slightly more than 3% of the world's textile production, compared to nearly 5% in 1988-89 (Department of Primary Industry and Energy 1994). This is due to an overall increase in the production of textiles as well as to the decrease in demand for wool fibre. The inability of Australia to sell its woolclip has resulted in a wool stockpile, both in-store and on farmer's properties, of nearly 4 million bales (720 million-kg) worth approximately 2.5 billion dollars, an inventory greater than one year's production. This situation has highlighted the need for the wool industry to look closely at its marketing strategy. If wool is to

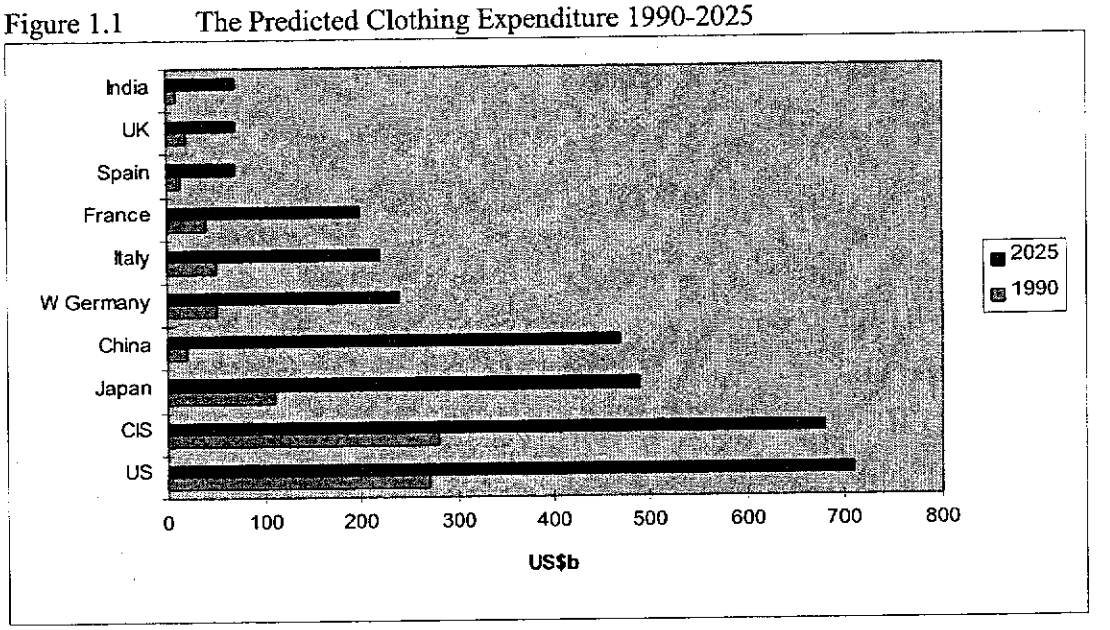
contribute toward improving export earnings further processing and an increase in the demand for wool based fabric are needed.

The International Wool Secretariat is the organisation entrusted with directing wool market research and the promotion of wool fabric. Its two key thrusts in the promotion of the fabric are to create "pull" of the product through stores by advertising wool's unique benefits and to create demand "push" by producing new products to put onto the retail shelves by working with manufacturers and retailers on market research and production (International Wool Secretariat 1993, p7).

1.2.1 Clothing Demand

During the next 30 years, population growth and changing age profiles are projected to be the most rapid and dramatic in history (Johnston 1993). In the next three decades, the number of people of productive income-earning age will double in developing regions, but stagnate in developed regions. The Canberra-based Centre for International Economics (1992), has estimated that, by the year 2025, world expenditure on clothing is likely to more than triple as a result of demographic and income effects. The world's developed clothing markets are expected to remain substantial in the United States, Western Europe and Australia, while growth in expenditure in Asia and India is expected to be dramatic (Figure 2.11).

Figure 1.1 The Predicted Clothing Expenditure 1990-2025



Source: Centre for International Economics, 1992, *Effects Of Demographic Developments On The Demand For Wool*, Canberra.

Population and income growth in China, Taiwan, Japan and India will contribute most to high spending on clothing, leading to an almost nine fold increase in clothing expenditure in China and Taiwan. By 2025, expenditure on clothing is likely to more than triple as a result of these demographic and income effects.

Stoeckel (1993) has suggested that the demographic changes which will have a major impact on future clothing demand are:

- the age profile of males and females;
- the overall rates of population growth; and
- income growth and changes in income distribution.

These factors effect how demand is distributed across countries and across market segments.

Australia has traditionally tried to centralise its promotion and marketing of wool. However, demographic developments, income growth and lifestyle change will mean markets for wool-based apparel will be fragmented into specific and different segments, requiring diverse marketing strategies for particular market segments. Stoeckel (1993) believes the challenge for those involved in the production of wool clothing is how best to decentralise marketing and promotion to match the special needs of individual segments and be able to respond rapidly to changes in consumer preference. It is this challenge and the needs of a small woollen apparel manufacturing business that led to the present study.

1.2 Background to the Study

The woollen apparel manufacturer SIOMIJO Pty Ltd, trading as *StormBoy,* in the South West of Western Australia has for many years relied on one product for its income, this being a classical, heavyweight, fishermen's rib, crew necked, pure wool sweater. Consumer demand for this product has been assisted greatly by the "Australian Made", "Taking wool from the sheep's back through to apparel" image.

Unfortunately, sales are beginning to decline as the South-West Western Australian market reaches saturation point and competition from other Australian knitwear manufacturers increases. In order to survive in this increasingly competitive "Australian Made" market StormBoy are aware they need to be continually reviewing their marketing strategy. StormBoy's objective is:

- to increase sales through diversification into new styles, new wool based fabrics and new markets;
- to retain the image of "StormBoy" as outdoor, dependable, and 'farm natural'; and
- to price products so that they are competitive with other products in the everyday-wear market.

Within their marketing strategy climate has always been an important factor in the Company's targeting of markets in Western Australian, with a belief that wool is for the colder regions. However, StormBoy's owner-manager considered that this assumption could perhaps be unnecessarily restrictive given the flexibility provided by new woollen fabrics designed for warm climates.

In deciding what style and fabric would suit different markets, the company identified four alternative ways to proceed in new product development. These were:

1. to base selection on their own feelings about the markets;
2. to approach the International Wool Secretariat for advice on styles and fabric;
3. to approach a range of stores as to what they may require and hope they take the product when the time comes; or
4. to research consumer fabric preference in the various climatic zones to ascertain the suitability of currently used fabrics for other markets and to find out new possibilities.

StormBoy's decision was to concentrate on the last-mentioned option.

StormBoy's need was to determine what fabrics consumers prefer in each of the climatic zones. The company recognised that factors such as price, style and color influence the consumer decision. However, it regarded information on consumers' choice of fabric as the most important consideration in their new product

development decisions. On enquiry, they found no information available on fabric preference in the different Australian markets.

A search of a number of international databases found the International Wool Secretariat (1993) studies were the only available studies of consumers' attitudes towards types of fabric. A major study of consumers in the main wool consuming countries was performed by this organisation. There was no research on the influence of climatic factors on consumer preference for types of fabric (SEARCH 1993). Further, there was no available information as to the types of wool-based fabrics specific Australian consumer segments would prefer to buy.

The current process employed by apparel manufacturers when developing a new range is to follow European trends in colour, style and fabric type. Trends are obtained from trade fairs, such as the Interstoff International Trade Fair for Clothing Textiles in Frankfurt. The designer and management then decide the season's production. As an illustration of this process, the Farmers Weekly (1993, p5) contained the following comment:

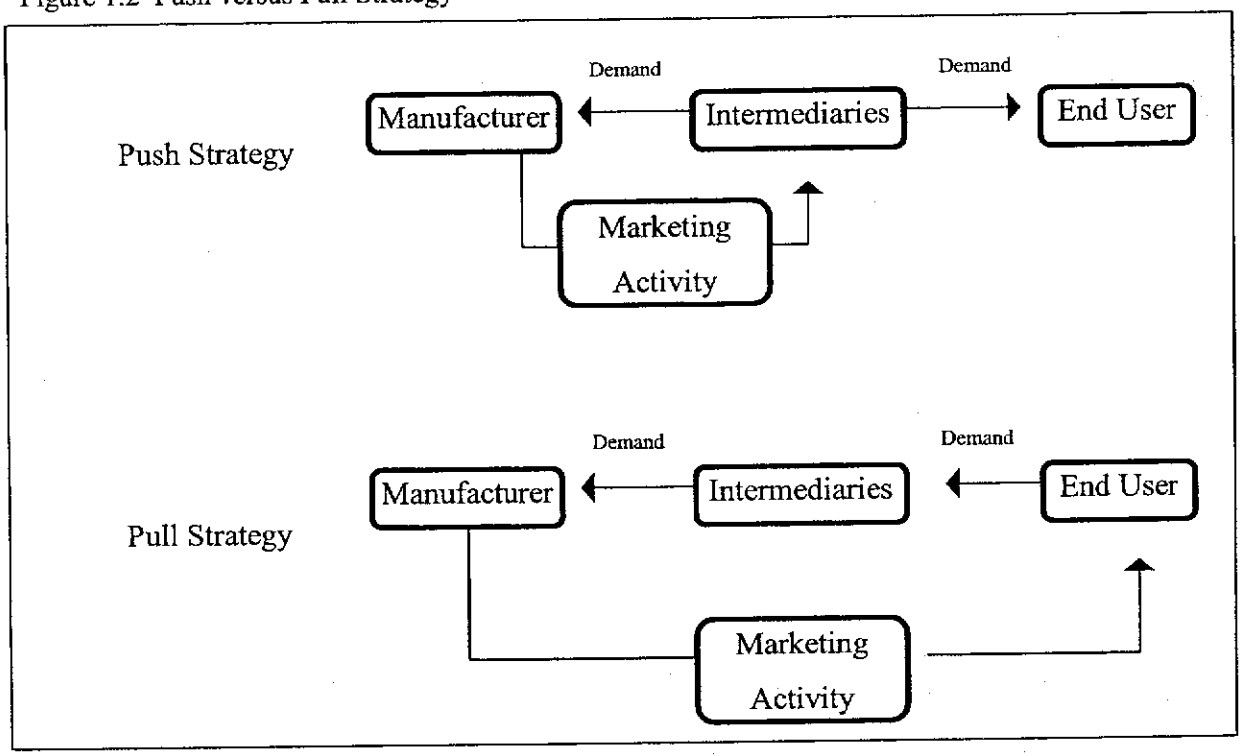
> *Linda Thorogood, the International Wool Secretariat producer manager for menswear and womens wear in the UK, is full of enthusiasm on returning from the huge Premier Vision textile fabric show in Paris where wool was featured in around 20pc of displays. Decisions about what people will wear in 1994-95, now being made, favor a recovery for wool.*

As an indication of the lack of success of such predictions, Wool Focus's November, 1995, retail report indicated a decline in wool's share over that period. Developing a new apparel product from seller/shop owner perceptions, or trade fair recommendations, is no longer an appropriate or effective way to approach the

product development. Grant (1991, p6) believes that "*what the business person think they know about the customer and the market is more likely to be wrong than right,*" and suggests a market research approach is necessary, based on benefits sought by the consumer.

StormBoy was advised by industry consultants to speak to a number of retail stores to find their perceptions of consumer requirements in the market and, from this information, decide on the type of fabrics to use. This advice is based on the "retail push" concept. However, there is little evidence to support a correlation between retail store fabric type and consumer preference for fabric type. A "retail push" marketing strategy involves retailers purchasing a product and then promoting it to end users, as compared to a "pull" strategy where the retailer researches or receives information on consumer requirements and then orders from the manufacturer. The difference between push and pull strategy is illustrated in Figure 1.2.

Figure 1.2 Push versus Pull Strategy



Source: Kotler, P., 1991, *Marketing Management: Analysis, Planning, Implementation and Control,* 7th Edition, Prentice Hall International, New Jersey, p585.

StormBoy required market information on which to base their decisions about what type of fabric to use to target different market segments. They were not content to go with their own feelings about market requirements and were unhappy with the advice to make woollen clothing then "push" it onto the market with a volume of generic promotion about "what is so good about wool." *StormBoy* was also wary of surveying a range of clothing stores as to their perceptions of the type of fabric and garment required by consumers. Without a commitment from each store to buy consignments the company was not prepared to produce a new fabric based on retailers' perceptions alone. They felt that this method was unlikely to result in a product that would give the company a marketing edge.

StormBoy decided to use a combination of advice from the International Wool Secretariat and consumer research. By determining consumers' preferences from a full range of natural and man-made fabrics, across various climatic conditions, StormBoy would make a decision on the fabric that was most likely to succeed in a chosen market, hence gaining a marketing edge by developing new wool based fabrics to match the needs of particular market segments. Having reached this decision the partners of StormBoy approached Curtin University School of Management with a proposal to support a postgraduate study addressing their situation. An Australian Postgraduate Award (Industry) was obtained for this purpose and this study was undertaken.

1.3 Aim of the Study

The research question addressed in this study is "what outerwear fabric types are preferred by consumer segments in each of the major climatic zones in Australia?" The objectives are to:

1. examine consumer preference for fabric in each of the five major climatic zones in Australia, using fabric attribute levels as the choice criteria, in order to provide information to *Stormboy* on fabric attributes most preferred by

consumers, and the market segments in each zone, based on these fabric attribute preferences; and

2. determine any significant differences in fabric preference between the climatic zones so as to indicate to *Stormboy* whether climate should be taken into consideration in the marketing of wool based fabric.

This information on preference for fabric type, will enable *Stormboy* design wool based fabrics that match the fabric attribute requirement of consumers. The information on market segments will not only provide the fabric attribute requirements but also the possible size of the market.

This study will develop a method to monitor consumer trends in fabric preference so that *Stormboy* can make informed decisions about their design and choice of wool based fabric.

This study provides the required consumer information to *Stormboy*. It illustrates a method of research which can be used in decisions making by producers of products or services where there is heterogeneity in buyers' preferences, for:

- the development of new products or services;
- the renewal of a product or service;
- the positioning of a product or service; and
- the ongoing monitoring of consumer preferences and retail compatibility with consumer preferences.

As Green and Kreiger (1985) conclude, once preference and segments have been identified companies can react to (or possibly produce to) preference heterogeneity by modifications of their current product/service attributes (including price), distribution, and advertising/promotion. Companies are motivated to do so if the net payoff from modifying their offerings exceeds what the payoff would be without such modification. Companies may modify its product/marketing mix to include

product line addition/deletion decisions as well as the repositioning of current offerings.

The study begins by reviewing relevant literature on the function of clothing and fabric type, the position of wool in the apparel market, the effect of climate on choice, the key concepts of consumer behaviour and segmentation as a means of positioning products. The design of the research is summarised in Chapter 3, and the findings from a survey of consumers in five Australian centres are presented in Chapter 4. Chapter 5 discusses the implications of these findings and recommendations made to *StormBoy*. Conclusions relating to the study design, limitations and future research are addressed in Chapter 6.

Chapter 2. A Review of the Literature on Clothing, Fabric Choice and Segmentation

2.1 Introduction

The International Wool Secretariat survey "Researching the Global Market Place" (1993) provides qualitative information as to global trends in clothing consumption. This is pertinent for a mass marketing strategy, where the sellers engage in mass production, mass distribution and mass promotion of one, or a number of products, for all buyers. However, business competition dictates that defined markets need to be targeted with the benefits they seek. For target marketing there are three main steps, market segmentation, targeting and positioning. StormBoy requires market segmentation information that is based on fabric preference. Market segmentation requires specific information to divide a market into distinct groups of buyers who may require different products and/or marketing mixes. For the purpose of this study it was therefore important to have an understanding of the status of current knowledge about the role of clothing, the factors involved in clothing selection, and the effect of climate, demographics and consumer behaviour in that choice. For the Australian market there was no secondary information regarding fabric preference by segments of the population, hence the requirement to research the most meaningful segmentation strategy for the client.

The chapter begins by reviewing the literature on the value of clothing to people and the position that fabric, and more specifically wool fabric, holds in that value. Following this is an overview of the literature on the effect of climate on fabric preference. A number of examples are given where climate is believed to be a large influence on fabric preference and conversely where climate is of a lesser, and perhaps diminishing, influence. The chapter concludes with a discussion which places the study within the parameters of consumer based research rather than retail research.

2.2 The Importance of Clothing

There is probably no sphere of human activity in which our values and lifestyle are reflected more vividly than in the clothes we choose to wear (Horn 1975). The dress of an individual is a "sign language" that communicates a complex set of information and is usually the basis on which immediate impressions are formed. Also, consciously or unconsciously, individuals reflect, through their clothing choices, sets of beliefs about themselves and what they want others to believe. Clothing is a symbol of crucial social and psychological importance which serves to communicate to others an impression of social status, occupation, role, self-confidence, and other personality characteristics (Horn 1975). Clothing is of major importance in defining a situation. It can be considered part of society's "social code" (Anspach 1967). As Stone and Form (1987, p34) note

> *from birth to death, each change in a significant life situation requires a change in wardrobe, and even in daily life, each separate activity requires a change of dress. A person's appearance "announces his identity, shows his values, expresses his mood, or proposes his attitudes."*

2.2.1 Fabric as a Factor in Clothing Selection

As well as style, colour and price, fabric type is a major factor in clothing selection. To some consumers there is a certain status appeal in labels that read, "100% imported cashmere" or "pure Irish linen." In some cases, the "snob appeal" is accompanied by increased quality. The well known Harris tweed is a good illustration. The long stapled wool from the island of Harris in the Outer Hebrides, coupled with the unique fabricating techniques of the crofter-weavers, produces a distinctive fabric that offers superb protection against the elements.
While style can go from cuffs to no-cuffs, from button down collars to spread, from below the knee to mini skirts, it would appear that type of fabric remains more of a constant in the consumer's mind. According to Di Lello (1995), General Manager of

Tony Barlow Australia, suit buyers always want to know about the fabric because they are very loyal to their perceptions of fabric. Of wool, his observation is

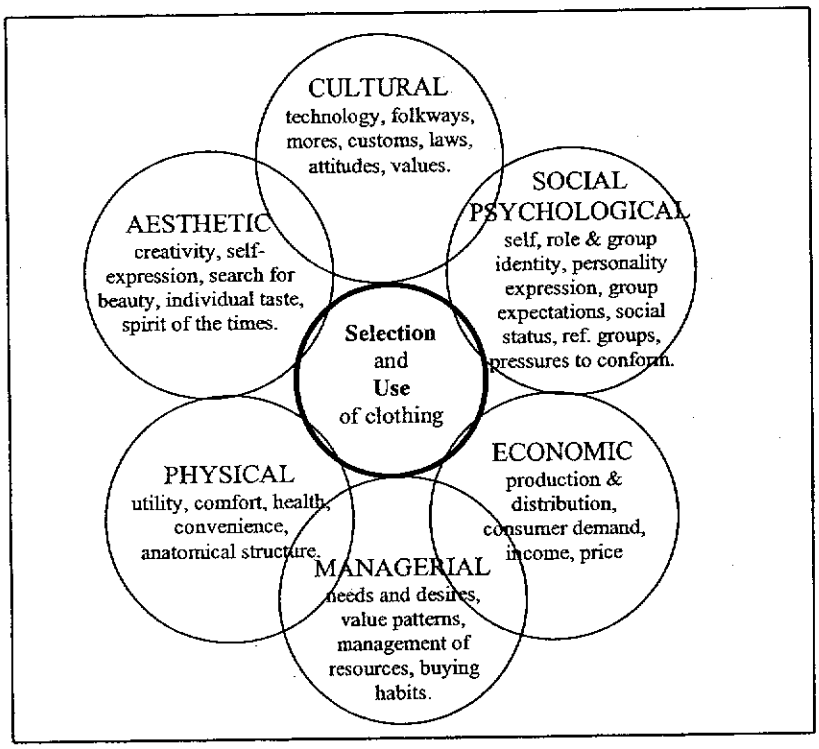
> *one thing the Australian consumer understands is the value of wool for trans-seasonal comfort.*

Research by Larose (1947), Nielsen (1992) and Lotens (1995) shows that fabric type is a significant consideration in the design of work clothes for tropical conditions. This literature is reviewed later in this chapter.

2.2.2 Clothing Selection

The physical effect of clothing on the consumer is only one of the considerations relating to the selection of clothing. The type of clothing worn is dictated by the intended activity, a person's state of health and climatic conditions, which are all important modifying factors in regard to the consumer's physical comfort (Horn 1975).

Figure 2.1 The factors affecting clothing decisions.

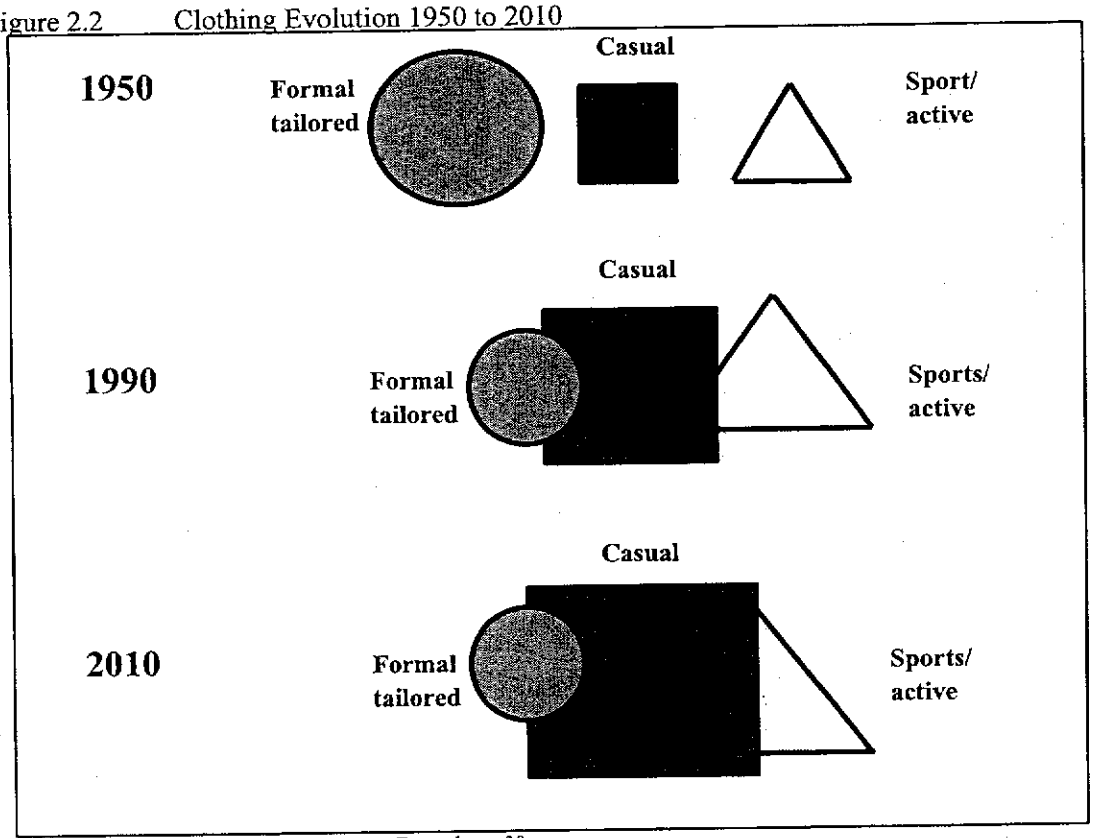


Source: Horn, M.J., 1975, *The Second Skin: An Interdisciplinary Study of Clothing*, Second Edition, Houghton Mifflin Co., Boston.

The fabric make-up (including fibre type, weave and weight) is an integral factor in the clothing selection. Figure 2.1 shows a schematic representation of the factors affecting clothing selection.

This range of variables indicates the complexity of the selection process. A person's fashion choice becomes an individual statement as well as a reflection of changing demographics. An example of the effect of change is the influence on macro fashion of increased leisure time and the promotion of sports through advancements in technology. A graphic illustration (Figure 2.2) of the clothing evolution for the period 1950 to 2010 shows the demise of formal tailored wear and the increased use of sports/active and casual wear.

Figure 2.2 Clothing Evolution 1950 to 2010



Source: McLaren, P., 1994, *WOOL Magazine*, December, p30.

Figure 2.2 shows that there is now a significant overlap between the formal and casual segments and McLaren predicts that this pattern is likely to increase. For many people, the clothes they now go to work in are the same style of clothes they used to change into for casual wear. It is also now difficult to separate sports and

activity clothing from casual wear (McLaren 1994). From a clothing manufacturers perspective, the sports/active and the casual markets appear to be the opportunity areas.

2.3 Wool's Market Share of the Clothing Market

Within the apparel market, wool has lost market share marginally since 1989 in the six major developed markets for wool [the United States, Japan, Germany, France, Italy and the United Kingdom] (Wool Monitor 1994). Table 2.1 indicates the strong position of wool in Italy and Japan, while there could be reason for optimism in the lucrative American market.

Table 2.1 Wool Fibre's Share of Consumer Purchases
- % share: Menswear, Womenswear, Knitwear.

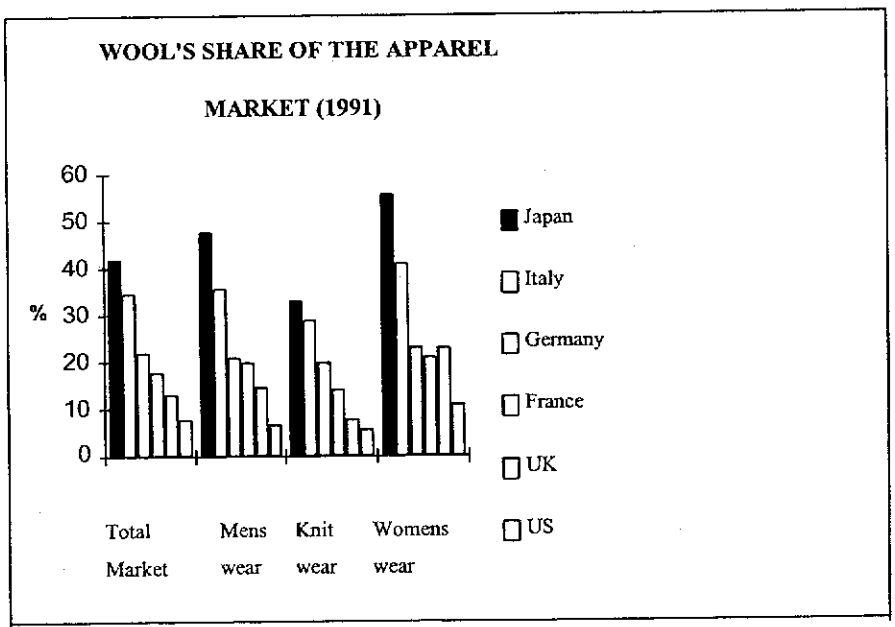
	1991	1992	1993	1994	1995
Italy	37	36	37	37	37
Germany	18	20	20	19	18
France	20	20	19	18	18
UK	13	13	14	15	15
Japan	42	42	40	40	40
USA	8	8	7	9	9

Source: WOOL Magazine, 1995, October, p17.

The percentage consumption by those countries in each of the clothing categories is shown in Figure 2.4. As shown by Figure 2.3, the largest market is womenswear. In 1991, forty five percent of apparel wool consumption in the six major markets was womenswear (trousers, suits, skirts, jackets, dresses and coats), twenty nine percent

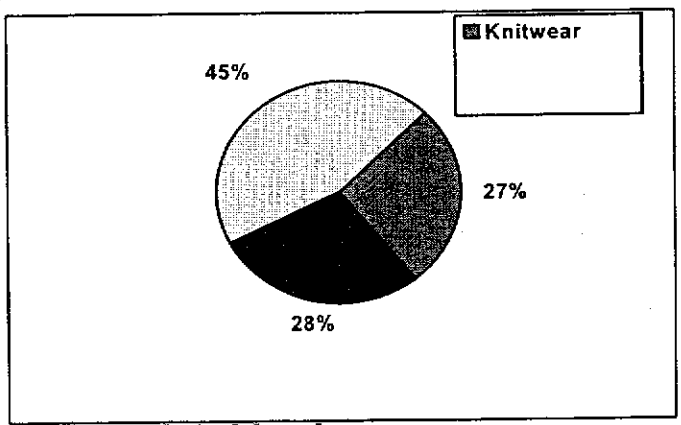
menswear, and twenty seven percent knitwear (a combination of mens and womenswear). The decline in the consumption of womenswear over the period 1987 to 1991, for all types of fabric, is the most significant. During this period, consumption of dresses fell by nineteen percent, skirts fell by twelve percent, and coats by eight percent (Wool Focus 1993).

Figure 2.3 Wool's share of fibre consumption in the 6 major developed markets.



Source: International Wool Secretariat Review, 1993, *Researching the Global Market Place.*

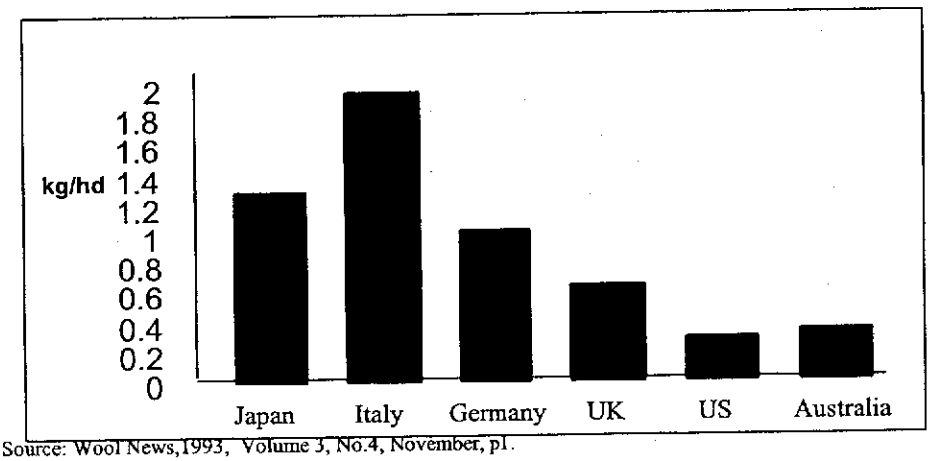
Figure 2.4. Apparel wool consumption in 1991 for the 6 major markets.



Source: Wool Focus, 1993, Volume 1, Number 2, June, p5.

Australia, a country often compared both culturally and climatically with the United States, has a per capita consumption of wool very similar to that country. Figure 2.5 compares five of the high wool consumers with Australia.

Figure 2.5 The Consumption of Apparel Wool per capita (1991)



Source: Wool News,1993, Volume 3, No.4, November, p1.

Italy has the largest consumption of apparel wool per capita with a climate that is described as warm mediterranean. Much of Italy has degree day totals similar to the south and east of Australia and much greater than the United Kingdom and the United States. In this instance it would appear that wool apparel does not follow the perception held by S. Bennett (1995) and G. Bennett (1993) that wool fibre is suitable only to cooler climates.

Because of the size of the market in the United States, and the perceived opportunities for wool to increase its market share in that country, much of the consumer research on fabrics has been performed there. Research in the United States suggests that consumers strongly favour cotton over wool. The United States is a large producer of cotton and consumers tend to view wool as a specialty fibre that is old fashioned, expensive, itchy and difficult to care for (Wool News 1993).

2.3.1 Wool Review Recommendations

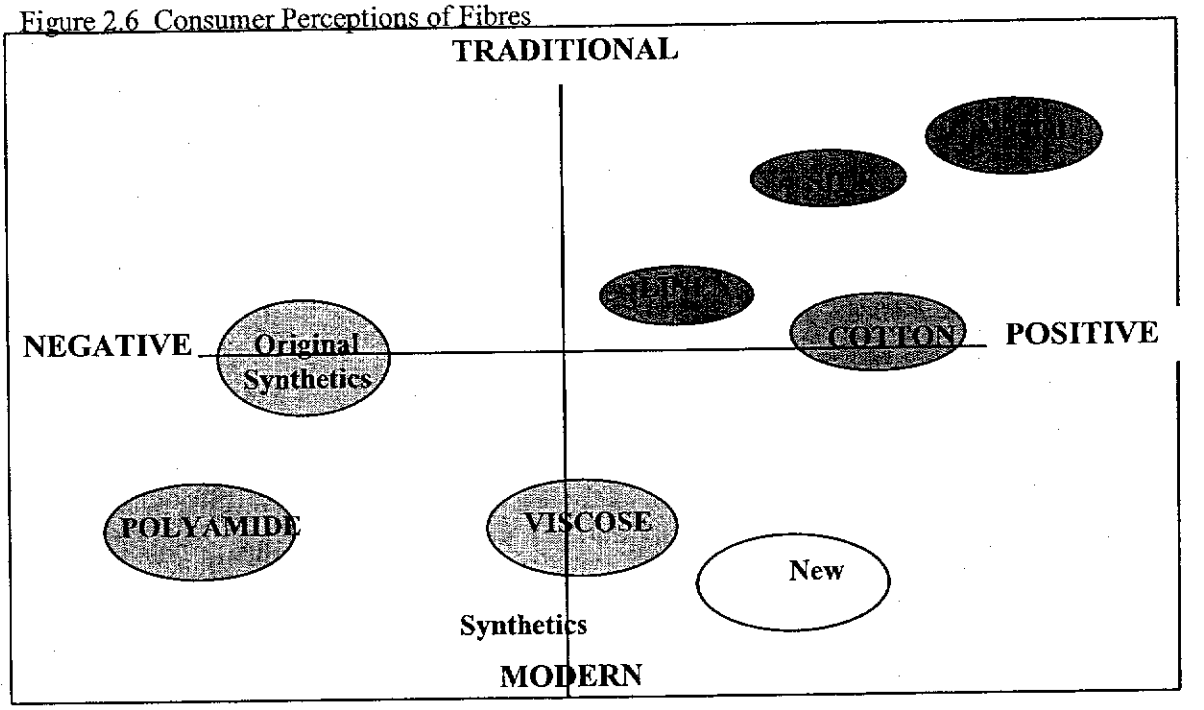
In an attempt to improve wool's position in the market, the Australian Government appointed a Wool Review Committee in 1992. Their report on marketing and promotion, published in Wool Focus (September 1993), included the following recommendations for wool promotions at retail and consumer levels:

1. ensure that wool stays as part of current and future generations' lifestyles;
2. focus on the need to make wool products more widely attractive, requiring a combination of imaginative promotion in markets such as the United States where the qualities of wool are poorly understood, and an R&D emphasis aimed towards textiles and garments that are easily managed, such as washable; and
3. extend promotion beyond the generic Woolmark to cover wool qualities such as softness, warmth, coolness, fire resistance and crease resistance (Wool Focus, September 1993).

2.3.2 Market Perceptions of Wool Fabric

The International Wool Secretariat (IWS) Review, "Researching the Global Market Place" (1993), resulted from a survey of 10,500 consumers in the major six countries plus four others, 83 processing partners, 38 major retailers representing 3000 outlets, and 56 discussion groups. The study determined specific consumer perceptions of the various fibre types from the 56 discussion groups (Figure 2.6). It was concluded that wool's image is the most positive of all the fibres. The apparent problem is that these positives are all in the area of traditional associations in a world that is steadily becoming less traditional. Cotton, on the other hand, may enjoy a less positive perception, but it is better balanced between traditional and modern sectors.

Figure 2.6 Consumer Perceptions of Fibres



Source: International Wool Secretariat Review, 1993, *Researching the Global Market Place.*

The IWS study also surveyed consumers' perceptions of a range of fabrics. The results are shown in table 2.2. The comments appear nondescript and too broad to be of significant use by a manufacturing company. On wool fabric, the comments tend to indicate as much about the style in which wool has been used, 'timeless and 'classic', 'traditional', as about the fabric itself.

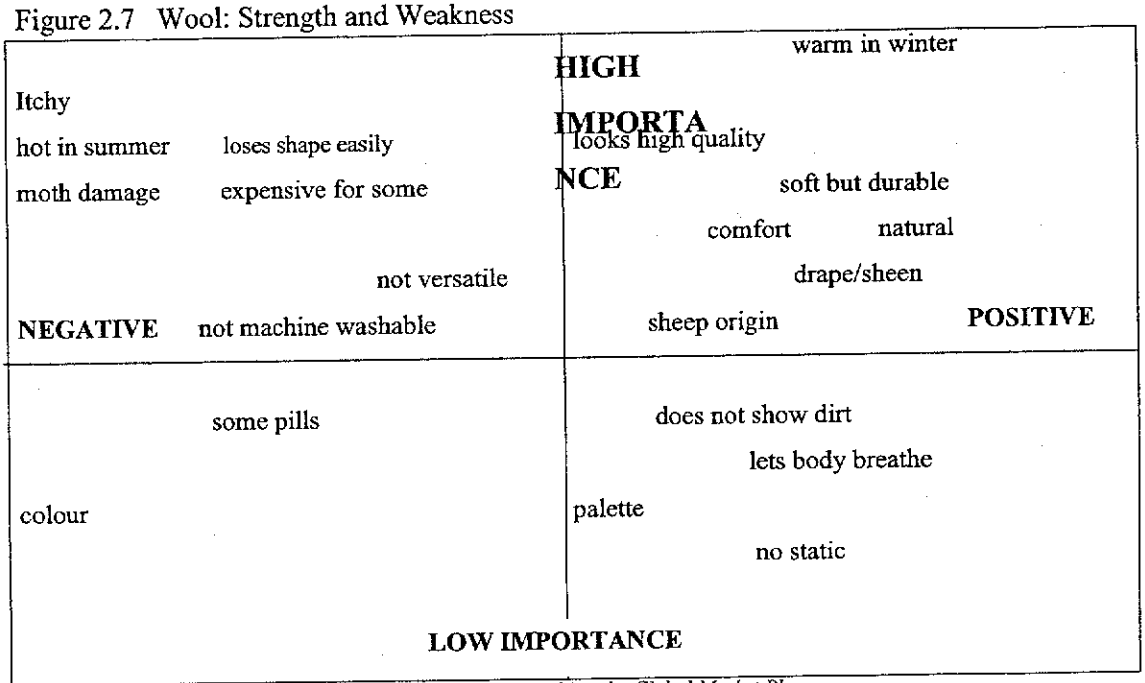
Table 2.2 Perceptions of Specific Man-made and Natural Fabrics

Nylon/Polyester	Viscose	Microfibres	Cotton	Wool
- cheap	- status unclear	- expensive	- natural	- timeless/classic
- old technology	- some positives	- innovative	- some heritage	- natural
- "filler"		- hi-tech	- everyday	- warm/soft
- practical		- modern		
- uncomfortable				

Source: International Wool Secretariat Review, 1993, *Researching the Global Market Place.*

The study also looked at consumer opinions about wool fabrics, illustrated in Figure 2.7.

Figure 2.7 Wool: Strength and Weakness



Source: International Wool Secretariat Review, 1993, *Researching the Global Market Place.*

While consumers have some very positive impressions of wool, the survey indicated that the majority of the weaknesses are perceived as important negatives.

In support of this work, Wool Monitor (1993, p9) reports that independent market research in the United States of America shows perceptions of wool to be that:

1. wool is prickly;
2. one cannot buy wool clothing that is casual wear; and
3. wool is hot, heavy and formal.

The IWS believes that through marketing and improved processing and raw material control, the negatives, shown in Figure 2.7, would move to the low importance sector. These product improvements will need to develop alongside major changes that are occurring in the way consumers use clothing, as shown in Figure 2.2.

Market research in the United States of America using West Coast retailers and consumers indicated that:

- garments must be affordable and preferably suitable for business and leisure; and
- people buy clothes, not slogans.

Generic promotion has failed to capitalise on the versatility of wool (Wool Monitor 1993, p6).

Grant (1991) believes that "benefit" research is necessary to successfully market wool and to test the following hypotheses:

1. What business people think they know about the customer and the market is more likely to be wrong than right.
2. The customer rarely buys what the business thinks it sells him/her i.e. nobody pays for a "product", but rather for satisfaction or the means to attain satisfaction.
3. What the producer thinks is the most important feature of the product may well be relatively unimportant to the customer.
4. Consumers have their own sense of rationality which is not necessarily the same as that of the manufacturer or supplier.

2.3.3 Wool Marketing by the International Wool Secretariat

With general trends away from mass marketing to specific targeting, wool growers have asked why the International Wool Secretariat (IWS) continues to prioritise funding on generic promotion of wool. Despite this, Richard Excell (1994, p26), managing director of the IWS, is firm on the type of promotion they will support, stating:

> *IWS promotion programs will increasingly be based on specific product-innovation benefits rather than 'atmospheric' feelings and emotions.*

The wool industry's concerns about 'a one-way communication' marketing strategy are supported by Bauer (1964) and the Richardson-Haley model (Haley 1985), who argued that communication of information about the product should be a two-way process, whether by an advertising message, the package, promotional material, the price, or the reputation of the store in which the product is sold. Bauer (1964)

believes that the consumer is not an inert, passive target, able to be manipulated by advertising, but an active participant in the communications process. The consumer screens message, distorting, adding, subtracting, counterarguing, and mentally calculating whether the messages benefit them or fit their ways. The Richardson-Haley model suggests that the consumer exposed to an advertising message uses previous experience, values and interests, personality and lifestyle, moods and habits in this screening process.

2.4 Climate as an Influence on Fabric Choice

McBoyle (Jeans 1987) used twenty climatic variables to identify a hierarchy of regional climatic differences in Australia. Australia's climate is described as ranging from "hot and very wet, summer maximum of rain" to "cold and humid, all season rainfall, winter maximum with much snow" (Ford and Rowe 1985). The five areas defined as being most significantly climatologically different, assessed by the steepness of the climatic gradients, are in this study (see Chapter 3). The five centres used for the survey within each of these five zones each have a population exceeding ten thousand.

McLaren (1994) predicted that climate will, over time, have a decreasing effect on the weight of cloth worn. Improved methods of temperature control mean that populations in the cold parts of the world are living in warmer conditions and those in hot climates are increasingly experiencing air-conditioned homes, shopping malls, offices and cars (McLaren 1994). This situation may produce a long term shift to lightweight fabrics.

Outside the artificial environment, people possess an elaborate thermostatic mechanism that keeps internal organs at a constant temperature in spite of heat fluctuations in the immediate environment. The process calls for the production of

heat at the same rate that heat is lost from the body. Such equilibrium can be achieved by:

1. consuming enough food and engaging in physical activity sufficient to produce the required amount of heat; or

preventing heat loss from the body through the use of clothing as a protective barrier (Horn 1975).

In a study of the type of fabric suited to the workplace in the tropics, Woodcock (1962) noted that the type of clothing fabric, air temperature, humidity and velocity of air had an effect on workers' skin temperature. It was found that the higher the skin temperature the greater the thermal stress on the body. It has also been found that high humidity, resulting in an increased sweat rate, causes greater thermal stress than dry conditions (Candas et al 1979; Boisvert et al 1993). They concluded that if clothing insulation is high this can lead to an increase in skin temperature.

To illustrate the importance of fabric type in the tropics Ahasan et al(1996) noted the work in these countries is largely physical, heavy and characterized by static and dynamic loads of variable duration and intensity, and that workers with low physical capacities are less able to tolerate heat. In this case climate has a large influence on the type of fabric that should be preferred. Most of the tropical countries are developing countries with a poor economy, where physical work combined with heat-stress can cause dehydration through sweating. In this instance the thermal properties of fabric are very important.

Fabric materials have a significant impact on thermal activity. Nielsen (1992) found that the dissipation of metabolic-heat can be altered by up to 25% depending upon the type of fabric. In general, subjects in tropical climate feel comfortable using light clothing due to solar-heat and higher humidity (RH = 70-85%).

Optimal thermal conditions occur when the amount of heat produced by the body equals the loss of heat from body surfaces through radiation, convection, conduction, or evaporation (Horn 1975).

It may be thought that, as the temperature rises, people will remove more clothing. Though this is true in much of Western culture, the opposite occurs in the Middle East, where clothing is used as a barrier to heat transfer, both in respect to the amount of heat lost from the body to the atmosphere, and the amount of heat absorbed by the body from the environment. Clothing also conserves body energy in warm climates. As early as 1937, studies confirmed the fact that men sitting in the sunshine fully clothed showed 130 to 180 grams per hour less sweating than when nearly nude (Adolph 1938).

Horn (1975) makes the following observations about clothing and thermal conditions. Most clothing will reflect appreciable amounts of environmental radiation. Conduction refers to the flow of heat through a medium without the actual physical transfer of material. Thermal conductivity values give some basis for comparing the relative insulating qualities of widely divergent substances (the higher the number the greater is the substance's propensity to transfer heat; the lower the number the better the substance is as an insulator). A few examples of the thermal conductivity of common substances are:

silver.....	0.99 cal/sec/cm^2/C°/cm thickness
human tissue.....	0.0005
leather.....	0.0004
wool felt.....	0.000125
pure wool.....	0.000084
still air.....	0.000057

Wool and entrapped air are two of the of the poorest conductors, and hence two of the best insulators. The slow process of conduction is considerably hastened by convection, in which air currents constantly remove the heated molecules and replace them with cold molecules. When the temperature of the air is higher than that of the skin, it is important to use fabrics that are not only highly absorbent but relatively impermeable to air currents so that heat from the hot air is not transferred to the body by convection. The greatest protection in hot dry climates is the insulation provided by clothing. White and light coloured fabrics are more effective than dark colours.

As an example, traditionally Arabs wear a full covering of loose flowing, often white wool garments to give protection against the sun and insulation against the cold at night.

When the atmosphere is both hot and moist, clothing should offer the very minimal resistance to evaporative cooling from the skin. Since evaporation from the skin is more efficient than evaporation from wet clothing, fabrics that will not absorb water vapor seriously hinder the cooling process. In cold regions, clothing must prevent body heat loss from exceeding the metabolic heat production. The biggest problem is the accumulation of moisture during periods of activity.

In reality, however, there does appear to be some difficulty in marketing the theory of wool's insulation qualities in Australia. Graeme Bennett (1993, p13), managing director of a large Australian wool fabric manufacturer, Norwellan Wool Spinners and Weavers, believes climate is a key factor in his sales of wool finishings as

> *our wool finishings are being exported to the United States and Japan, but we found it hard going in South East Asia, because wool has the reputation for being hot,*

and for the Norwellan Bluey, a felted woollen coat, he had this comment regarding climate as a criteria for selecting target areas

> *the people like Levi Strauss and so on who we visited were very impressed, they thought this great and so did their advertising people. The problem was that they finally decided that it wasn't promotable throughout Australia north of Sydney because the climate is just too hot.*

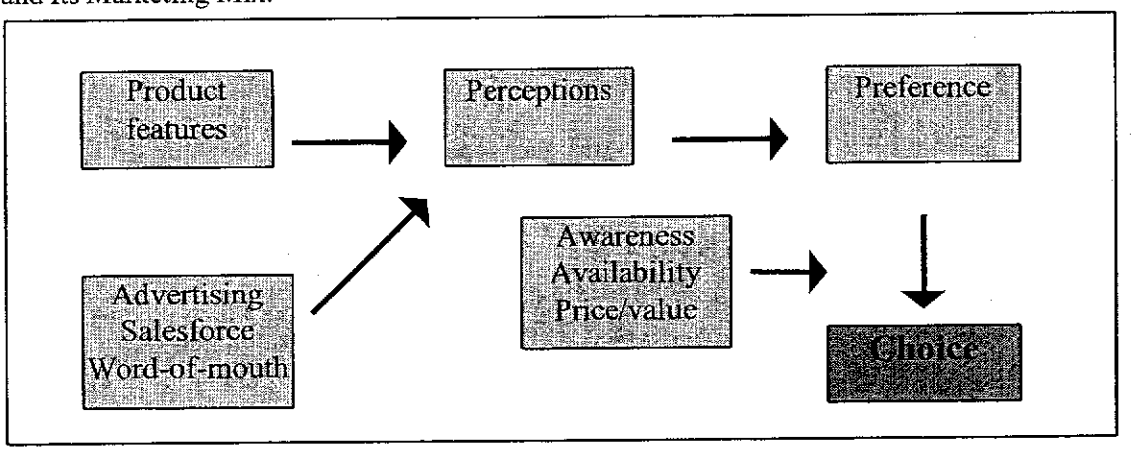
Stephen Bennett (interview 1995), founder of Country Road Clothing Pty. Ltd. and a large retailer of woollen garments, positioned his stores in a climate that he judged would suit the sale of wool fabric as

> *currently we have 21 stores in the northeast chunk of the US which is very cold and therefore very suitable to wool.*

2.5 Key Concepts of Consumer Behaviour

Customers buy products for the benefits that they think the product will deliver. The success of a new product is dependent on the degree to which it delivers benefits that the customers need (Urban and Hauser 1993). Objective features are important because they deliver the subjective benefits. This philosophy is based on a model of customer behaviour known as Brunswick's Lens model (figure 2.8). The lens model states that customers form their preferences for products based on subjective perceptions (Urban and Hauser 1993). They use these perceptions as a "lens" to filter the complex set of cues they receive about the product based on its features and based on communications [advertising, public relations, word of mouth, etc.] they receive about the product. Thus, to impart a preference, advertisers must select the key benefits, as perceived by consumers, and fill them with appropriate features and communications.

Figure 2.8 "Lens" Model Illustrates Key Concepts of Customer Response to a New Product and Its Marketing Mix.



Source: Urban, G.L., and Hauser, J.R. , 1993, *Design and Marketing of New Products,* second edition, Prentice Hall, New Jersey.

The Lens model recognises explicitly that preference is moderated by price/value considerations and constraints, such as awareness and availability. The model emphasises the impact of visual factors and objective features on perceptions which result in preferences and ultimately choice. The model also suggests that information

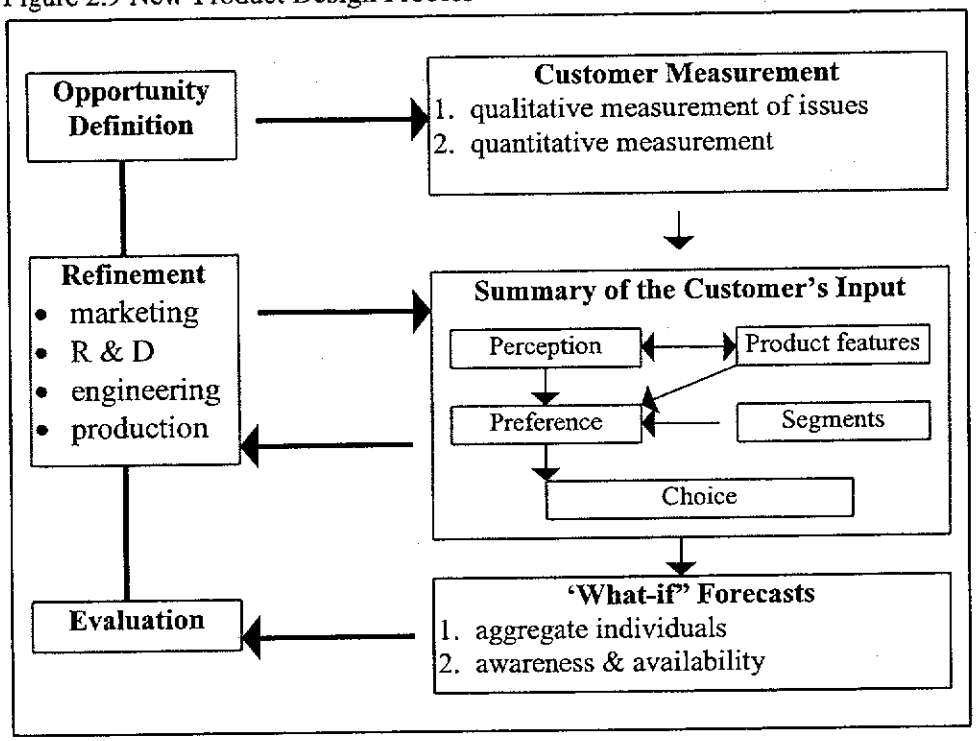
about benefits sought by the consumer can be used to influence the product and promotion. Used in this way the model has interactive implications. The model does not attempt to include the influences of the cultural and psychological factors as shown in Figure 2.1.

According to Anspach (1967), people emulate "better" taste and so upgrade their own. One person is a member of many groups, a part of many wholes. People act in relation to the group to which they are most committed. This can be a group in which one is a member or a group in which one hopes to hold membership. The group from which beliefs, motivations, and actions are drawn in a specific instance is the "reference group." It is not the "president" of the "reference group" that the person wants to emulate, rather, sociologists point out, that as a rule consumers emulate tastes within reach, ie. people in their own group. The "reference group" concept of social psychology gives perspective to fashionable choice.

According to Urban and Hauser (1993), the way in which customer information can be organised so that it can direct the strategic development of the new product is by an interactive process between customer measurement and development, with consumer behaviour being the driver. This is shown in Figure 2.9.

Noticeable in this model is a two-way interaction between perception and product features within the customer summary, and customer measurement prior to the development of product.

Figure 2.9 New-Product Design Process



Source: Urban, G.L., and Hauser, J.R. , 1993, *Design and Marketing of New Products,* second edition, Prentice Hall, New Jersey.

Urban and Hauser (1993) expand on this model by explaining its elements as follows:

- **Opportunity Definition**

Market definition is a review and refinement of the markets and target customers that were the output of opportunity identification. A successful opportunity identification will have indicated a market that has the greatest potential to achieve managerial goals such as profit and growth.

- **Customer Measurement**

Qualitative measurement raises questions, suggests some answers, and directs investigation, but alone is not sufficient.

Quantitative measurement builds upon the qualitative insights to provide quantifiable measures of customer perceptions of existing products, of customer priorities with respect to alternative product benefits, and to provide input to the models underlying the "what-if" analyses.

- **Strategic Summary of the Customer's Input**

These models identify the product benefits that are key to a new product's success and they identify how to achieve those benefits in the design of the product.

- **What-if Forecasts**

If the models of perception, choice etc. have been developed carefully then they can be used to forecast customer response. The output of what-if analyses is more than a sales forecast, it is a series of forecasts that depend on the variables such as initial price, marketing strategies, and product features.

- **Evaluation**

The what-if forms the basis of the evaluation of the business opportunity. The management and new product team weigh the forecasts, production costs, supply of material, political and technical constraints, firm image etc. to arrive at a go on/no go decision.

- **Refinement**

This depends on the effective integration of marketing, research and development, engineering, production, and other functional areas of the organisation.

The present study is involved with the 'Summary of the Customer Inputs' in that it measures and analyses customer's perceptions and product preferences. It identifies the product benefits sought by customers and the perceptions of the population on a grid of combined attributes.

2.6 Market Segmentation

The term "market segmentation" was introduced into the marketing literature by Smith (1956). Kotler (1991) considers it not as a strategy but as an analytical act involving Probing, Partitioning, Prioritising, and Positioning, the four "Ps" of strategic marketing, which are a prelude to the use of the four "Ps" of tactical marketing (Product, Price, Place and Promotion). He considers the continuum of

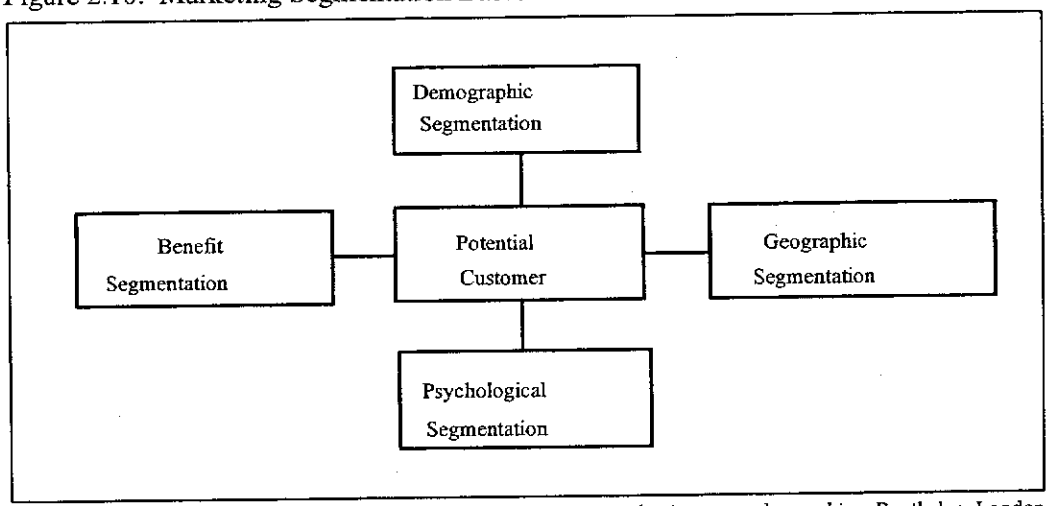
segmentation ranges from "dealing with the mass market" to "the individual customer as a segment." His research suggests that mass marketing is generally the wrong approach, stating that

> ..... *a company chasing the "mass market" loses it.*

Market segmentation results from a determination that there are factors that distinguish a certain group of consumers from the overall market (Gunter and Furnham 1992). This group might require separate products and/or marketing mixes.

There are four commonly used bases for segmenting consumer markets (Figure 2.10), of which two are physical attribute classifications [Demographic and Geographic] and two are behavioural or psychological attribute classifications [Product Use or Benefit and Psychological Segmentation].

Figure 2.10. Marketing Segmentation Bases



Source: Gunter, B. and Furnham, A., 1992, *Consumer Profiles, An introduction to psychographics*, Routledge, London, p27.

Ackerman (1984) believes that causal segmentation schemes (segments based on benefits sought, problems experienced, occasions of use, or category belief) are likely to be a more successful means of uncovering potentially responsive subgroups and, thus, more attractive targets, than are descriptive segmentation schemes (segments based on demographic or behavioural characteristics). Schemes based on lifestyle or values are likely to fall somewhere in the middle.

2.6.1 Product Use and Benefit Segmentation

A powerful form of segmentation is the classification of consumers according to the different benefits they seek from the product (Kotler 1991). Gunter and Furnham (1992) view the benefit approach to market segmentation as enabling marketers to identify market segments by causal rather than descriptive factors (eg. demographics). The belief underlying this segmentation strategy is that the benefits people seek in consuming a given product are the basic reasons for the existence of true market segments. The justification for Benefit Segmentation is based on grouping people by criteria that allow the message sender to predict responses to advertising messages (Haley 1985). The primary advantage of Benefit Segmentation studies is that they identify the consumers and occasions offering the most promising source of business and describe them in meaningful and actionable terms. In doing so they form a key source of information for the development of a communications strategy, as well as delineating the buying incentive with the greatest potential, providing guidance to:

- product refinement;
- appropriate advertising tonality;
- visuals;
- spokespersons;
- nonverbal appeals;
- choice of promotion; and
- media types.

Ackerman (1984) argues that one of the secrets of effective marketing is concentrating efforts on the promotion of high leverage points provided to a segment that have expressed desire for those key benefits. This relates closely to the theory underlying the Lens model illustrated in Figure 2.9. Benefits can be categorised into three general types:

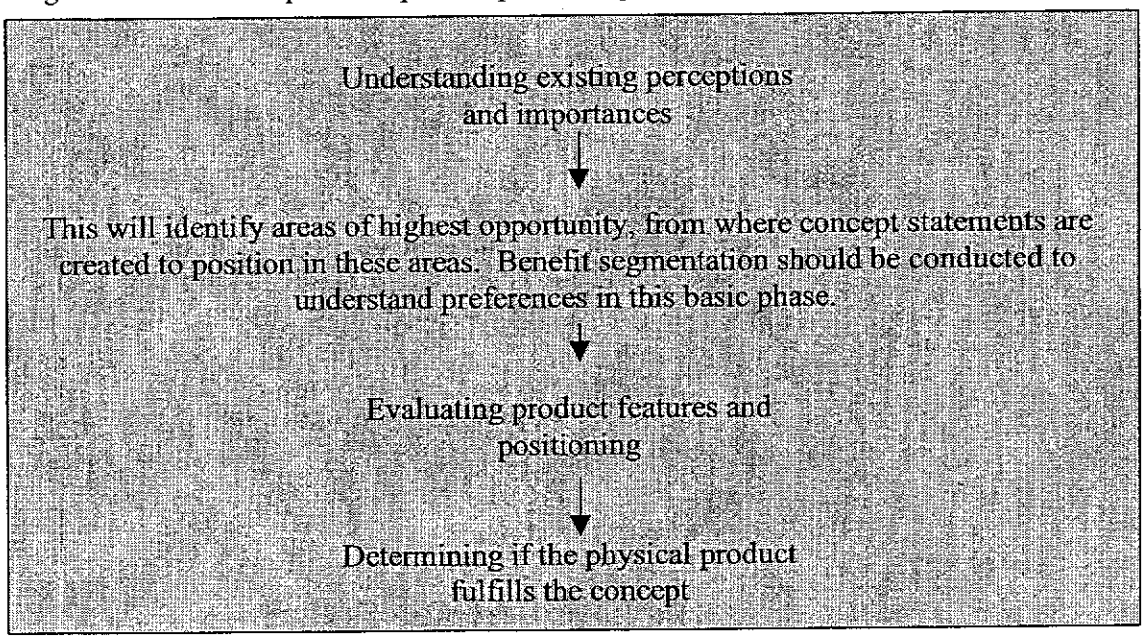
1. **What the product is.** These are physical characteristics such as what the product is made of, its ingredients, its color, its texture, its weight, and more subjective scaling such as strong, spicy, inexpensive, all natural, etc.;
2. **What the product does**, being the kinds of benefits delivered by the product in use, such as it is healthier, tastes better, lasts longer, etc.; and
3. **How the product makes one feel.** These are all sorts of emotional benefits, usually communicated non-verbally, such as:

- sensory benefits, such as sound, sight, smell, taste, and touch.
- the way people feel when they buy, use or own the product, such as secure, happy, carefree, proud, etc.
- affiliative benefits which may deal with the reputation of the manufacturer or the retailer.
- user imagery, such as choice products that are consumed in social situations reveal something about the chooser, help to reinforce self-images.

Ackerman (1984) suggests focusing on communicating the key benefits to the exclusion of others the brand may reasonably claim and targeting the segment of consumers indicating the strongest requirement for those benefits. This focus is termed the core benefit or the fundamental service or benefit that the customer is really buying (Kotler 1991). Figure 2.11 identifies the three phases in product positioning, and where benefit segmentation is applied.

This model suggests that benefit segmentation takes place early in the development stage to support the concept phase. Whilst the arrows indicate a one way operations, in reality the tasks operate interactively until the pilot phase meets the organisation's expectations.

Figure 2.11 Three phases in product positioning



Source: Alison, P., 1991, *Product Positioning: Preference Analysis and Benefit Segmentation*, p264.

2.6.2 Psychological Segmentation

Gunter and Furnham (1992) believe that conceptually, consumers can be classified in terms of their values and lifestyles. They describe the two terms in the following way:

- Values are generalised beliefs or expectations about behaviour. Individuals are not born with their values, rather values are learned or passed on from generation to generation in society, or from member to member in a subcultural group. Many values are relatively permanant from generation to generation but others undergo considerable change. The values in transition frequently are of most importance to marketing strategists because they provide the basis for difference among lifestyle market segments.
- Lifestyles are the patterns in which people live and spend time and money. Lifestyles are the result of the mix of economic, cultural and social forces that contribute to a person's human qualities. Kotler (1991) views lifestyle as the person's pattern of living in the world as expressed in the person's activities,

interests, and opinions. Lifestyle is a summary construct defined as patterns in which people live and spend time and money (Engel, Blackwell, Miniard 1993).

Lifestyle marketing attempts to relate a product, often through advertising, to the everyday experiences of the target market. Some of the most effective advertisers track trends in lifestyles of key market targets and reflect those lifestyles in their advertisements (Engel et al 1993). Lifestyle patterns (Lazer 1974) refer to a distinctive mode of living in its aggregate and broadest sense as

..... *it embodies the patterns that develop and emerge from the dynamics of living in a society.*

Lifestyle patterns combine the virtues of demographics with the richness and dimensionality of psychological characteristics and depth research (Plummer 1974). Examples of a number of lifestyle dimensions using the AIO [activities, interests, opinions] measures, or psychographics, are shown in table 2.3. Lifestyle segmentation is the marriage between lifestyle patterns and market segmentation (Plummer 1974).

Table 2.3 Life Style Dimensions

ACTIVITIES	INTERESTS	OPINIONS	DEMOGRAPHICS
Work	Family	Themselves	Age
Hobbies	Home	Social issues	Education
Social events	Job	Politics	Income
Vacation	Community	Business	Occupation
Entertainment	Recreation	Economics	Family size
Club membership	Fashion	Education	Dwelling
Community	Food	Products	City size
Shopping	Media	Future	Stage in life cycle
Sports	Achievements	Culture	

Source: Plummer, J.T., 1974, 'The Concept and Application of Life-Style Segmentation', *Journal of Marketing*, January, pp33-37.

As well as using psychographics to define segments, marketers often use psychographics to develop a better understanding of segments that have been defined with more traditional variables, such as demographics. It allows marketers to understand consumer lifestyles of the core customers in order to communicate more effectively with people in that segment (Engel et al 1993).

Life Style segmentation begins with people instead of products and classifies them into different lifestyle types by the use of clustering methods. The rationale for this approach is that although the product is the most important to marketers, consumers see *themselves* as the most important element in the equation.

According to Engel et al (1993), the benefits of lifestyle segmentation are that it may:

- provide a richer redefinition of the key target;
- tighten up the definition of the key target; and
- show that certain demographics go together to define targets which, considered independently, might not merge.

Lifestyle segmentation can be employed to position a product based on the inferences drawn from the portrait of the consumer both in terms of his basic needs and how the product fits into his life.

2.6.3 Market Segmentation Summary

In summary, the essentials of the concept of market segmentation are as follows (Green and Kreiger 1985):

1. Market segmentation presupposes heterogeneity in buyers' preferences (and ultimately choices) for products/services.
2. Preference heterogeneity for products/services can be related to either person variables (e.g. demographic characteristics, psychographic characteristics, product usage, brand loyalties) or situational variables (e.g. type of beverage for a meal, buying for oneself or a gift) and their interactions.
3. Companies can react to (or possibly produce) preference heterogeneity by modifications of their current product/service attributes (including price), distribution, and advertising/promotion.
4. Companies are motivated to do so if the net payoff from modifying their offerings exceeds what the payoff would be without such modification.
5. Companies modification of product/marketing mix includes product line addition/deletion decisions as well as the repositioning of current offerings.

Chapter 3 Methodology

3.1 Introduction

As was noted in Chapter 1, there were a number of reasons for undertaking the present study. The focus was on investigating consumer preferences for clothing (outer wear) fabrics. Specifically the study was an attempt to determine whether the clothing market can be segmented on the basis of fabric preferences and whether climate has an influence on people's fabric preference. The approach used to achieve these aims was a mixed method, using both qualitative and quantitative research.

3.2 Research Design

The literature review found no previous study of this type which could be used as a base for the design of the present study. Following research into possible approaches, a design involving two stages of data collection was developed. The first stage was mainly qualitative and the second stage was quantitative. Stage one involved a number of focus groups because it was necessary to find which fabric attributes people take into account when considering a clothing purchase. These attributes, and their levels (or aspects), were to become the independent variables in the subsequent quantitative phase.

This second stage used these derived fabric attributes to examine fabric preferences. Five samples were chosen in significantly different climatic regions but what were felt to be similar socio-economic areas. A partial factorial design was developed from the attributes and levels found in stage one and people were asked to indicate their preferences for each of the 16 clothing profiles so developed. Information on a number of background variables, such as age, occupation and family status was also collected, to test the similarity of the five samples.

3.2.1 Summary: Research Design

As already mentioned, the study required a number of stages, namely:

- Focus Groups, which included:

1. Two pilot focus groups.
2. Two main focus groups to determine how important fabric was in the decision to purchase clothing and which fabric attributes or characteristics were the most important to the respondents.
3. Discussion of attribute levels with "experts."

- A large field survey, which required:
    1. The design of a questionnaire and preparation of fabric swatches to be used when talking to respondents.
    2. Face to face interviews in the five climatic regions.
    3. The determination of fabric preference using conjoint modelling.
    4. An examination of the individual level conjoint utilities to see if there were segments within the consumers questioned.
    5. A number of discriminant analyses to examine differences between the groups from different climatic regions and differences in the backgrounds of the segments obtained.

The focus groups are discussed in the next section as their output was used in the quantitative phase. In order to do undertake the quantitative phase, a questionnaire was designed to acquire the appropriate needed information and a sample of consumers was obtained to respond to this instrument. The data collected were analysed in a variety of ways. These parts of the research design are outlined in the sections of this chapter that follow the discussion of stage one.

3.3 Stage 1: Focus Groups

As fabric preference is dependent on a range of attributes that are not known, it was decided to conduct a number of focus groups to find them. Apart from that objective, focus groups are a useful starting point for the design of questionnaires. They provide a means of exploring the ways potential respondents talk about a topic area, identifying alternatives for closed-ended items and determining the suitability of various types of scaling approaches (Stewart and Shamdasani, 1990, p12).

To test the procedure and the questions to be asked at the "real" focus groups, two trial groups were held with undergraduate Curtin University students, with each group containing over 50 students. Through these 'trials' a range of questions were tested and discussed. 'Price' and 'colour' were found to be prime attributes that were neutral to the study.

Two "real" focus groups were conducted at Curtin University using the Group Support System 'MeetingWare' that was developed by Lewis (Klass and Schmidenberg 1992) to support decision making in face-to-face meetings.

Participants were chosen who:

1. are the purchasers of clothing; and
2. manufacture, retail or design clothing.

Though convenience sampling is a strength of focus groups (Stewart and Shamdasani 1990, p53), it does not eliminate the need to choose a group that is representative of the population of interest. The 10 people in the first group were males and females, whose age ranged between 18 and 55, with rural and urban backgrounds and professional and trade occupations and who were clothing consumers. The 10 people in the second group were males and females, with ages ranging between 30 and 56, and were a spread of manufacturers, designers and retailers.

To ascertain the levels (or aspects) within each fabric factor discussions were held with 6 manufacturers of fabric. The manufacturers ranged in scale from small finishers of fabric to the larger supplier of broad cloth fabric.

The group decision support system "MeetingWare" was used for both focus groups so the collection and analysis of the qualitative data could be done by the same program and within the same venue. Participants also obtained feedback on the outcomes of the analysis of the data. Sessions were structured around a clearly articulated question or questions. The MeetingWare approach allowed participants to brainstorm, structure lists, plan, discuss and evaluate on a network of microcomputers with a large public screen at the front of the room. Participants were seated at the laptop terminals on tables placed in a "U"-shaped formation. The computer assists with special techniques, such as voting, rating, ranking, and factor analysis to determine group preferences and has been found to be useful in focus groups of this kind.

The decision conference sessions were undertaken by a facilitator and a computer analyst [termed a chauffer]. The role of the facilitator is to keep the group task focused while eliciting the appropriate information and encouraging an exchange of views within the group to surface assumptions, capture expressed preferences, clarify points raised and promote participants, mutual understanding of each members' position on the issue. The facilitator steers the group through the stages of the process and acts as the groups' computer guide, interpreter and instructor. The role of the analyst is to keep track of the group's discussions so that full documentation of the process is always available. The contents of the computer screen can be projected at will for the group to see, talk about and/or amend (Klass and Schmidenberg, 1992).

The meeting procedure for each focus group followed the Nominal Group Technique and involved the following steps:

A. The introduction by the facilitator covered the following areas:
    1. the purpose of the focus group;
    2. a reading and explanation of the two questions before the group;
    3. an explanation of the GSS system to be used;
    4. a short practice session; and
    5. time to answer any questions;

B. The following steps were followed in relation to each question. The steps were completed for Question 1 and then repeated for Question 2

1. Participants were asked to enter into the laptop as many responses as they could in answer to the question. Entries were anonymous.
2. The raw list of ideas thus generated from all terminals was then displayed on the public screen and each item was discussed and sorted interactively by the group under the guidance of the Facilitator. Participants did not know who had entered which item. Similar items were classified into categories, each with its own heading, duplicated ideas were discarded, meanings of entries were discussed and an agreed interpretation entered, and multiple ideas were separated out and classified appropriately.
3. the participants then rated the importance of each category, '10' being extremely important, '1' being not important at all;

C. The output from the steps outlined in B was as follows for each question

1. An unsorted, "raw" list of responses. These raw lists are shown in Appendix 1.
2. A sorted and classified list of responses to each question (See Appendix 1).
3. The rated list of categories, showing average ratings in descending order is shown in Appendix 1.

Each of the two focus groups were structured around two questions, viz:

Question 1. "When you purchase clothing, what considerations guide your purchase"?

Question 2. "What aspects or attributes of fabric, if any, do you consider when you buy clothes"?

Responses to Question 1 determined how important fabric was in the decision to purchase clothing. Responses to Question 2 determined which fabric attributes or characteristics were considered by the respondents, and which were the most important to them.

From the first question it was possible to be determine how important fabric is in clothing purchases.

3.3.1 How Important is Fabric

Tables 3.9 and 3.10 indicate that 'fabric' was rated as very important (an average '7') when purchasing clothing. Of the factors identified, "fabric type" is one of the few visually quantifiable items. Although, as mentioned, price (cost) and colour were prime factors that were not included in the present study.

Table 3.1 Factors and Average Ratings, Question 1. Group 1.

IDENTIFIED FACTORS	AVERAGE RATING
1. Appropriate style	8.88
2. Cost	8.25
3. Design	7.50
4. Suit existing wardrobe	7.38
5. The way it makes me feel	7.25
6. Quality	7.13
7. Colour	6.38
8. Fabric	**6.00**
9. In the store purchasing act	5.88
10.Origin/identification	5.75
11.Opinion of others	5.25
12.Care of garment	4.88
13.Uniqueness	4.63

Table 3.2 Factors and Average Ratings, Question 1. Group 2.

IDENTIFIED FACTORS	AVERAGE RATING
1. Quality	9.13
2. Style/Design	8.63
3. Personal Appearance	8.25
4. Appropriateness	8.13
5. Fabric	**8.00**
6. Colour/Pattern	8.00
7. Comfort	7.88
8. Value for money/price	7.63
9. Emotion	7.25
10.Practicality	7.13
11.Brand	6.75
12.Time for shopping	6.50
13.Image	5.88
14.Location of purchase	3.75

3.3.2 Fabric Attributes

Responses to Question 2 determined which fabric attributes or characteristics were considered by, and which were the most important to the respondents.
The same procedure of facilitation and analysis was applied as for question 1. The attributes and ratings obtained from Question 2 are shown in table 3.11 and 3.12.

Table 3.3 Factors and Average Ratings, Question 2. Group 1

IDENTIFIED FACTORS	AVERAGE RATING
1. Comfort	8.13
2. Appropriate use of fabric	8.13
3. Texture/finish	8.00
4. Quality	7.75
5. Design/Pattern/Print	7.75
6. Colour	7.25
7. Weave of Fabric	6.88
8. Fibre content	6.63
9. Manufacture	6.00
10.Care of fabric/instructions	4.75
11.Health aspects	4.13
12.Brand	3.13

Table 3.4 Factors and Average Ratings, Question 2. Group 2.

IDENTIFIED FACTORS	AVERAGE RATING
Performance	9.13
Feel	8.88
Colour	8.88
Visual appearance	8.63
The right fabric for the right product	8.63
Design/pattern	8.5
Care and maintenance	7.75
Fabric structure	7.38
Weave	7.25
Versatility	7.00
Origin of fibre	6.38
Smell	5.75

Five attributes were selected from the list that had importance scores greater than 6 and could be translated into fabric attributes. These were used in designing the fractional factorial design (orthogonal array) needed for the subsequent conjoint analysis. The attributes chosen were:

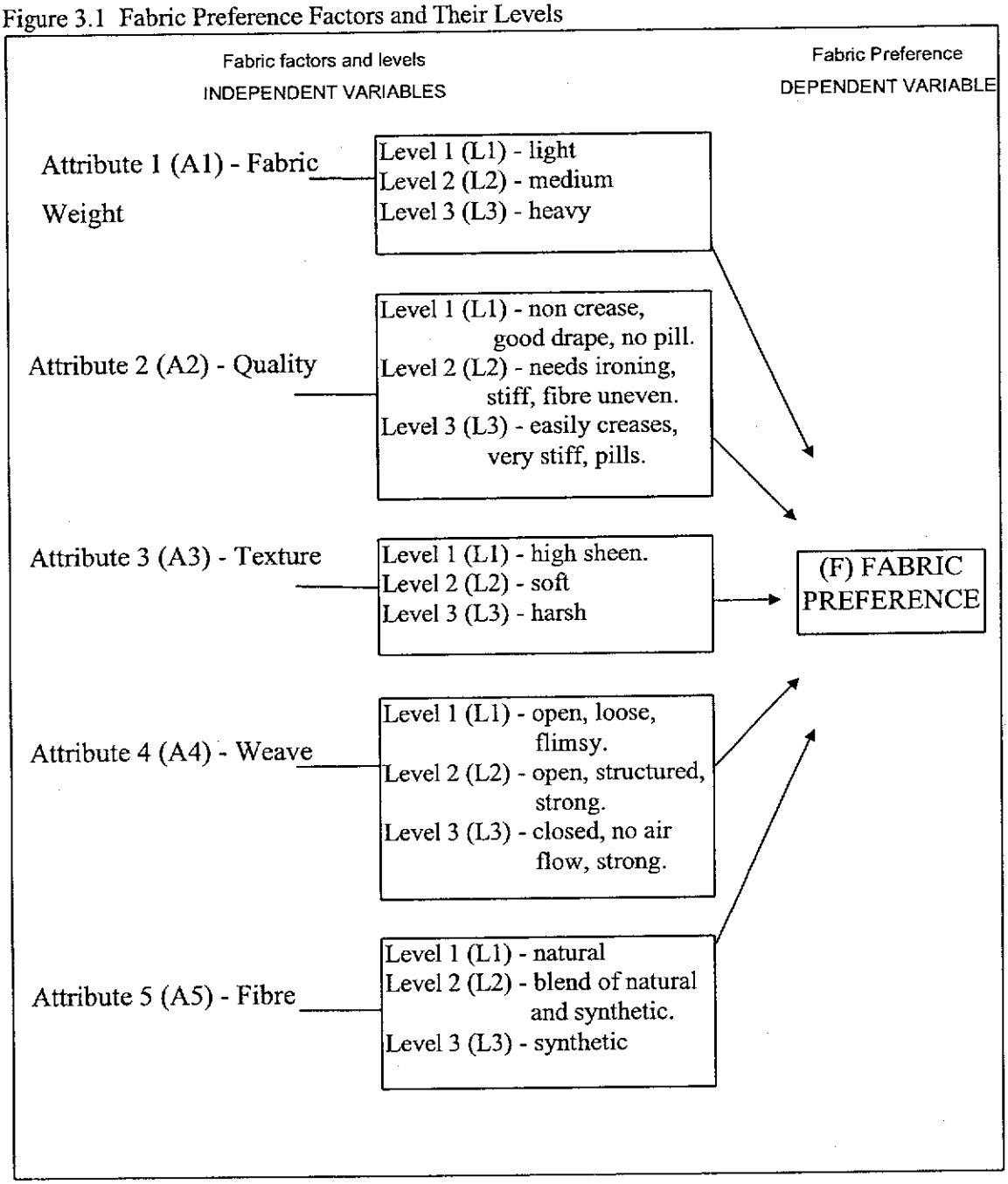
1. **Weight**, which was derived from 'comfort', feeling heavy or light weight.
2. **Quality** or 'performance', which are those perceptions relating to creasing, holding shape, fresh looking, good drape, colour fast, non pilling, durable.
3. **Texture**, which relates to finish or fabric structure.
4. **Weave** or knit.
5. **Fibre** content or origin of fibre, which relates to whether the fabric is natural, synthetic or a blend.

3.3.3 Attribute Levels

The possible levels for each attribute were discussed with representatives from the fabric manufacturing industry (experts). The appropriate levels are shown in figure 3.1, as is the relationship between the fabric attributes (the independent variables) and customer's preferred fabric (the dependent variable).

In the figure, "A" refers to attribute, "L" to the level of that attribute, and "F" to the summation of the utility recorded for a particular fabric. This diagram illustrates the number of attributes and their levels that were derived from the two focus groups and the "experts".

Figure 3.1 Fabric Preference Factors and Their Levels



3.4 Stage 2: Data Collection and Analysis of Field Survey

3.4.1 Questionnaire Design

As has already been noted, the second quantitative stage required the development of a questionnaire, which was developed with four major sections:

1. A section that asked a number of background characteristics of the respondents.
2. A section that asked a number behavioural characteristics of the respondents.
3. A section that asked respondents about their clothing purchases.
4. A section that obtained preferences for the twenty fabric profiles, based upon the obtained fractional factorial design.

The full questionnaire is shown in Appendix 2.

3.4.1.1 Demographic, Behavioural and Purchase Questions

The three demographic variables asked in the questionnaire were:

- age;
- marital and family status; and
- occupation status.

The behavioural questions provided a broad description of attitudes that might affect fabric preferences. The first of these questions contained five "activity, interest and opinion (AIO)" like statements which respondents were asked to rate, on a 9 point Likert Scale, ranging from "totally disagree" (1) to "totally agree" (9). These statements were:

1. Being well dressed is one of the important parts of my life.
2. I usually watch for the lowest possible prices when I shop.
3. The fabric is very important when I buy a garment.
4. I like to watch, listen to or play sport.
5. The man should run the family.

The second behavioural question asked respondents to indicate the magazines they read, providing information for advertising as well as being a lifestyle indicator. This question provides information on media consumption, an idea promoted by

Gullen (1994, p21) who stated that "people choose their media to fit in with their attitudes and lifestyles, but also because what they read helps develop these attitudes and give ideas on how to live their lives."

The final behavioural question was a guide to social activity and asked respondents were asked how often during an average week they:

1. Visited friends.
2. Went to a pub, club or the movies.

Went to a restaurant or party.

Two questions relating to the clothing purchase decision were also included in the questionnaire, namely:

1. Self reported annual expenditure on clothing; and
2. The distribution of clothing expenditure among different types of retail outlets. The focus groups had identified five types of retail outlets, namely:
    - fashion boutiques;
    - everyday and leisurewear stores;
    - department stores;
    - supermarkets; and
    - men's clothing stores.

    Department stores were differentiated from supermarkets by the service offered. Department stores have specialist sales people while supermarkets as have no such people, with the purchase at the checkout counter. Ultimately, however, the data from this question was not used as interviewers reported that many respondents either answered without consideration or did not answer the question at all.

3.4.1.2 Fabric Preference Questions

The fabric preference questions provided data for the conjoint modelling through:

- A set of self-explicated judgements on five fabric attributes; and

- Preference ratings on twenty fabric samples, the first four being holdouts and the final sixteen being the profiles used to estimate respondents' clothing utilities.

By using a personal interview and conjoint modelling the study was able to consider each buyer as a segment of one. Ultimately, similarities of preferences formed the basis for defining larger segments. As such, it was considered important that the attribute levels used represented meaningful choices for respondents.
Theoretically there were 243 possible fabric combinations using the five attributes and their associated levels. However, as Green and Srinivisan (1990) noted, to survey each of those combinations in the market place would be impractical because of:

1. respondent fatigue or overload;
2. respondent confusion;
3. the use of simplifying tactics by respondents, which ultimately may distort preference structure; and
4. increased administration costs.

To effectively survey consumer preference, Green and Tull (1978, p487) suggest the use of a fractional factorial design (orthogonal array) that reduces the large number of combinations to a smaller, more manageable number, and the use of conjoint modelling. The test combinations in the orthogonal array were selected so that the independent contributions of all five attributes remained balanced. In this way, each attribute's weight was kept separate and were not confused with those of the other attributes (Green and Wind 1975, p109).
The desired array resulted in sixteen stimulus profiles, with each profile containing five attributes and one level per attribute. An additional four profiles were used as a holdout sample for validation purposes. The holdout samples were presented to respondents first. Three examples of the descriptors of an individual stimuli (samples 1, 2 and 3) are shown in figure 3.2. The orthogonal array of the stimulus sets are detailed in figure 3.3.

Figure 3.2 Description of Three Individual Stimuli.

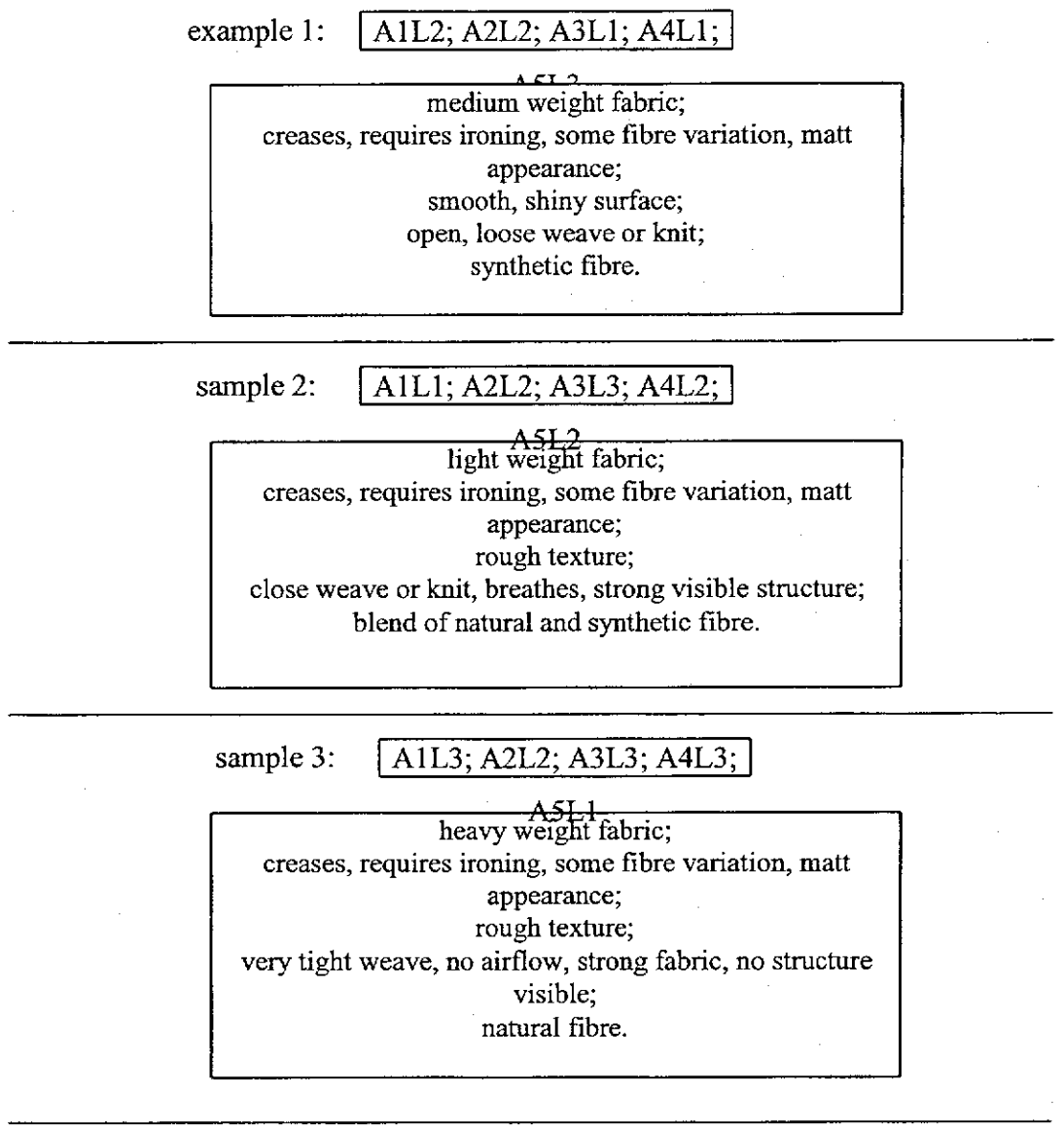


Figure 3.3 Orthogonal Array of Stimulus Sets

Practice 1	A1L3; A2L1; A3L3; A4L2; A5L1	Sample 1	A1L2; A2L2; A3L1; A4L1; A5L3
Practice 2	A1L2; A2L3; A3L2; A4L3; A5L2	Sample 2	A1L1; A2L2; A3L3; A4L2; A5L2
Practice 3	A1L1; A2L2; A3L1; A4L2; A5L3	Sample 3	A1L3; A2L2; A3L3; A4L3; A5L1
Practice 4	A1L1; A2L3; A3L1; A4L1; A5L3	Sample 4	A1L1; A2L2; A3L2; A4L2; A5L1
		Sample 5	A1L1; A2L3; A3L3; A4L1; A5L1
		Sample 6	A1L2; A2L1; A3L2; A4L2; A5L1
		Sample 7	A1L1; A2L1; A3L1; A4L3; A5L2
		Sample 8	A1L3; A2L1; A3L3; A4L2; A5L3
		Sample 9	A1L3; A2L3; A3L2; A4L1; A5L2
		Sample10	A1L1; A2L3; A3L1; A4L3; A5L3
		110 Sample11	A4L2; A5L3 A1L2; A2L3; A3L3; A4L3; A5L1
		Sample12	A1L1; A2L3; A3L1; A4L2; A5L1
		Sample13	A1L1; A2L1; A3L3; A4L1; A5L1
		Sample14	A1L3; A2L1; A3L1; A4L2; A5L1
		Sample15	A1L1; A2L1; A3L2; A4L3; A5L3
		Sample16	A1L2; A2L1; A3L3; A4L2; A5L2

note: the practice sets can also be termed holdout samples

3.4.1.3 Stimulus Set: Preparation of Swatches

The attributes in the present study were more suited to visual assessment than to pictorial or descriptive narration. Therefore, swatches of fabric that matched the descriptions of each sample (as illustrated in figure 3.2) were found and cut to a size of 250mm wide by 500mm long, with a descriptor card stapled to the top of each swatch. Senior (1994) found that this was an adequate size for participants to assess a fabric. Black fabric was chosen because of its neutrality and also because of the practical aspect of not showing dirt when being handled by interviewees. Participants were asked to disregard the fabric's colour. Both the swatch size and colour neutrality issues were tested qualitatively when the survey was pre-tested with Curtin University students.

3.4.1.4 Measurement of the Self-explicated and Profile Stimuli

Question 2 listed the five factors and asks respondents to indicate the relative importance of each factor by allocating 100 points between the attributes. Such a 100 point rating scale is thought to give flexibility and accuracy (Green and Srinivisan, 1990; Zikmund, 1982, p323). Questions 3, 4, 5 and 6 were used to rank the stimuli. Question 3 asked respondents to group the twenty fabrics into "Yes, I would wear that type of fabric," "Maybe I would" or "No, I definitely would not" piles. Question 4 asked respondents to rank the "Yes" group in order of preference, question 5 asked respondents to rank the "Maybe" group in order of preference, and question 6 asked respondents to rank the "No" group in order of preference. This resulted in the fabric profiles being ranked in order of preference from first to last.

3.4.2 Field Survey: Sample Selection

Given funding constraints, a convenience (rather than a representative) sample from within each climatic region was used. Respondents were obtained from Australia's five most populated climatic zones, as shown in map 3.1. Climatic zones 6 and 7 are

sparsely populated and were not included in the present study. The locations chosen were shopping centres in Melbourne, Adelaide, Darwin, Perth and Geraldton. Two hundred and sixty five female respondents aged between eighteen and seventy provided the data used in the present analysis. The locations and numbers of respondents was chosen for the following reasons:

1. The five cities are located in the five most populated climatic zones of Australia as defined by McBoyle (Jeans 1987, p29). Map 3.1 and table 3.5 indicate the location of these zones within Australia and the cities chosen to represent these zones. Each city has a large enough population to allow for a reasonable representation of demographic groups. The five cities also had trained interviewers available so that the data could be collected relatively easily.
2. Females were targeted because the focus groups found that the female of a couple or family makes most clothing purchases for both males and females.
3. The age range of between eighteen and seventy years old included all categories within the Australian Bureau of Statistics (1990) survey of clothing expenditure.
4. Due to budgetary constraints the sample size was set at approximately two hundred and fifty (250) respondents, with at least fifty (50) respondents from each centre.
5. Inquiries to a number of research agencies, explaining the need to survey in areas with people from a range of socio-economic backgrounds that were representative of the general population of that city, resulted in the following shopping centres being selected:
    1. Perth: Karrinyup Shopping Centre
    2. Geraldton: Northlands Shopping Centre
    3. Melbourne: Southlands Shopping Centre
    4. Adelaide: Southlands Shopping Centre
    5. Darwin: Casuarina Shopping Centre

Map 3.1 The Five Most Populated Climatic Zones Of Australia, as Defined By McBoyle (Jeans 1987, p29)

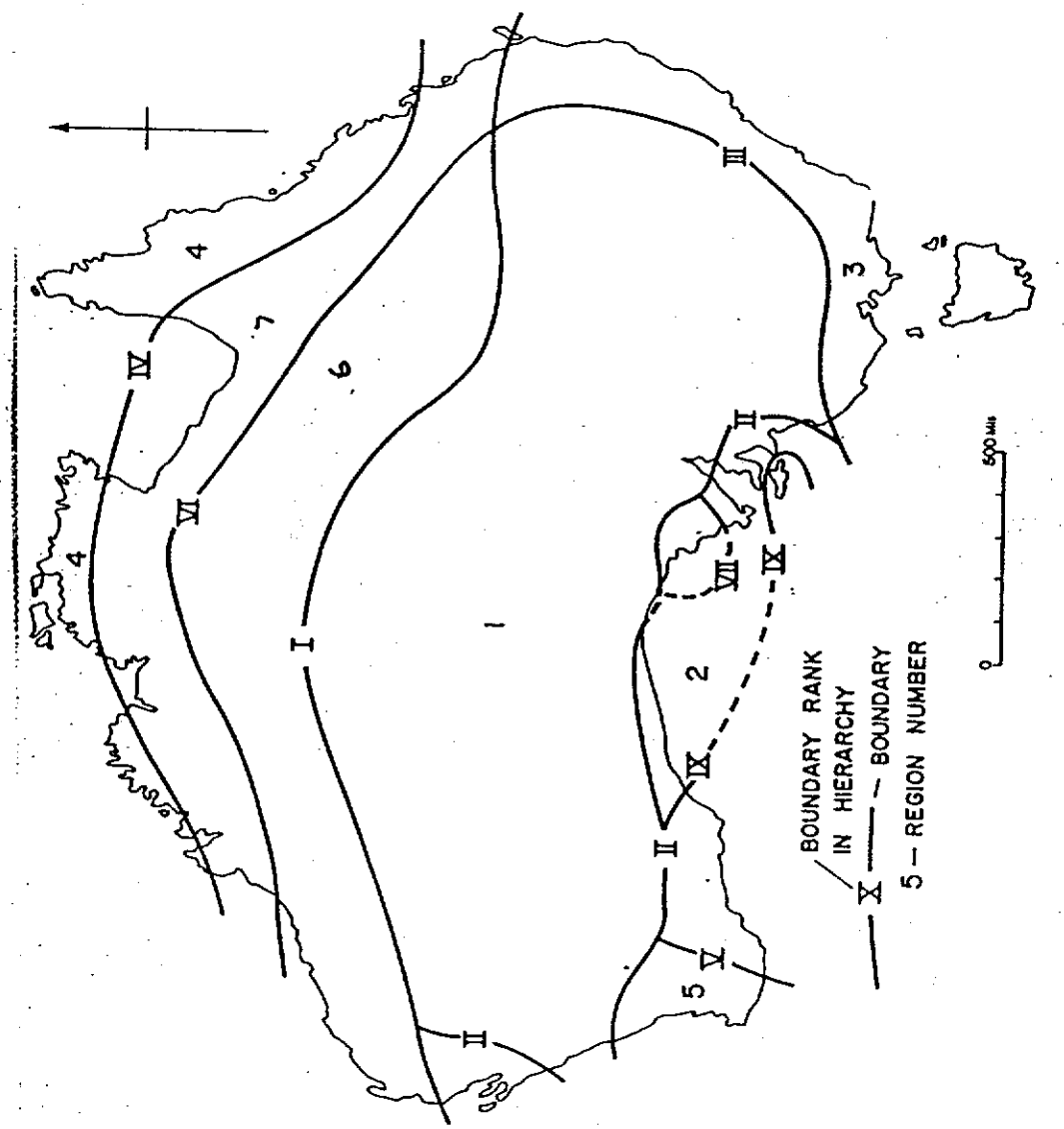


Table 3.5 Cities from five of McBoyle's climatic regions.

Region	Description	Representative City
1	Subtropical humid zone	Melbourne
2	Mediterranean zone	Adelaide
3	High mediterranean zone	Perth
4	Semi-arid zone	Geraldton
5	Tropical savannah zone	Darwin

The data in the second stage were obtained through face to face interviews. Wells Australasia Research administered the survey at the nominated shopping centres, with a minimum target of fifty respondents at each centre. The company indicated this should be achievable by allocating four hours and three interviewers to each centre. They guaranteed the fifty respondents and any surveys over fifty within the allotted time were also delivered. All interviews were conducted according to the Market Research Society of Australia's Code of Professional Behaviour and were checked for completeness.

3.5 Data Analysis

3.5.1 Conjoint Analysis

Conjoint analysis was chosen to determine the relative importance of the attributes and the impact of attribute levels for a number of reasons. Firstly, the focus of conjoint modelling is on the measurement of buyers' preferences for product or service attributes (Green and Srinivisan 1978, 1990). Conjoint analysis is concerned with the joint effect of two or more independent variables on the ordering of a dependent variable, such as preference (Rao and Soutar 1975). As fabric is a combination of attributes that can be changed, conjoint analysis is likely to be more effective than alternative post-hoc segmentation methods. Also, because the part-worth functions, which are the heart of conjoint analysis, are measured at an individual level, the utility information calculated for each respondent can be used to construct a market simulation, enabling the testing a range of alternative product

formulations. The part-worths can also be used as a basis for clustering consumers according to the similarity of their attribute level preferences and designing the best product for each buyer segment.

Conjoint choice modelling is well suited to the new product development process as it allows product designers to search for the best profile of the various attribute-level combinations for a product or service (Rao and Soutar 1975; Witink et al 1994, p43).

Conjoint studies also enable researchers to simultaneously collect respondents' background information (Green and Kreiger 1991, p21) so that customer profiles can be linked to the benefits they seek.

Green and Srinivasan (1990) concur with others that the focus of conjoint modelling is on the measurement of buyer preferences for product attribute levels (including price) and the buyer benefits that may flow from product attributes. They view conjoint modelling as a technique that can be used at an individual level. Preferences for attribute levels are measured at an individual level, enabling preference heterogeneity to be found if it is present. They argued that conjoint studies should also include the collection of respondents' background information (eg., demographic and psychographic data) as these often determine the perceived importance of purchase or use occasions, so enabling researchers to develop more meaningful segments.

Where conjoint modelling is used to segment a market, it is often referred to as benefit or behavioural segmentation (Green et al 1985). According to Srinivisan and Wier (1992), this modelling method outperforms the standard approaches to creating benefit based segments because it reveals more meaningful market segments, yields better estimates of the size of these segments and performs more reliably than other techniques.

Conjoint modelling is generally performed through personal interviews using a collection of photos, samples, cards or tables describing a series of products in terms of attributes at various levels, the important attributes of the product having already

been ascertained through initial secondary or qualitative research. Respondents can rank each profile from highest to lowest or rate them on some preference scale. From these overall evaluations it is possible to infer the utility of each attribute level being studied. The preference model used in this study was the main effects part-worth model, which assumes that the part-worths of the factor levels can be added and that no interaction effects are present.

It is important to understand the limitations of this method. Srinivisan (1992) has noted that:

- it may not always fully capture the complexity of a market;
- it assumes the important attributes of a product can be identified in advance and that consumers do trade-off;
- it is relatively labour intensive, and the data is expensive to collect; and
- the validity is dependent on the design of the survey, therefore it requires experienced and meticulous researchers.

In this study, the first two points were seen as likely to have an impact on the effectiveness of the research. To address this price and colour were deleted from the study and extensive pre-tests were undertaken to understand people's recognition of fabric attributes.

The relative perceived importance of each fabric attribute was determined by analysing the mean importance rating of each factor by each location. This information is important in evaluating whether consumers accurately perceive their preference for fabric attributes. Further, if there is a difference between individual relative importances and group relative importances across the attributes, the existence of benefit segments can be assessed. Bretton Clark's "Conjoint Analyzer" calculates relative importance for each individual and for the "average" person surveyed. "If these two figures are significantly different, this indicates that respondents are heterogeneous" (Bretton Clark 1992, p 30) and that there are likely to be segments in the sample.

Part worth utilities were initially calculated for each of the fabric attribute levels for each respondent. These utilities were then used to determine whether climate influenced fabric preference through the following analysis.

1. Segments were determined by using Bretton-Clark's Conjoint Segmenter program to group people with similar attribute utilities together.
2. Once the segments were determined, discriminant analysis was used to determine whether the segment preference differences could be explained by background variables, including location (or climatic region).
3. A cross-tabulation of location and cluster provided information as to the frequency of each segment in each location.

This procedure achieved the objectives of:

3. examining consumer preference for fabric in each of the five major climatic zones in Australia, using fabric attribute levels as the criteria, in order to provide information as to the fabric attributes that are most preferred, and the nature of the benefit segments in each zone, based on fabric attribute preferences; and
4. determining significant differences in fabric preference between the climatic zones so as to indicate whether manufacturer need to take climate taken into account when marketing fabric.

Discriminant analysis was also able to determine whether differences in preferences for fabric attributes could be explained by the background variables measured.

The study provided information for the development of at least two marketing strategies, namely:

- The broad preferences at each location if a strategic approach is to consider each location as a segment.
- The number and nature of segments within each location to provide a more complete approach for target marketing.

The results of the data collection and the various analyses undertaken to find answers to the research questions raised in this chapter are outlined in the next chapter. Their implications are discussed in chapter 5.

Chapter 4 Research Findings

This chapter presents the results of the various analyses undertaken to provide answers to the research questions posed in chapters one and three, namely:
(a) whether the clothing consumer market can be segmented;
(b) the fabric attributes most preferred by those segments; and
(c) whether climate has an influence on fabric preference.

Before examining these questions in detail, an evaluation of the background characteristics of the samples obtained across the five locations is presented in the subsequent sections.

4.1 Sample Characteristics Across the Five Locations

As has already been noted, convenience (rather than a representative) samples were drawn from within each of the selected climatic regions. Respondent were approached at shopping centres in Melbourne, Adelaide, Darwin, Perth and Geraldton, providing an overall sample of two hundred and sixty five females aged between eighteen and seventy.
A number of demographic and behavioural variables were included in the questionnaire to provide background data, so as to better understand the segments obtained and to determine if there were significant differences between the samples from each zone. If there the samples were similar then the influence (or lack of influence) of climate on fabric preference would be better substantiated. These location differences are examined in the subsequent sections of this chapter.

4.1.1 Age and Occupation

There was a similar spread of ages in all locations, with the majority of respondents being aged from 25 to 55. Table 4.1 shows that, over the whole sample, there were a similar number of respondents in each of the three age categories. A t-test found the only significant difference was that the mean age of the Perth sample was a little

older than that in the other four centres. The same test found there were no significant differences between the mean ages of the other four samples.

Table 4.1 Age of the Respondents

Location	Age 18-24	Age 25-35	Age 36-45	Age 46-55	Age 56-60	No. in the sample
Melbourne	19.6%	21.6%	25.5%	29.4%	3.9%	51
Adelaide	17%	20.8%	34%	18.8%	9.4%	53
Perth	9.3%	9.3%	29.6%	44.4%	7.4%	54
Geraldton	12%	44%	16%	16%	12%	50
Darwin	21.6%	25.5%	29.4%	15.7%	7.8%	51
Average Percentage	15.8%	23.9%	27%	25.2%	8.1%	100%

Thirty eight percent of the respondents were occupied full-time in home duties, as shown in table 4.2. This was generally representative of all locations, although only 28% of the Darwin sample were in this category. The least represented occupation was the retired.

Table 4.2 Occupation of the Respondents

Location	Full time Home	Full time Professi	Full time Skilled	Part time Professi	Part time Skilled	Student	Retired	No. of respondents
Melbourne	45%	9.9%	5.9%	19.6%	13.7%	5.9%	0%	51
Adelaide	37%	7.4%	9.3%	13%	22.2%	9.3%	1.8%	54
Perth	32.7%	14.5%	3.7%	23.6%	21.8%	3.7%	0%	55
Geraldton	46%	12%	8%	12%	16%	4%	2%	50
Darwin	27.5%	19.6%	11.7%	13.7%	15.7%	5.9%	5.9%	51

4.1.2 Marital Status

The majority of respondents fitted within four marital status categories. These were young and unmarried (17%), young and married with children (19%), middle-aged and married with children (27%), and middle-aged and married without dependants (11%). Of the total number of respondents, 86% were represented in the six

categories shown in table 4.3. In each city, more than 45% of respondents had dependants.

Table 4.3 Marital Status of the Respondents

Location	Young Unmarried	Young Married w/c child	Young Married with child	Midage Married with child	Midage Divorce with child	Midage Married w/c dep.
Melbourne	21.6%	2%	23.5%	31.4%	2%	7.8%
Adelaide	22.2%	7.4%	9.4%	27.8%	9.3%	11.1%
Perth	14.5%	7.3%	3.6%	36.4%	9.1%	16.4%
Geraldton	14%	4%	36%	20%	6%	16%
Darwin	11.8%	5.9%	25.5%	19.6%	5.9%	3.9%

4.1.3 Social Activity

As already mentioned, respondents were asked how often each week they visited friends, went to a pub, club or the movies or went to a restaurant or party. The average frequency for each category is shown in table 4.4. A t-test found that respondents in all locations had similar habits, except for Darwin, where respondents go to the pub significantly more than respondents in Geraldton ($t=2.68$, $p=0.009$).

Table 4.4 Social Activities of the Participants

Location	Visit Friends	Pub, Club or Movies	Restaurant
Melbourne	2.1961	0.7255	0.7843
Adelaide	2.3704	0.8333	0.6852
Perth	2.1273	0.6727	0.9273
Geraldton	2.0600	0.4600	0.6200
Darwin	2.7255	1.2353	0.9608

4.1.4 Reading Habits

Reading habits were also surveyed. Table 4.5, which shows the number of people from each sample who had read particular magazines during the month before the

survey, suggests that New Idea, Women's Weekly and Woman's Day are the most frequently read magazines and these results were consistent across all locations. There is an indication that the Geraldton sample may be more "traditional" in their reading habits, with lower percentages reading Vogue, Who and Cosmopolitan.

Table 4.5 Magazines Read in the Last Month

Magazine	Melbourne (%)	Adelaide (%)	Perth (%)	Geraldton (%)	Darwin (%)
Vogue	16	19	16	4	16
Forum	0	6	2	4	8
You	0	2	4	2	2
New Idea	67	57	53	56	47
Who	24	22	29	16	18
Dolly	6	7	5	6	10
Women's Weekly	49	43	49	58	49
Cleo	14	11	13	10	20
Woman's Day	45	43	53	50	45
Cosmopolitan	18	15	22	12	22
None	18	26	24	22	25

4.1.5 Purchase Behaviour

To gain an indication of spending habits at each location, respondents were asked to estimate their annual expenditure on clothing (outerwear). Table 4.6 shows that the majority spent less than $1200 per year. Seventy five percent spent less than $1200 per year, 18% spent between $1200 and $2400, with the remainder spending between $2400 and $4800 annually. The percentages of each location's sample within each range was similar, with the two ends of the spectrum being Perth, where 16% spent over $2400 annually, and Geraldton, where 90% spent less than $1200 annually. A mean expenditure calculated from the categories surveyed indicated Geraldton spent significantly less than Perth and Melbourne and Perth spent more than Adelaide.

Table 4.6 Respondents' Annual Expenditure on Clothing

Location	$0-1200	$1200-2400	$2400-4800	$4800-7200	$7200+
Melbourne	34	13	4	0	0
Adelaide	42	10	2	0	0
Perth	32	14	8	1	0
Geraldton	45	5	0	0	0
Darwin	42	6	1	0	2
Column Total	195	48	15	1	2
Percentage	74.7%	18.4%	5.7%	0.4%	0.8%

4.1.6 Attitudes

Respondents' general attitudes to a small range of topics were surveyed by asking their agreement with the five statements shown in Table 4.7. It seems that Perth respondents were not as concerned as Adelaide or Geraldton respondents about shopping for the lowest possible prices [Adelaide ($t=2.24$, $p=0.027$) and Geraldton ($t=2.17$, $p=0.032$)]. This was, however, the only significant difference, and even this was a difference in the level of agreement, rather than a disagreement.

Table 4.7 Respondents' Level of Agreement on Statements (1=totally disagree; 9= totally agree).

Location	*Statement 1 "dress"*	*Statement 2 "price"*	*Statement 3 "fabric"*	*Statement 4 "sport"*	*Statement 5 "man"*
Melbourne	5.96	5.22	7.22	5.84	3.02
Adelaide	6.87	6.22	7.17	5.43	2.37
Perth	6.63	5.09	7.56	6.00	3.11
Geraldton	6.40	6.20	7.18	5.94	2.64
Darwin	6.41	5.98	7.41	5.98	3.00

Table 4.7 shows that the level of agreement to statement 3, the importance of fabric was consistently high at all locations and confirmed one of the premises upon which this study is based, "that fabric is an important attribute in the purchasing decision process of clothing".

4.1.7 A Summary of the Difference between the Samples from the Five Locations

The research design attempted to choose representative samples from each of the five locations that had similar demographic and behavioural characteristics so that climatic region was the main differentiating variable. Based on the sample characteristics found, the main differences between the samples were:

1. Perth's sample was a little older than the others;
2. Darwin respondents 'go to the pub' more often than Geraldton women; and
3. Geraldton and Adelaide may not be prepared to spend as much on clothing.

Overall, however, it seems that the samples in each of the locations were similar in demographics, behaviour and attitudes. This is not to say that the samples represent the population in their respective climatic zones and, therefore, they have not been compared with Australian Bureau of Statistics data. However, the survey company's experience suggests that, by choosing samples from large shopping centres in densely populated areas, the best fit to the population in that zone would have been obtained. For the purpose of this study it was important that the samples chosen were similar and it appears that this was achieved.

4.2 The Relative Importance of Fabric Attributes at Each Location

As was noted in chapter 3, respondents were initially asked to allocate 100 points to the 5 attributes included in the study. As can be seen in table 4.8, the *quality* of the fabric was perceived to be the most important attribute in all locations, with the *type of fibre* and *weight* being the next most important. A one-way analysis of variance found there was a significant preference difference between *fabric weight* (F prob. = 0.0495) and *quality* (F prob. = 0.0133). Melbourne rated weight significantly lower than Perth (t=2.25, p=0.027), Geraldton (t=2.18, p=0.033) and Darwin (t=2.36, p=0.021). Darwin also rated this attribute significantly higher than Adelaide (t=2.36,

p=0.021). Darwin rated *quality* significantly lower than Adelaide (t=2.37, p=0.021) and Melbourne (t=2.34, p=0.028).

Table 4.8 Mean Importance Rating of Each Fabric Attribute (out of 100 points)

Location	Fabric weight	Quality	Texture	Weave	Type of fibre
Melbourne	12.7	41.5	15.0	11.4	19.8
Adelaide	17.1	41.6	16.3	15.0	15.1
Perth	19.9	34.8	18.7	13.8	20.0
Geraldton	19.5	37.2	18.2	15.2	19.0
Darwin	25.1	39.3	20.1	12.5	24.1

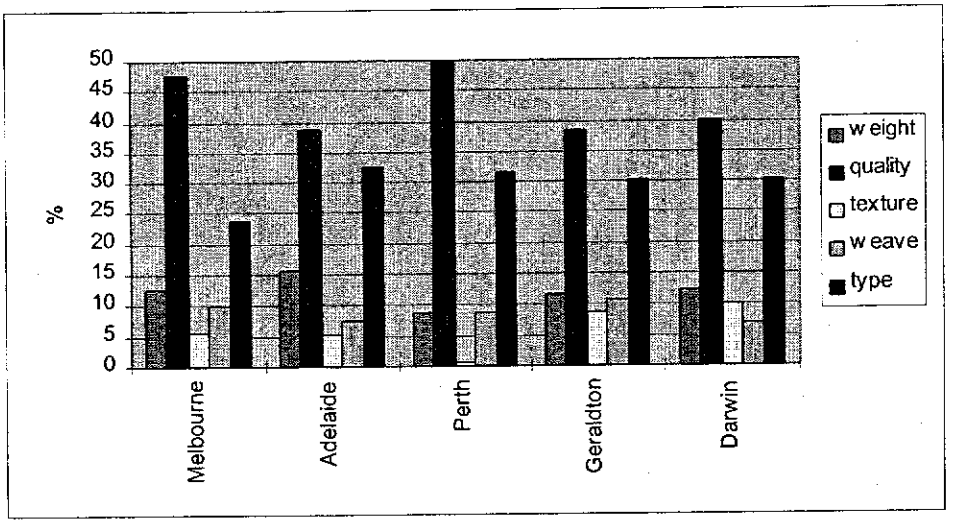
To determine the relative importance of these attributes and their levels within the fabric choice process respondents were then asked to rank order 20 fabrics profiles, including 4 holdout samples, from their most preferred to their least preferred options. These ranks were used as input into a conjoint analysis program (Bretton-Clark 1992) that enabled an examination of the relative importance of the various attributes and the impact of attribute levels on people's preferences.

4.3 Fabric Preferences at Each Location

4.3.1 Conjoint Analysis

The data collected from the respondents' ranking of the 16 sample profiles in each location were subjected to conjoint analysis which estimated the part-worth utility scores for each of the five attributes for each person interviewed. The relative importances of the five attributes in each location are shown in figure 4.1. Not surprisingly, given the earlier analysis, *quality* was found to be extremely important in explaining respondents' preferences in all five locations, with Perth recording the highest relative importance for this attribute (50 percent).

Figure 4.1: Each Cities' Relative Importance of the Five Fabric Attributes



Part worth utility scores for each fabric attribute level were also calculated, as shown in table 4.9. While there is some similarity in the part-worth utilities across the various locations, there are also some obvious differences. For example, heavy weight fabric was viewed positively only in Geraldton and Darwin and Adelaide were strong in their preference for lightweight fabric. Smooth and soft texture fabric was rated as most preferred by Melbourne whereas a rough texture was rated highly by Adelaide. Tightly woven fabric was rated as least preferred in Melbourne and Perth and Melbourne were the only location to rate natural fibre fabric positively.

Table 4.9 Mean Attribute Utilities for each Location

Attributes	Melbourne	Adelaide	Perth	Geraldton	Darwin
Heavy weight (W1)	-.730	-.667	-.551	.005	.079
Medium weight (W2)	.299	-.282	.348	-.435	-.463
Light weight (W3)	.431	.949	.203	.430	.386
Non-crease (Q1)	2.828	2.543	3.038	1.322	1.434
Creases (Q2)	-1.502	-1.096	-1.086	.184	-.120
Creases easily (Q3)	-1.326	-1.449	-1.952	-1.506	-1.314
Smooth texture (T1)	.094	-.091	-.050	-.009	.356
Soft texture (T2)	.202	-.226	.028	-.320	-.340
Rough texture (T3)	-.296	.317	.022	.329	-.016
Open weave (Weave 1)	-.158	-.374	.498	-.452	-.168
Close weave (Weave 2)	.541	.414	-.125	.331	-.134
Tight weave (Weave 3)	-.383	-.040	-.373	.121	.302
Natural Fibre (Type 1)	.269	-.083	-.018	-.024	-.317
Blend (Type 2)	-1.216	-1.64	-1.578	-1.103	-.876
Synthetic Fibre (Type 3)	.947	1.723	1.596	1.127	1.193

By using the highest scoring level for each attribute, the most preferred fabric for each city can be calculated and these are shown in table 4.10. The total score at each location provides a comparison of the utility of the most preferred combination of attribute levels, taking into account the relative importance of each attribute.

Table 4.10 Preferred Fabric for Each City Sample

City	Relative Importance of the Attribute	Total Utility	Description of the Preferred Level in Each Attribute
MELBOURNE	quality (47.71%)		non-crease, good drape, even and faultless
	fibre type (23.82%)		synthetic fibre
	weight (12.80%)		light weight
	weave (10.18%)		close, breathes, strong visible structure
	texture (5.48%)	8.1053	soft texture
ADELAIDE	quality (38.74%)		non-crease, good drape, even and faultless
	fibre type (32.65%)		synthetic fibre
	weight (15.68%)		light weight
	weave (7.65%)		close, breathes, strong visible structure
	texture (5.27%)	8.1184	rough texture
PERTH	quality (49.85%)		non-crease, good drape, even and faultless
	fibre type (31.70%)		synthetic fibre
	weight (8.98%)		medium weight
	weave (8.69%)		open, loose, breathes well
	texture (0.77%)	8.2226	soft texture
GERALDTON	quality (38.45%)		non-crease, good drape, even and faultless
	fibre type (30.32%)		synthetic fibre
	weight (11.76%)		light weight
	weave (10.65%)		close, breathes, strong visible structure
	texture (8.82%)	8.1859	rough texture
DARWIN	quality (40.24%)		non-crease, good drape, even and faultless
	fibre type (30.28%)		synthetic fibre
	weight (12.41%)		light weight
	texture (10.19%)		smooth texture
	weave (6.88%)	8.4177	tight weave, no airflow, no visible structure

Overall, the part-worth utilities suggest that the attribute order of attribute importance is:

1. *quality.*
2. *fibre.*
3. *weight, weave* and *texture* of similar importance.

They also show that the same levels (*non-crease and synthetic*) of the two most important attributes (*quality* and *fibre*) have the highest utility in all five locations, with lightweight fabrics having the highest utility in all cities except Perth.
To examine part-worth differences in a multivariate way, a discriminant analysis was undertaken in which the independent variables were the 15 part-worth utilities scores (one for each attribute level). Using the I^2 statistic suggested by Peterson and Mahajan (1976), two significant functions were found that, together, explained 81% of the variance in the data, with 65% being explained by function one and 16% by function two. To gain an insight into the differences between the locations, Soutar and Clarke's (1981) suggestion to use the structural correlations for this purpose was followed, and the correlations are shown in table 4.11.

Table 4.11 Correlations between Discriminating Variables and Canonical Discriminant Function (variables ordered by size of correlation within function)

Choice	Function 1	Function 2
Non-crease	.67	.36
Creases	-.59	-.19
Medium weight	.43	-.10
Heavy weight	.32	-.20
Soft Texture	.28	-.16
Tight weave	.26	.07
Open weave	.22	-.02
Rough texture	.11	-.08
Synthetic fibre	-.04	.61
Blend of Synthetic & Natural fibre	-.32	.57
Light weight	-.06	-.46
Natural fibre	-.07	.32
Smooth texture	-.04	-.28
Creases easily	.11	-.26
Close weave	-.08	-.19

Table 4.11 suggests that function 1 is most related to the quality and weight of fabric, while function 2 is most related to the type and texture of the fabric. Higher scores implying greater importance in each case. The locations' means (centroids) can be used to determine how they compare on these two functions and the results are shown in table 4.12.

Table 4.12 Location Means (Groups' Centroids) – Attribute Importance Functions

Location	Quality & Weight	Texture & Type
Melbourne	.63	-.27
Adelaide	.05	.39
Perth	.45	.23
Geraldton	-.64	-.13
Darwin	-.55	-.27

Table 4.12 supports the information from Table 4.10, which showed Melbourne, Adelaide and Perth respondents were more likely to choose fabrics that do not crease, is a medium weight, soft textured, open weave fabric than are Geraldton or Darwin. Again following Soutar and Clarke (1981), the position of each location can be mapped, as shown in Figure 4.2. The direction of the structure correlation vectors helps to interpret the discriminant functions about which the groups are plotted, and so helps explain the relative differences between the groups. From the map it appears that:

1. Geraldton and Darwin respondents are more likely to choose a fabric that is a heavier weight, a tighter weave and that creases.
2. Perth and Adelaide respondents are more likely to choose a fabric with higher synthetic properties, a lighter weight, non-creasing and rougher texture, with Perth being more likely to prefer a more open weave.
3. Melbourne respondents are more likely to choose a fabric that is of medium weight, has a softer texture and more natural fibre content.

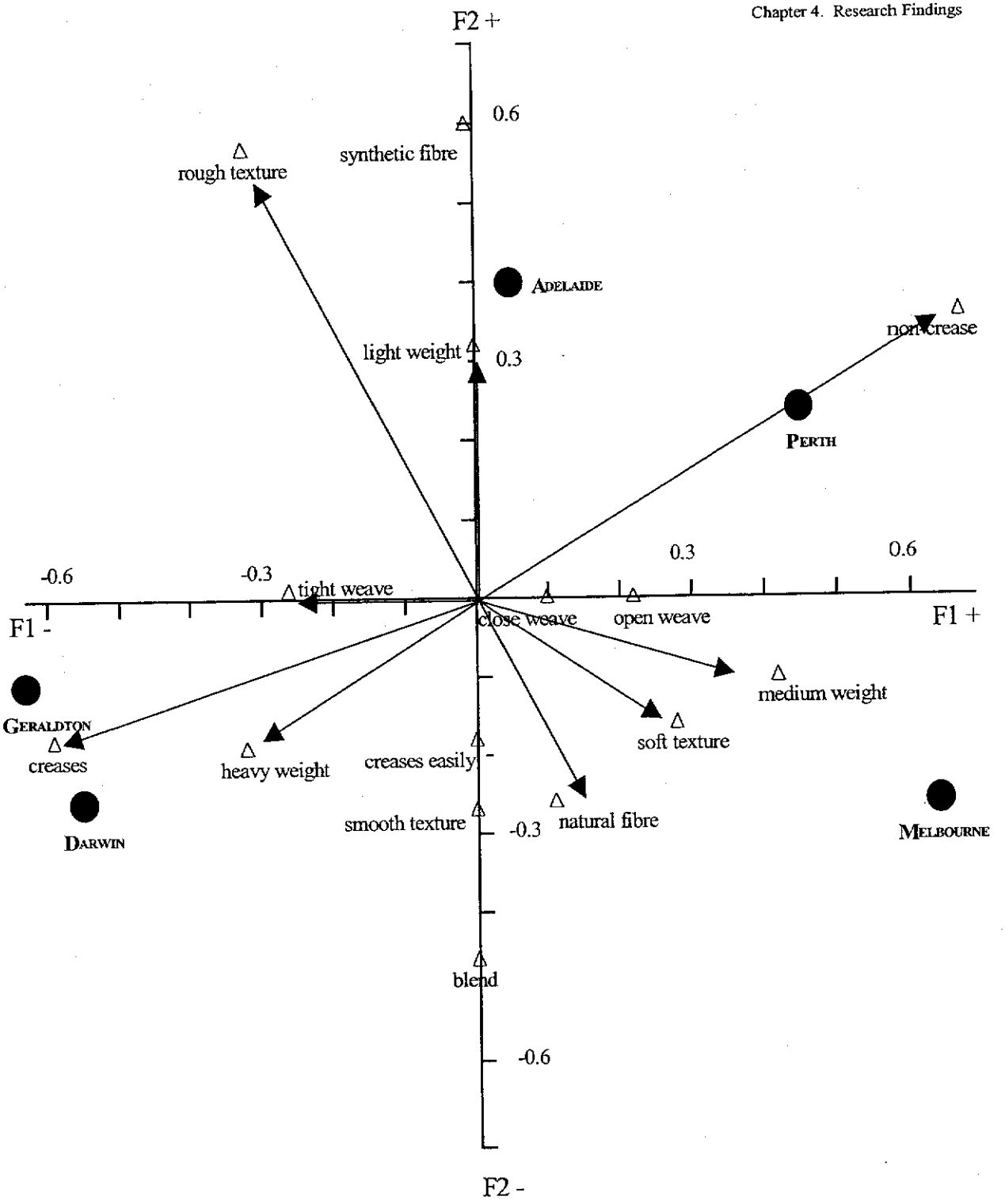


Figure 4.2: Discriminant Map of Variables and the Preference of Locations

4.4 Segmenting the Sample

4.4.1 Conjoint Analysis

As already noted, the part-worth utilities were estimated from each respondent's rankings of the fabric profiles using Bretton-Clark's *Conjoint Analyzer* program. The relative importances of the five attributes, both on an individual basis and as a group (ie. average respondent) are shown in Table 4.13. As can be seen, the differences between the individual and group results are significant for *quality* and *weight* and, to a lesser extent, for *weave* and *fibre*. There is little difference for *texture*. Having such differences in group and individual results suggest respondents' part-worth utilities are not homogeneous and that there may be segments seeking different benefits from fabric (Bretton-Clark 1992). Had the differences been the same as for *texture* the presence of segments would have been unlikely. However, there are big enough differences to suggest that it would be worthwhile to examine the possibility of benefit segments within the sample.

Table 4.13 Conjoint Analysis of the Populations' Fabric Preference

Attribute	Individual Relative Importance %	Group Relative Importance %
Weight	20%	9%
Quality	25%	37%
Texture	16%	16%
Weave	19%	15%
Fibre	20%	23%

The sample's preferences were broadly spread over the different levels of each attribute. Two attribute levels recorded a very high preference. More than 50 per cent of the population had a preference for 'non crease, good drape, non pilling' fabric, and 46 per cent preferred 'synthetics,' results suggesting there are a number of segments that have different requirements.

In order to examine the nature of these segments, Bretton-Clark's (1993) *Conjoint Segmenter* cluster analysis program was used as it has been designed specifically for use with the utilities estimated from a conjoint analysis. In the first stage of this

procedure, each respondent's utilities are compared with every other respondent's utilities using a hierarchical cluster analysis process. The results of this analysis are shown in Table 4.14.

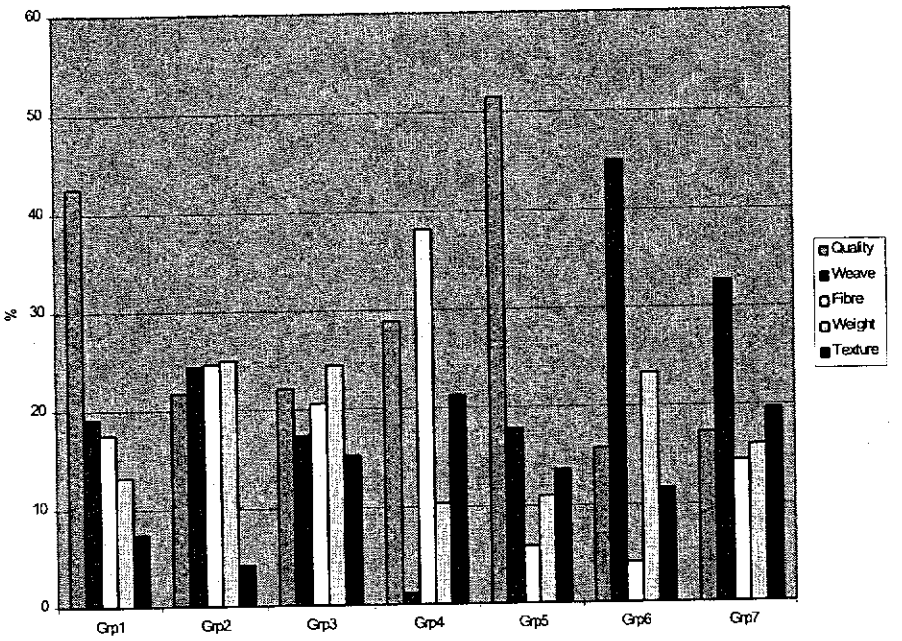
Table 4.14 Number of Clusters/Segments to Select From

Number of Clusters	Distance
2	2832143579348992
3	3478188720128
4	435344834560
5	33559377920
6	2099581312
7	363323712
8	351996480
9	17435126
10	14680301
11	8997825
12	7710403
13	1624278
14	1207264
15	883492

The distance measured reflects the amount of variability within the segments. As the number of segments increased, the amount of variability decreases. The distance decreased sharply at first, and then levels out. Bretton-Clark (1993) suggest that there is no satisfactory statistical method for determining how many segments exist in the data, but suggest that the 'elbow' (where the distance levels out) seems a plausible solution, especially if the segments seem sensible.

In the present study, the appropriate number of segments seems likely to fall between five and seven. In moving from 5 to 7 segments, new segments were formed while remaining segments remained at a reasonable size. The new segments were also meaningful. Consequently, the seven segment solution was accepted and used in the subsequent analysis. The relevant information for the 5, 6 and 7 cluster solutions is shown in Appendix 3. The relative importance of the five fabric attributes across the seven segments are shown in Figure 4.3.

Figure 4.3 Each Group's Relative Importance of the Five Fabric Attributes



Part-worth utility scores were also calculated within each segment for each fabric attribute level. The differences between the seven groups over these levels each of can be seen in Table 4.15.

By using the highest scoring level for each attribute (those marked by shading) the preferred fabric for each group can also be determine. These "most preferred" profiles are shown in table 4.16.

Table 4.15 Mean Attribute Utilities for each GROUP

Attributes	Grp1	Grp2	Grp3	Grp4	Grp5	Grp6	Grp7
Heavy weight	.111	.079	-.019	-.212	-.475	.425	.014
Medium weight	.340	-.361	.422	.247	.149	.064	-.278
Light weight	-.451	.282	-.403	-.035	.326	-.489	.264
Non-crease	1.452	-.328	.289	.777	1.785	.221	.069
Creases	-1.104	.230	.167	-.495	.191	-.397	-.327
Creases easily	-.348	.098	-.456	-.282	-1.976	.176	.258
Smooth texture	.042	-.056	.263	.529	.586	.127	-.107
Soft texture	.201	.004	-.008	-.409	-.171	.166	.387
Rough texture	-.243	.052	-.255	-.120	-.415	-.293	-.280
Open weave	.451	.136	.179	-.026	-.138	-.913	-.563
Close weave	-.703	.246	-.384	.028	-.584	.068	.546
Tight weave	.252	-.382	.205	-.002	.722	.845	.017
Natural Fibre	-.121	.095	.448	-.158	-.074	-.026	-.285
Blend	-.465	-.366	-.247	-.762	-.180	.092	.202
Synthetic Fibre	.586	.271	-.201	.920	.254	-.066	.083

Table 4.16 Preferred Fabric for Each GROUP

GROUP	No.	Relative Importance of the Attribute	Description of the Preferred Level in Each Attribute
Grp1	47	quality (42.62%)	non-crease, good drape, even and faultless
		weave (19.23%)	open, loose, breathes well
		fibre (17.54%)	synthetic fibre
		weight (13.20%)	medium weight
		texture (7.40%)	high sheen, smooth texture
Grp2	42	weight (24.96%)	light weight
		fibre type (24.72%)	synthetic fibre
		weave (24.42%)	close, breathes, strong visible structure
		quality (21.70%)	needs ironing, stiff, fibre uneven
		texture (4.21%)	rough texture
Grp3	38	weight (24.46%)	medium weight
		quality (22.12%)	non-crease, good drape, even and faultless
		fibre type (20.62%)	natural fibre
		weave (17.44%)	tight weave, no airflow, no visible structure
		texture (15.36%)	high sheen, smooth texture
Grp4	37	fibre type (38.20%)	synthetic fibre
		quality (28.88%)	non-crease, good drape, even and faultless
		texture (21.27%)	high sheen, smooth texture
		weight (10.43%)	medium weight
		weave (1.23%)	close, breathes, strong visible structure
Grp5	24	quality (51.50%)	non-crease, good drape, even and faultless
		weave (17.87%)	tight weave, no airflow, no visible structure
		texture (13.71%)	high sheen, smooth texture
		weight (10.98%)	light weight
		fibre type (5.94%)	synthetic fibre
Grp6	43	weave (44.97%)	tight weave, no airflow, no visible structure
		weight (23.39%)	heavy weight
		quality (15.83%)	non-crease, good drape, even and faultless
		texture (11.73%)	soft
		fibre (4.08%)	blend of natural and synthetic
Grp7	30	weave (32.74%)	close, breathes, strong visible structure
		texture (19.66%)	soft
		quality (17.26%)	easily creases, very stiff, pills
		weight (15.99%)	light weight
		fibre (14.35%)	blend of natural and synthetic

From these results, the 7 benefit segments can be described in the following way.

1. **Group 1,** which comprised approximately 18% of the market, places great importance on buying non-crease, good drape, faultless fabric that breathes well.
2. **Group 2**, which makes up approximately 16% of the market, is the most weight sensitive of all groups, strongly preferring lightweight fabrics. This group prefers a structured synthetic fabric and does not get upset if it creases or has some uneven characteristics.
3. **Group 3**, which makes up approximately 15% of the market, prefers a medium weight fabric that is non-crease, good drape and faultless. This group, of all the groups, is the most attracted to natural fibre.
4. **Group 4** makes up approximately 14 % of the market. Group members place little or no importance on the weave of the fabric. But have a strong preference for synthetic fibres that have a smooth, high sheen texture and are non-creasing, with a good drape and are faultless.
5. **Group 5** makes up 9% of the market. Group members place little emphasis on fibre type but are the most quality sensitive of all groups, preferring non-crease, good drape, and faultless fabrics.
6. **Group 6** makes up approximately 16% of the market. Members prefer a tightly woven, heavy weight fabric that shows no structure and is non-creasing. This group places a high emphasis on the tightness of the weave and a lack of visible structure.
7. **Group 7** makes up approximately 11% of the market. Members prefer closely woven, light weight fabrics with a strong visible structure and a soft texture.

Given these segments exist, it is important to determine whether these differences can be attributed to the climatic background of the five locations or to any of the other background variables collected and the analysis undertaken for this purpose is discussed in the next section.

4.4.2 Climatic (Location) or Other Background Differences between the Segments

A discriminant analysis was undertaken to determine if there were differences in the backgrounds of the seven segments. The list of background variables included (many of them as dummy variables) is shown in Table 4.17.

Table 4.17 Background Variables Used in Discriminant Analyses

Name	Dummy Name	Description
LOCN	L1-5	Location: 1=Melb. 2=Adel. 3=Perth 4=Ger. 5=Dar.
AGE		Age of respondent.
MAR	MS1-4	Marital and family status.
CLOTHEXP	CE1-2	Annual expenditure on clothing.
OCCUP	JOB1-4	Occupation: home, full time, casual, student.
WDRESS	WD1-3	Importance of being well dressed.
LPRICE	LP1-3	Importance of low price.
FABIMP	FI1-3	Importance of fabric.
CLASSIC	SIC1-3	Attitude toward classical music.
SPORT	ST1-3	Attitude toward sport.
MAN	MN1-3	Attitude to a traditional value.
MAG	MG1-11	Whether certain magazines are read.
FASH	FS1-3	Percentage of clothing expenditure in fashion boutique.
EVDAY	EV1-3	Percentage of clothing expenditure in leisure store.
DEPT	DT1-3	Percentage of clothing expenditure in department store
SMKT	SK1-3	Percentage of clothing expenditure in supermarket.
MEN	EN1-3	Percentage of clothing expenditure in menswear store.
VISFR	VF1-3	How frequent visit friends.
GOPUB	GP1-3	How frequent visit pub, club or movie.
GOREST	GR1-3	How frequent go to restaurant or party.

While the discriminant analysis found Geraldton respondents were more likely to be in segment 2, respondents from other locations were randomly spread across the segments, suggesting that climatic conditions had little impact on people's fabric preferences and that an explanation for the segments would have to be found elsewhere. The discriminant analysis also found that the other background variables collected had little or no influence on fabric preferences as they were not significant enough to enter the stepwise discriminant procedure used. The results of the discriminant analyses are in Appendix 4.

4.4.3 Segment Composition of Each Location

By performing a cross-tabulation of location by segment, the segment composition at each location can be seen, as shown in Table 4.18. The table shows that all segments are represented at each location and there is often more than one segment well represented at any location.

Table 4.18 The Number of Each Segment in Each Location

	Melbourne	Adelaide	Perth	Geraldton	Darwin	Group Total
Group 1	7	9	19	3	9	47
Group 2	4	11	9	14	4	42
Group 3	9	4	6	9	10	38
Group 4	8	12	7	2	8	37
Group 5	2	3	4	11	4	24
Group 6	12	11	5	8	7	43
Group 7	9	4	5	3	9	30

The discussion of the research findings on fabric preference and the effect of climate on the choice of fabric are in chapter 5.

Chapter 5 Discussion and Recommendations

5.1 Introduction

An extensive search of the literature did not find previous studies that assessed consumers' fabric preferences, nor provide empirical evidence that people from different climates choose different fabrics. It did, however, suggest that wool is losing market share, that Wool International has adopted a marketing strategy that attempts to "push" its product into the market, rather than facilitating a "pull" strategy by providing fabrics that are in demand, and that clothing is physically and psychologically very important to most people. The following discussion and conclusions address these issues in light of the results of the present research project in which consumers' preferences for fabric attributes were explicitly measured.

5.2 Fabric Preference at Each Location

The main objective of this section is to examine consumer preference for fabric in each of the five major climatic zones in Australia, using fabric attribute levels as the criteria, in order to provide information about the fabric attributes that are most preferred. This information would be most useful should an organisation develop a marketing strategy that viewed each location as a separate segment.
This issue was examined in a variety of ways within the study, including focus groups, the collection of direct attribute importance within and the questionnaire and a conjoint analysis of the ranked preferences of an appropriate set of fabric swatches.

5.2.1 The Comparative Importance of Fabric Attributes

The results were similar in all three cases. The relative importance of *quality* was similar to that calculated from the conjoint analysis. Indeed:

- *Quality* was generally perceived as twice as important as the other attributes.
- The conjoint analysis suggested that *fabric type* was the second most important attribute when choosing a fabric.
- *Weave, weight* and *texture* were of lesser but similar importance in all locations.
- It would also appear that Melbourne, Adelaide and Perth shoppers are less likely to choose a heavyweight garment that creases than shoppers in Geraldton and Darwin.

Bennett (1993) suggested that people in the warmer climates of the tropical savannah (Darwin) and the semi-arid (Geraldton) zones would prefer lighter weight and more open weave fabric. It was therefore expected that these locations would place more importance on these two attributes. This expectation was partially refuted for fabric weight, however, as both of these locations preferred heavyweight fabrics more than the cooler locations. Nevertheless, they did prefer lightweight fabrics overall. The expectations on *weave* were also refuted, as both Darwin and Geraldton rated this attribute as low in importance and preferred tight weaves with no airflow (Darwin) or close weaves (Geraldton). Geraldton's choice was the same as the cooler climates of Melbourne and Adelaide.

- All locations preferred a non-crease, good drape, even and faultless synthetic fabric. Fabric texture was of low importance in all locations.

The light weight and non-crease preference was not surprising as McLaren (1994) has noted the importance of changing lifestyles, more casual clothing and controlled temperature work environment on peoples' fabric requirements.

- In all locations *quality* and *fibre type* dominated the relative importance ratings (69-81% of the importance) and respondents judged the same levels within these two attributes as most preferred (non-crease *quality* and synthetic *fibre type*).

A discriminant analysis was used to bring together the main attributes that explain variance in preferences between locations. The analysis found two functions that, together, explained 81% of this variance.

Function one was related to non-creasing, medium weight and soft texture attributes while **Function two** was related to the type of fibre. The discriminant analysis suggested the differences between location preferences were that:

- Geraldton and Darwin consumers were likely to choose a heavier weight fabric heavier with a tighter weave and that may crease.
- Perth and Adelaide respondents are more likely to choose a fabric with higher synthetic properties, a lighter weight, non-creasing and rougher texture, with Perth being more likely to prefer a more open weave.
- Melbourne consumers were more likely to choose a medium weight, softer texture and more natural fibre content fabric.

The locations had generally similar preferences towards the 'blends of synthetic and natural', 'smooth textures', 'creasing easily' and 'close weave' attributes.

These preferences suggest that the people in the warmer climates (Geraldton and Darwin) are more inclined to wear heavier, tighter weave fabric than people in the other locations. Both Horn (1975) and Adolph (1938) provide theoretical support as to why this might occur, having showed that clothing conserves body energy in warm climates and prevents the transfer of hot air to the body.

The discriminant map (Figure 4.2) suggests that Melbourne consumers are more inclined to choose wool fabric than people at the other locations. The high preference for synthetic fabric shown in Adelaide may mean that synthetic properties are desirable there and may not mean there is a specific desire for synthetic fibre.

5.3 Segmenting the Sample

A conjoint analysis of the overall sample found significant difference between the individual relative importance and the group relative importance of the attributes. This indicates the possibility of segments that have different fabric preferences.

Indeed, overall more than 50% of respondents preferred 'non-crease, good drape, non-pilling' fabric, while 46% preferred 'synthetic' attributes.

The *Conjoint Segmenter* cluster analysis program that was used to break the sample into meaningful segments suggested seven segments with what appeared to be different preferences. Table 5.1 provides some comments about the differences between these groups.

Table 5.1: Segment (Group) Properties

Group	% of Pop.	Comment
Group 1	18%	Places great emphasis on quality and good drape. 40% of this group are from Perth.
Group 2	16%	Majority are in Geraldton, Adelaide, and Perth. They seek a lightweight, well structured synthetic fabric.
Group 3	15%	Spread evenly across the population. They seek a natural fibre, non-crease, medium weight fabric.
Group 4	14%	This group are very keen on the synthetic properties, non-crease, smooth texture. Strong in Adelaide.
Group 5	Only 9%	Almost half are in Geraldton, and non-crease, good drape quality is by far their main concern.
Group 6	16%	They are strong in Melbourne and Adelaide. This group seek a tightly structured fabric that is reasonably heavy. No concern as to the type.
Group 7	11%	Mainly from Melbourne and Darwin. This group seeks a soft, visibly structured fabric – linen like fabric.

5.3.1 The Influence of Climate, and Other Background Variables, On the Variance in Fabric Preference.

A further analysis was undertaken to see whether these segments differed across the set of background data collected within the survey, including location. Geraldton was the only attribute for which a difference was found. The remainder of the locations and the other background variables did not differ significantly across the seven segments. This suggests that climate has little, if any, influence on fabric

preference and that the other background variables could not explain the way the fabric preference segments were formed.

5.4 Recommendations

The following recommendations address the two major research objectives of this study, which were to:

1. examine consumer preference for fabric in each of the five major climatic zones in Australia; and
2. determine any significant differences in fabric preference between the climatic zones so as to indicate whether climate should be taken into consideration when marketing fabrics.

The study found that the most required attribute was quality, which was viewed in terms of a fabric being non-crease, good drape, even and faultless. Respondents were particularly agreeable to synthetic fabric, although the study did not conclude whether it was the synthetic fibre itself or the synthetic properties that were preferred.

The sample contained seven segments that were described in detail in chapter 4. Certain segments were more strongly represented in some locations, which offers an opportunity to target particular fabric to those markets. The study, however, suggested that climate differences did not result in people choosing fabrics with different attributes and, therefore, need not be taken into account when marketing a new fabric. The market segments offers some guide though as to the types of fabric that are most likely to be successful in each location.

If a manufacturer decide to adopt a mass marketing strategy then it is essential for them to place an emphasis on quality and weight attributes. A lightweight fabric that is non-creasing, has good drape, is faultless and even is a preferred at all locations. The properties of synthetic fabric that provide quality, weave and texture should be incorporated where possible.

Chapter 6 Conclusions

6.1 The Study

As already mentioned, a review of the literature found no previous studies that had examined the type of clothing fabrics consumers prefer. This problem is not to be confused with research that examined what people say they prefer, which is quite different and for which there were a number of studies. This lack of information would place a manufacturer or retailer in a quandary when attempting to decide what fabric to use and where to target a new product. The literature review showed that the opinion that people living in warmer climates prefer a lighter weight fabric is a common one (International Wool Secretariat 1992; Wool Monitor 1993; Graeme Bennett 1993; Stephen Bennett 1993).

To address this problem the present study used a typical new product development process that involved a combination of focus groups, interviews using fabric samples, conjoint analysis and discriminant analysis. The results provide an empirical base to assist in the development of a new product strategy.

The study's findings support the commonly held view that lightweight fabric that doesn't require ironing and has a faultless and even structure is most preferred. The study, however does, not support the other common perception that people in hotter climates prefer lighter weight fabrics. In fact in Darwin (tropical savannah) and Geraldton (semi-arid) more people preferred heavier weight fabrics than in the cooler locations.

The results suggest that manufacturers must use quality fabrics that have easy care properties. The utility gained from *quality* was at least 38% of the total utility for fabric in each of the locations, with Perth recording 50 %. This confirms McLaren's

(1994) study, which found there was an increasing need for easy care wear, as well as versatility.

6.2 Study Limitations

Because of the lack of previous work in measuring fabric preferences, the questionnaire and the attributes used have not a background of previous research or testing. The attributes and their respective levels were the result of two focus groups and, if their views as to the relevance of the attributes are not reflective of the wider community, there may have been biases in the subsequent conjoint analysis.

A second limitation of the study was a possible inaccuracy in choosing the fabric swatches from the description cards. It was not always possible to represent the attribute level consistently when choosing the different fabrics, although industry experts were used to make these judgements. For example, the lightweight in the lightweight natural fibre may not have been as lightweight as the lightweight in the lightweight synthetic fabric.

As already mentioned, conjoint analysis has a number of limitations. Those most pertinent to this study are that:

- it may not always fully capture the complexity of the market; and
- it assumes the important attributes of a product can be identified in advance; and
- it assumes that consumers do trade-off between attributes.

Another limitation relates to the sample selection procedures. An attempt was made to choose a sample that was representative of a climatic region and a city population. However, in deciding on the sampling method it was necessary, for both financial reasons and convenience, to choose the sample from a shopping centre within each location.

6.3 Future Research

There are two areas of research that would significantly assist manufacturers and retailers.

This study shows that within each of location there are a number of segments. Future research should be undertaken with larger samples so that a better understanding can be obtained as to the nature of these subgroups in terms of the attitudes and interests. This may result in a structured equation model providing information on the consumptional value of clothing.

A question that arose from this study is whether there is a correlation between consumers' fabric preferences and what is actually offered in retail outlets. If the offering and the preference were similar, it could be assumed there is no need for the study that has been undertaken as manufacturers understand their markets correctly. If the offering and the preference were significantly different, however, both retailers and manufacturers could make significant gain by performing periodic research based on the methods used in the present study. A further study to ascertain the relationship between offerings and preferences would be useful for this purpose.

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Appendix 1 Focus Group Data

Interpretation of the Focus Group Data

The factors perceived as the most important considerations (>6) guiding the groups purchase decisions were the following (interpretations for future reference are included):

*8.5 appropriate style and design - alignment with an image of oneself and the image one wishes to portray. Participant would need to choose from a comprehensive range of images, i.e. country, conservative, business efficiency, etc.

*8.1 quality - shrink proof, durable, colour fast, well sewn and finished. Need to score a mix of quality, how important each are with reference to each other in the term quality.

*7.9 cost/value for money/price - whether one chooses to buy value based on cost price (in $ terms) or value for an item based on quality.

*7.8 Appropriateness/suit existing wardrobe - the versatility of the garment, is it appropriate to complement my existing clothes (my story or lifestyle), involves colour. Need to find out the importance of this factor in comparisson to others.

*7.5 comfort/the way it makes me feel - the ease of movement in the garment, the feel of the garment on the body is good. As one of the multiattribute in this question, where is it positioned.

*7.2 emotion - appearance, who is with me when shopping, my mood. One group scored it as important.

*7.0 fabric - texture, type, elasticity, drapability, feel, weight. How important?

*6.7 brand - designer. How important is the reputation of a brand in the decision process.

Other factors:
Colour was perceived as a separate factor, however, on examination of data the discussion centred on "appropriateness" i.e. right for me, my colour type, etc.

What aspects or attributes of fabric do you consider when you buy clothes?

The focus group results (2) were collated and analysed. The following were areas of high importance (>6) and able to be translated into fabric properties, factors to be used in the the orthogonal design.

*8.5 Comfort/Feel - itchy, softness, the weight (heavy/light),

*8.44 Performance/Quality -those perceptions relating to creasing, holding shape, fresh looking, good drape, colour fast, non pilling, durable.

*8.0 Texture of the Fabric - shiny/slippery; soft/supple; harsh/itchy/stiff.

*7.05 Weave - open/loose/flimsy; open/breathe/strong; closed/no vent/strong.

*7.0 Fibre type - natural fibre, synthetic fibre, blend.

These factors were of high importance, however are not directly related to the fabric. Colour does fit the above category, however the range is too great to include in this study.

*8.63 Appearance - taken as the means by which a customer assess's the factors discussed.

*8.38 Appropriate use of Fabric - a consideration outside the scope of this study, additional to whether a person likes a fabric.

*8.12 Pattern/Print/Design - similar to colour, outside this study. Needs to be incorporated into the questionnaire along with colour.

*8.06 Colour - a variable outside the area of this study, colour is a variant able to be supported by the majority of fabrics.

Group 1. Consumers.
27th September 1994.

Rod Jaopes
Rob Davidson
Ro Stewart
Kristie Bamfield
Kristy Richardson
Anne Thomson
Jill Yates
Jenny Purse

RATED

#	ITEM	AVERAG RATING
1.	APPROPRIATE STYLE	8.88
2.	COST	8.25
3.	DESIGN	7.50
4.	SUIT EXISTING WARDROBE	7.38
5.	THE WAY IT MAKES ME FEEL	7.25
6.	QUALITY	7.13
7.	COLOUR	6.38
8.	FABRIC	6.00
9.	IN THE STORE PURCHASING ACT	5.88
10.	ORIGIN/IDENTIFICATION	5.75
11.	OPINIONS OF OTHERS	5.25
12.	CARE OF GARMENT	4.88
13.	UNIQUENESS	4.63
14.	LOCATION OF PURCHASE	3.63

27-Sep-94
06:54 PM

Q1. ~~Make purchase~~
When you purchase clothing, what considerations guide you purchase?

27-Sep-94
06:19 PM

CONSIDERATIONS WHEN PURCHASING CLOTHING

+ 1 COST
    - 1.1 IT'S A GREAT FIND EG IN AN OPSHOP
    - 1.2 A REASONABLE BUY
    - 1.3 ACCESSORIES I NEED TO PURCHASE
    + 1.4 BUDGET
        - 1.4.1 AMOUNT OF DISCERETIONARY INCOME AVAILABLE
    + 1.5 VALUE FOR MONEY
        - 1.5.1 DURABILITY
    + 1.6 IS IT A BARGAIN
        - 1.6.1 HEAVILY DISCOUNTED
+ 2 LOCATION OF PURCHASE
    - 2.1 TRAVELLING TIME (DISTANCE)
    - 2.2 PARKING
    - 2.3 TRAVELLING CONDITIONS
    - 2.4 STORES REPUTATION
    - 2.5 SUPERMARKET
    - 2.6 ADVERTISING OF AVAILABILITY (TIME EFFICIENCY)
+ 3 DESIGN
    - 3.1 A WONDERFUL CONFIGURATION OF PRINT, COLOUR, CUT & CLOTH
    + 3.2 VERSATILITY
        - 3.2.1 CAN IT BE "DRESSED UP/DOWN"
    - 3.3 IT ACTUALLY FITS
    - 3.4 MADE VERY WELL
+ 4 SUIT EXISTING WARDROBE
    + 4.1 ACCESSORIES I HAVE
        - 4.1.1 SUIT MY SHOES
    - 4.2 ACCESSORIES I NEED TO PURCHASE
    - 4.3 MATCH WITH OTHER ITEMS BEING BOUGHT AT SAME TIME
    - 4.4 COMPLIMENT COLOUR OF MOST EXISTING ITEMS
    - 4.5 HOW MANY OF THEM DO I ALREADY HAVE IN MY WARDROBE
    - 4.6 VERSATILITY
    - 4.7 IS IT PART OF A STORY-WILL SEVERAL PIECES BE OF GREATER VALUE
+ 5 APPROPRIATE STYLE
    - 5.1 FOR OCCASION
    + 5.2 FOR PERSON
        + 5.2.1 FIT
            - 5.2.1.1 FLATTERING
    - 5.3 FOR SEASON
    - 5.4 FOR CLIMATE
    - 5.5 DOES IT ALIGN WITH IMAGE OF ONESELF
    + 5.6 GIVES A PARTICULAR IMAGE
        - 5.6.1 LOOKS FABULOUS
        - 5.6.2 CRAZY
    - 5.7 FOR GENERAL PURPOSE
    - 5.8 FOR SPECIFIC PURPOSE
    - 5.9 FASHIONABLE

- 5.10 HOW OFTEN WILL I BE ABLE TO WEAR THE GARMENT
- 5.11 VERSATILITY
- 5.12 CLASSIC STYLE
- 5.13 WHETHER ITEM A NECESSITY OF WANT
- 5.14 PRACTICALITY OF NOTIONS

+ 6 ORIGIN/IDENTIFICATION
- 6.1 BRAND
- 6.2 STORES REPUTATION
- 6.3 AUSTRALIAN MADE

+ 7 COLOUR
- 7.1 PREFERENCE
- 7.2 AVAILABILITY
- 7.3 MY COLOUR TYPE

+ 8 QUALITY
- 8.1 NON-SHRINK WHEN WASHED
- 8.2 FINISH
- 8.3 SEWING QUALITY
- 8.4 COLOUR FASTNESS
- 8.5 MATERIAL TYPE
- 8.6 LIFE EXPECTANCY OF THE GARMENT
- 8.7 HOW OFTEN WILL I BE ABLE TO WEAR THE GARMENT
- 8.8 DURABILITY
- 8.9 MADE VERY WELL

+ 9 CARE OF GARMENT
- 9.1 NON IRON
- 9.2 DOES IT REQUIRE DRYCLEANING
- 9.3 CLEANING REQUIREMENTS
- 9.4 NON-SHRINK WHEN WASHED
- 9.5 NON FADE
- 9.6 WHETHER OR NOT FABRIC WILL CREASE

+ 10 OPINIONS OF OTHERS
- 10.1 WHAT PEOPLE IN MY LIFE HAVE TOLD ME I SHOULD BUY
- 10.2 FRIENDS
- 10.3 PARTNERS
- 10.4 MOTHERS
- 10.5 FASHION MAGAZINE INFLUENCES

+ 11 IN THE STORE PURCHASING ACT
- 11.1 TIME FOR SHOPPING
- 11.2 ENVIRONMENT
+ 11.3 SALES SERVICE
    - 11.3.1 STORES REPUTATION
    - 11.3.2 PACKAGING/MERCHANDISING
    - 11.3.3 ASSISTANCE & MENTAL COERSION PROVIDED BY SALES STAFF
    - 11.3.4 ATTITUDE OF SALES STAFF
    - 11.3.5 STYLE, SEX AND MANNER OF SALES ASSISTANT

+ 12 THE WAY IT MAKES ME FEEL
- 12.1 COMFORT
- 12.2 MATERIAL TYPE
- 12.3 'CRAZY'
- 12.4 IT'S A GREAT FIND EG IN AN OPSHOP

+ 13 UNIQUENESS
    - 13.1 NUMBER OF SAME ITEMS IN THE SHOP
    + 13.2 THERE ARE FEW OF THE ITEMS AVAILABLE
        - 13.2.1 IN THE STATE
+ 14 FABRIC
    - 14.1 ALERGIC REACTION
    - 14.2 WILL IT "TRAVEL" WELL
    - 14.3 SOFTNESS
    - 14.4 WEIGHT

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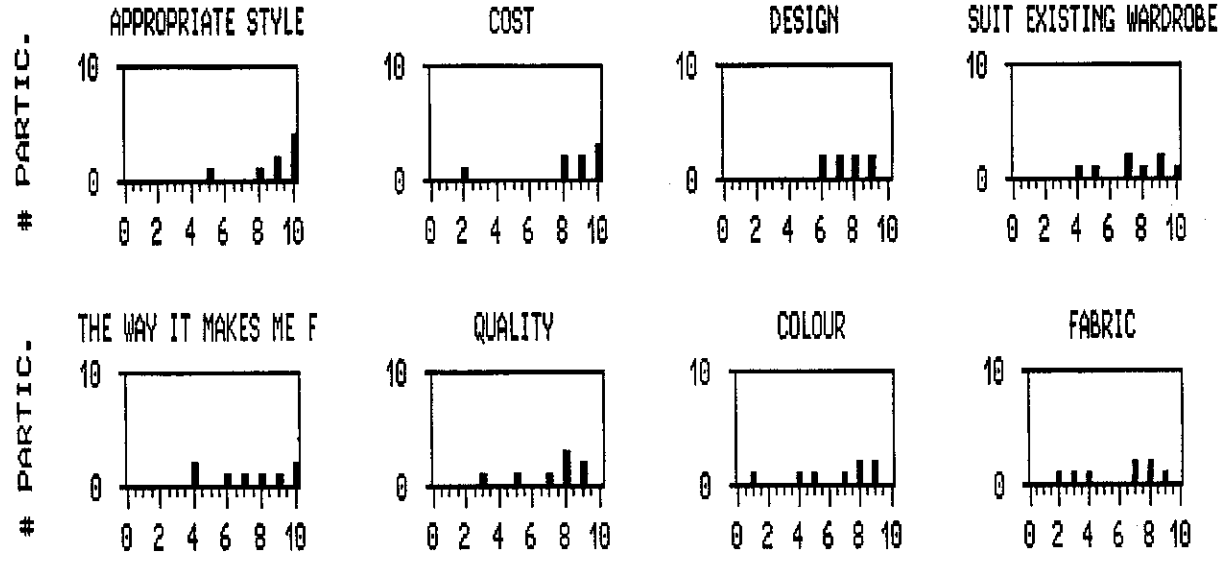

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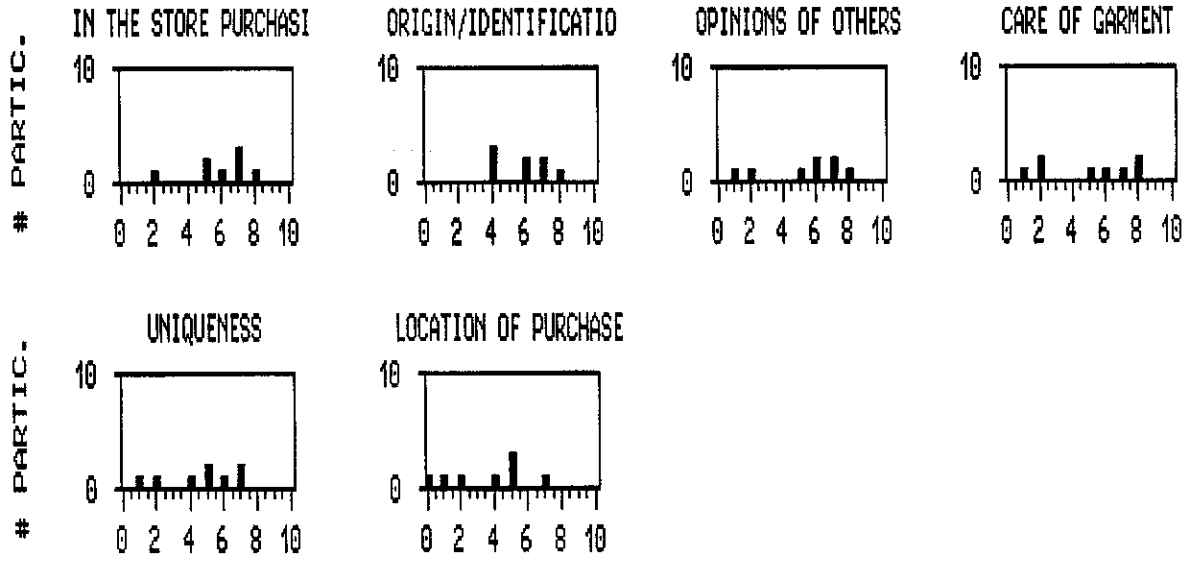

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CONSIDERATIONS WHEN PURCHASING CLOTHING

1. A VERY REASONABLE BUY IN A SUPERMARKET
2. A WONDERFUL CONFIGURATION OF PRINT, COLOUR, CUT AND CLOTH
3. ACCESSORIES-I-HAVE
4. ACCESSORIES-I-NEED-TO-PURCHASE
5. APPROPRIATE STYLE
6. ASSISTANCE AND MENTAL COERSION PROVIDED BY SALES STAFF
7. ATTITUDE OF SALESPEOPLE
8. AUSTRALIAN MADE
9. BUDGET - AMOUNT OF DISCRETIONARY INCOME AVAILABLE
10. CAN I WEAR THE ITEM IN WINTER AND SUMMER
11. CAN IT BE "DRESSED UP/DOWN"?
12. COLOUR
13. COLOUR FADES
14. COLOURS
15. COLOURS AND FASHION TO PERSONAL TASTE
16. COLOURTOSUITME
17. DOES IT ALIGN WITH IMAGE OF ONESELF
18. DOES IT FIT? IS IT FLATTERING?
19. DOES IT REQUIRE DRY CLEANING
20. DOES THE COLOUR COMPLIMENT MOST EXISTING ITEMS IN WARDROBE
21. DOES THE OUTERWARE HAVE A SPECIFIC OR GENERAL PURPOSE
22. DOES THE STYLE COMLIMENT MY FIGURE?
23. DURABILITY/LIFE EXPECTANCY OF THE GARMENT
24. EXPENSIVE
25. FIT
26. FIT OF GARMENT
27. FLATTERING STYLE
28. FRIENDS/PARTNER'S OPINIONS ON WHETHER IT SUITS ME OR NOT
29. GIVES A PARTICULAR IMAGE
30. HOW FASHIONABLE THE ITEM OF OUTERWARE IS
31. HOW MANY OF THEM DO I ALREADY HAVE IN MY WARDROBE
32. HOW MUCH TIME FOR SHOPPING
33. HOW OFTEN WILL I BE ABLE TO WEAR THE GARMENT
34. HOW WELL THE PIECE OF OUTERWARE FITS
35. IF IT'S A BARGAIN - HEAVILY DISCOUNTED
36. IS IT MADE TO LAST?
37. IS IT PART OF A STORY_WILL SEVERAL PIECES BE OF GREATER VALU
38. IS THE PRICE REASONABLE ?
39. IS THERE A PARTICULAR PURPOSE FOR THIS GARMENT
40. IT ACTUALLY FITS
41. IT DOESNT NEED IRONING
42. IT IS EXACTLY WHAT I WANT FOR THE OCCASSION : SPECIAL
43. IT IS MADE VERY WELL
44. IT MAKES ME FEEL GREAT
45. IT WILL LAST FOR A VERY LONG TIME, 'CLASSIC'
46. IT'S A GREAT 'FIND'...E.G. IN AN OPSHOP
47. IT'S ABSOLUTELY FABULOUS FOR THE PRICE
48. LOOKS FABULOUS AND 'CRAZY' AND IS POSSIBLY CHEAP
49. MATCH OTHER ITEMS ALREADY OWNED

50. MATCH WITH OTHER ITEMS BEING BOUGHT AT SAME TIME
51. MATERIAL TYPE
52. MONEY SPENDING
53. MY CLOUR TYPE
54. NEED-FOR-A-SPECIFIC-GARMENTY
55. NUMBER OF SAME ITEMS IN THE SHOP
56. OTHER PEOPLE THINK THAT I LOOK GOOD IN IT
57. PRICE
58. PRICE OF GARMENT
59. PRICE OF THE PRODUCT
60. QUALITY GOODS ON SALE
61. QUALITY OF MATERIAL
62. QUALITY OF THE PRODUCT
63. REPUTATION OF THE BRAND OF OUTERWARE
64. SEWING QUALITY
65. SOFTNESS OF MATERIAL
66. STORES REPUTATION
67. STYLE, SEX AND MANNER OF SALES ASSISTANT
68. STYLE OF ITEM
69. STYLE-TO-SUIT-ME-ANDCONSIDERATION-FOR-CURRENT-FASHION
70. SUIT MY SHOES
71. SUITABILITY OF COLOUR
72. SUITABILITY OF THE ITEM FOR THE CLIMATE OR SEASON
73. THE COLOUR OF THE OUTERWARE BEING CONSIDERED FOR PURCHASE
74. THE CURRENT SEASON
75. THE FABRIC USED TO MAKE THE PIECE OF OUTERWARE
76. THE SEASON IT IS
77. THERE ARE FEW OF THE ITEM AVAILABLE
78. TO A LIMITED EXTENT ITS CLEANING REQUIREMENTS ETC
79. TYPE OF FABRIC - WILL IT SHRINK WHEN WASHED? FADE?
80. TYPE OF SERVICE RECEIVED FROM SALES STAFF
81. UNIQUENESS
82. VALUE FOR MONEY
83. WARDROBE
84. WEIGHT OF FABRIC
85. WHAT IS IN FASHION AT THAT TIME
86. WHAT PEOPLE IN MY LIFE HAVE TOLD ME I SHOULD BUY
87. WHETHER ITEM A NECCESSITY OR WANT
88. WHETHER MACHINE WASH OR DRY CLEANING
89. WHETHER OR NOT FABRIC WILL CREASE
90. WHETHER THE FABRIC USED WILL CAUSE SOME ALLEGIC SKIN REACTIO
91. WHETHER THE ITEM WILL 'GO WITH' CLOTHES I ALREADY OWN
92. WILL IT BE ONGOING IN TERMS OF STYLE?
93. WILL IT COMPLEMENT OTHER PIECES IN MY WARDROBE
94. WILL IT COORDINATE WITH EXISTING APPAREL
95. WILL IT "TRAVEL" WELL?
96. WOULD THIS ITEM SUIT OTHER CLOTHING IN MY WARDROBE

RATED ATTRIBUTES

#	ITEM	AVERAGE RATING
1.	COMFORT	8.13
2.	APPROPRIATE USE OF FABRIC	8.13
3.	TEXTURE/FINISH	8.00
4.	QUALITY	7.75
5.	DESIGN/PATTERN/PRINT	7.75
6.	COLOUR	7.25
7.	WEAVE OF FABRIC	6.88
8.	FABRIC/FIBRE CONTENT	6.63
9.	MANUFACTURE	6.00
10.	CARE OF FABRIC/INSTRUCTIONS	4.75
11.	HEALTH ASPECTS	4.13
12.	BRAND	3.13

27-Sep-94
08:15 PM

Q2. What aspects or attributes of fabric, if any, do you consider when you buy clothes?

27-Sep-94
08:07 PM

ASPECTS OR ATTRIBUTES OF FABRICS IF ANY

+ 1 FABRIC/FIBRE CONTENT
    + 1.1 NATURAL VS MAN-MADE
        - 1.1.1 ALWAYS CHECK FOR THE NON NATURAL CONTENT
        - 1.1.2 BLEND
    - 1.2 I DON'T BUY NYLON
    - 1.3 DOES IT BREATHE?
    - 1.4 ANTI STATIC
    - 1.5 WOOL CONTENT FOR WINTER WARMTH ESSENTIAL
+ 2 HEALTH ASPECTS
    - 2.1 FIRE RESISTANT
    - 2.2 ANTI ALLERGIC
    - 2.3 NON ITCHY
+ 3 APPROPRIATE USE OF FABRIC
    - 3.1 FOR THE SEASON
    + 3.2 FOR THE LOOK (STYLE) EG SLOPPY OR PRISTINE
        - 3.2.1 SEE THROUGH
        - 3.2.2 DRAPING QUALITY
    + 3.3 APPROPRIATE FOR DESIGN OF GARMENT
        - 3.3.1 FABRIC 'MAKES' THE GARMENT
    + 3.4 PRACTICALITY
        - 3.4.1 WARM BUT LIGHTWEIGHT
    - 3.5 OCCASION
- 4 BRAND
+ 5 CARE OF FABRIC/INSTRUCTIONS
    - 5.1 FIRE RESISTANT
    - 5.2 DRYCLEANING
    - 5.3 CREASE RESISTANCE
    - 5.4 COLOUR FASTNESS
    - 5.5 HANDWASHING
    - 5.6 DOES FABRIC SHRINK
    - 5.7 DOES THE FABRIC FADE
    - 5.8 EASE OF CARE
    - 5.9 EASY TO IRON
+ 6 WEAVE OF FABRIC
    - 6.1 DRAPING QUALITY
    - 6.2 CLOSENESS
    - 6.3 DOES IT BREATHE?
    - 6.4 STRENGTH
    - 6.5 DOES IT HOLD ITS SHAPE
+ 7 COLOUR
    + 7.1 SHADE
        - 7.1.1 UNUSUAL
+ 8 DESIGN/PATTERN/PRINT
    - 8.1 APPEAL
    - 8.2 UNIQUENESS OF PRINT
    - 8.3 UNIQUENESS OF TEXTURE

+ 9 COMFORT
    - 9.1 NON ITCHY
    - 9.2 FEEL OF FABRIC
    - 9.3 DOES IT BREATHE?
    + 9.4 WEIGHT
        - 9.4.1 LIGHT WEIGHT
    - 9.5 SOFTNESS
+ 10 MANUFACTURE
    - 10.1 CUT
+ 11 QUALITY
    + 11.1 DURABILITY
        - 11.1.1 STRENGTH
    - 11.2 MUST HOLD SHAPE EG KNEES, SEAT
    - ~~11.3 FEEL OF FABRIC~~
    - 11.4 APPEARANCE
    - 11.5 FAULTS/FLAWS
+ 12 TEXTURE/FINISH
    - 12.1 SOFTNESS
    - 12.2 SHINY
    - 12.3 SMOOTH/HAIRY LOOK
    - 12.4 SUPPLENESS
    - 12.5 STIFFNESS
    - 12.6 FEEL OF FABRIC
    - 12.7 WILL NOT CATCH EASILY

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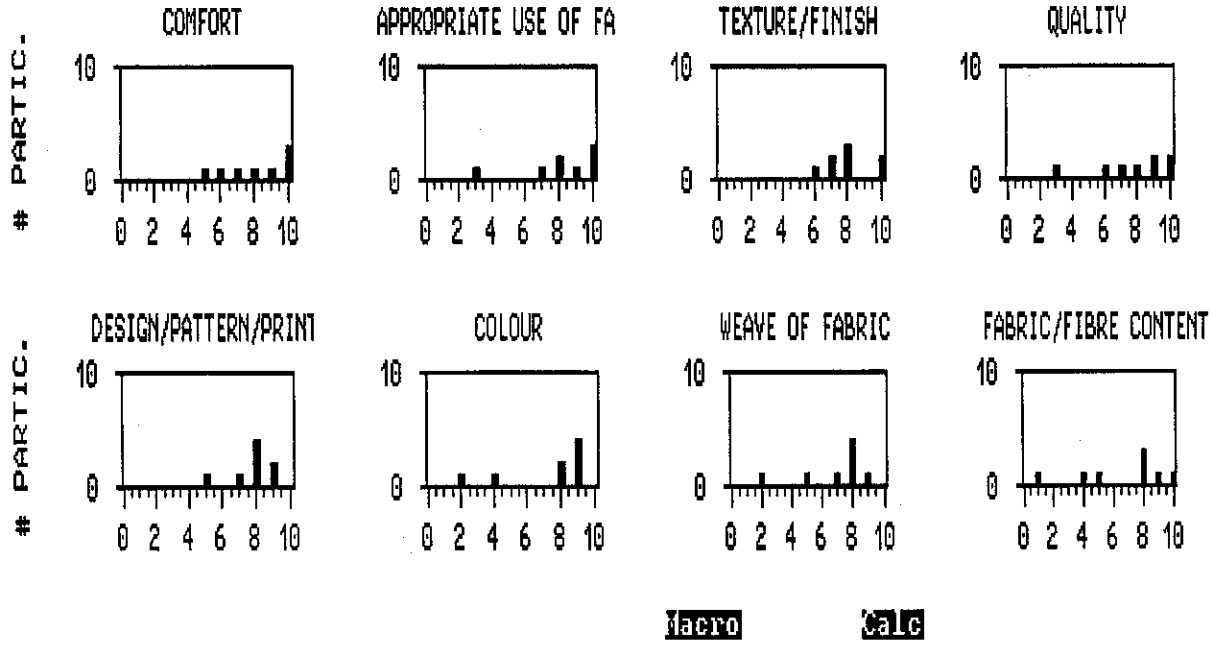

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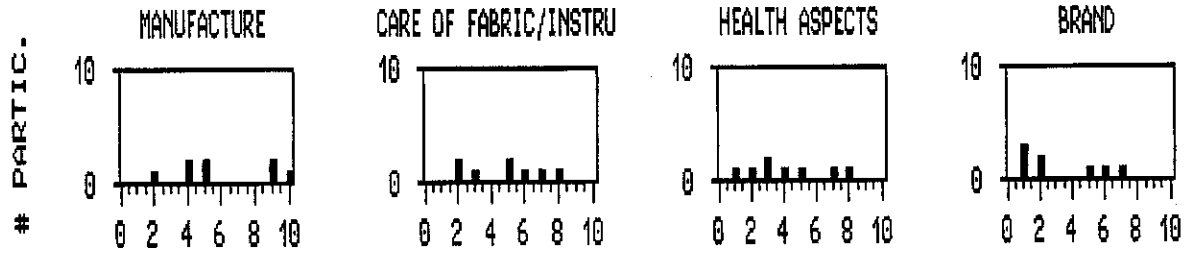

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ASPECTS OR ATTRIBUTES OF FABRIC IF ANY DO YOU CONSIDER

1. ALWAYS CHECK FOR THE NON NATURAL CONTENT
2. ANTI ALLERGIC
3. ANTI STATIC
4. APPROPRIATE FOR THE SEASON
5. APPROPRIATE LOOK IE SLOPPY OR PRESTEEN
6. BRAND
7. CARE REQUIRED - DRYCLEANING? HANDWASH?
8. CLOSENESS OF WEAVE OF FABRIC
9. COLOUR
10. COLOUR
11. COLOUR AND DESIGN OF FABRIC
12. COLOUR FASTNESS
13. COMFORT FACTOR
14. CREASE WHEN CRUSHED?
15. CUT CORRECTLY FOR SHAPE HOLDING
16. DESIGN
17. DOES FABRIC BREATHE?
18. DOES FABRIC CRUSH
19. DOES FABRIC SHRINK
20. DOES IT RETAIN THE DYE
21. DOES THE FABRIC FADE IE CANVAS
22. DURABILITY
23. DURABILITY
24. DURABILITY OF FABRIC
25. EASE OF CARE OF FABRIC
26. EASE OF CLEANING
27. EASY TO IRON/WASH
28. FABRIC DRAPING QUALITY
29. FABRIC EXPLOITED TO BEST POTENTIAL IN DESIGN OF GARMENT
30. FABRIC SUITING THE CUT
31. FABRIC 'MAKES' THE GARMENT
32. FABRICMUST HOLD SHAPE EG. KNEES , SEAT
33. FEEL OF FABRIC
34. FEELS LIKE IT WILL ALWAYS MAINTAIN ITS QUALITY
35. FIRE RESISTANT
36. HOW FABRIC WASHES
37. HOW FABRIC WEARS
38. I DON'T BUY NYLON
39. INTERESTING PATTERN/DESIGN
40. IS IT COMFORTABLE ON MY SKIN? CAUSE IRRITATION?
41. IS THE FABRIC PRACTICAL FOR YOUR REQUIREMENTS
42. LIGHTWEIGHT
43. LOOKS A QUALTY FABRIC
44. MY NAME IS ROD AND PHONE NO. 4305150
45. NATURAL FABRIC AS OPPOSED TO MAN_MADE
46. NON-ITCHY
47. NON_CRUSH
48. OPAQUE SKIRT/DRESS FABRIC
49. QUALITY

50. REASONABLY HEAVY FABRIC TO GIVE A LONG LINE
51. SHINY
52. SMOOTH/HAIRY LOOK
53. SOFTNESS
54. SOFTNESS OF FABRIC
55. SOMETHING SSO UNUSUAL, I CANT GO PAST IT
56. STRENGTH OF THE WEAVE, THE LOOK.
57. STRENGTH - RESISTANCE TO TEARING
58. SUITABILITY FOR PARTICULAR GARMENT
59. SUITABLE TO SEASON - PROVIDE WARMTH DURING WINTER
60. SUPPLENESS/STIFFNESS
61. TEXTURE
62. TEXTURE
63. THE SHADE OF THE COLOUR, MORE'ODD' OFTEN BETTER QUAL. GRMNT
64. THE WAY FABRIC FALLS
65. UNIQUE FABRIC PRINT
66. WARM
67. WARM BUT LIGHTWEIGHT
68. WARMTH OR COOLNESS OF FABRIC
69. WARM/COOL
70. WEAVE OF FABRIC DOES IT KEEP IT'S SHAPE
71. WEIGHT OF FABRIC EG NOT TOO HEAVY
72. WHETHER OR NOT FABRIC WILL HOLD ITS SHAPE OR BAG AT KNEES
73. WILL IT FADE?
74. WILL IT SHRINK?
75. WILL NOT CATCH EASILY
76. WON'T FADE
77. WOOL CONTENT FOR WINTER WARMTH ESSENTIAL

28th Sept.

Group 2. Focus / Discussion.

Mrs Liz Cacay
Mr Noel Klopper
Ms V.V. Turner
Ms Anne Sorroff
Mrs Robbie Selton
Ms Judy Bunbury
Mr Geoff Gale.
Ms ? (Chris invite).

Manufacturers / retailers.

RATED LIST

#	ITEM	AVERAGE RATING
1.	QUALITY	9.13
2.	STYLE/DESIGN	8.63
3.	PERSONAL APPEARANCE	8.25
4.	APPROPRIATENESS	8.13
5.	FABRIC	8.00
6.	COLOUR/PATTERN	8.00
7.	COMFORT	7.88
8.	VALUE FOR MONEY/PRICE	7.63
9.	EMOTION	7.25
10.	PRACTICALITY	7.13
11.	BRAND	6.75
12.	TIME FOR SHOPPING	6.50
13.	IMAGE	5.88
14.	LOCATION OF PURCHASE	3.75
15.	COUNTRY OF ORIGIN	2.88

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Q1. When you purchase clothing, what considerations guide your purchase?

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** REVISED LIST OF CONSIDERATIONS WHEN PURCHASING

+ 1 PERSONAL APPEARANCE
    - 1.1 PERSONAL STYLE
    - 1.2 CLASSICAL (THE VALUE IN TIMES I CAN WEAR IT)
+ 2 COLOUR/PATTERN
    - 2.1 APPEAL OF GARMENT
    + 2.2 BASIC COLOURS
        - 2.2.1 NAVY, BLACK, RED, CREAM
    - 2.3 ARE THE COLOURS RIGHT FOR ME?
+ 3 COUNTRY OF ORIGIN
    - 3.1 AUSTRALIAN MADE VERSUS PRICE
    + 3.2 LOCALLY MADE
        - 3.2.1 COMMUNITY
        - 3.2.2 WA
+ 4 VALUE FOR MONEY/PRICE
    - 4.1 CAN I MAKE IT AT A MUCH LESSER COST
    + 4.2 VALUE
        - 4.2.1 A PRODUCT THAT WON'T DATE
        - 4.2.2 AUSTRALIAN MADE VERSUS PRICE
    - 4.3 DO I REALLY NEED IT?
+ 5 BRAND
    - 5.1 DESIGNER
+ 6 LOCATION OF PURCHASE
    - 6.1 ATTRACTION
    - 6.2 FEELING YOU GET
    + 6.3 SERVICE OFFERED
        - 6.3.1 HELPFUL SHOP ASSISTANTS ARE GREAT
    - 6.4 ABILITY OF SALESPERSON
    - 6.5 TRUST IN SALESPERSON
    - 6.6 I WON'T PURCHASE IF THE SHOP ASSISTANT IS A DRAGON
+ 7 QUALITY
    - 7.1 LONGEVITY
    - 7.2 DURABILITY
    - 7.3 CAN IT BE WORN NEXT 5 YEARS/STYLE
    - 7.4 CUT
    - 7.5 SEWING
    - 7.6 FINISH
    - 7.7 MANUFACTURE
    - 7.8 FIT
+ 8 COMFORT
    - 8.1 THAT FEELS GOOD
    - 8.2 EASE OF MOVEMENT (CUT)
    - 8.3 SIZE AND FIT
+ 9 APPROPRIATENESS
    - 9.1 FOR THE OCCASION
    - 9.2 FOR LIFESTYLE
    - 9.3 DO I REALLY NEED IT?

- 9.4 DOES IT GO WITH OTHER ITEMS IN MY WARDROBE
- 9.5 AGE
- 9.6 VERSATILE
- 9.7 FOR MY ACCESSORIES
- 9.8 FOR SEASON
- 9.9 FOR CLIMATE
- 9.10 FOR WEATHER

+ 10 STYLE/DESIGN
  + 10.1 CLASSIC STYLE/SHAPE
    - 10.1.1 THE "LOOK" OF THE GARMENT
    + 10.1.2 CAN IT BE WORN NEXT 5 YEARS
      - 10.1.2.1 CLASSICAL (THE VALUE IN TIMES I CAN WEAR IT)
    - 10.1.3 A PRODUCT THAT WON'T DATE
  - 10.2 CURRENT LOOK
  - 10.3 INDIVIDUALITY NOT OBVIOUSLY MASS PRODUCED OR DESIGNED

- 11 EMOTION
  + 11.1 APPEAL OF GARMENT
    - 11.1.1 APPEARANCE OF THE GARMENT
    - 11.1.2 DO I LIKE THE GARMENT?
  - 11.2 DOES COLOUR SUIT ME?
  - 11.3 DOES IT FEEL GOOD
  - 11.4 DOES IT FLATTER ME
  - 11.5 DOES IT SUIT MY PERSONALITY
  - 11.6 DOES IT SUIT MY FIGURE
  - 11.7 WILL I REALLY LIKE IT IN THREE MONTHS TIME
  - 11.8 WHO IS WITH ME WHEN I AM SHOPPING
  - 11.9 MOOD WHEN I AM SHOPPING

+ 12 FABRIC
  - 12.1 TEXTURE
  - 12.2 TYPE OF FABRIC
  + 12.3 QUALITIES
    - 12.3.1 ELASTICITY
    - 12.3.2 DRAPABILITY
  - 12.4 DOES IT HAVE A NICE FEEL
  + 12.5 QUALITY
    - 12.5.1 DURABILITY
  - 12.6 WEIGHT
  + 12.7 TYPE OF FIBRE
    - 12.7.1 DOES IT BREATHE
    - 12.7.2 NATURAL VS SYNTHETIC
    - 12.7.3 DIFFERENT WEAVES

+ 13 PRACTICALITY
  + 13.1 FOR MAINTENANCE
    - 13.1.1 HOW WILL THE GARMENT PERFORM WITH CONSTANT DRYCLEANING
    - 13.1.2 IS IT WASHABLE
    - 13.1.3 WILL THE STAINS COME OUT?
  - 13.2 CARE INSTRUCTIONS
  - 13.3 WILL IT WEAR WELL
  + 13.4 SAFETY
    - 13.4.1 IS IT FLAMMABLE?

+ 14 IMAGE
    - 14.1 WILL MY CHILDREN APPROVE WHEN I AM WEARING IT
    - 14.2 WILL MY COLLEAGUES/FRIENDS/FAMILY LIKE IT
    - 14.3 WILL IT PORTRAY A DESIRABLE IMAGE
    - 14.4 TO PROJECT A SPECIFIC IMAGE
- 15 TIME FOR SHOPPING

DISTRIBUTION OF RATINGS

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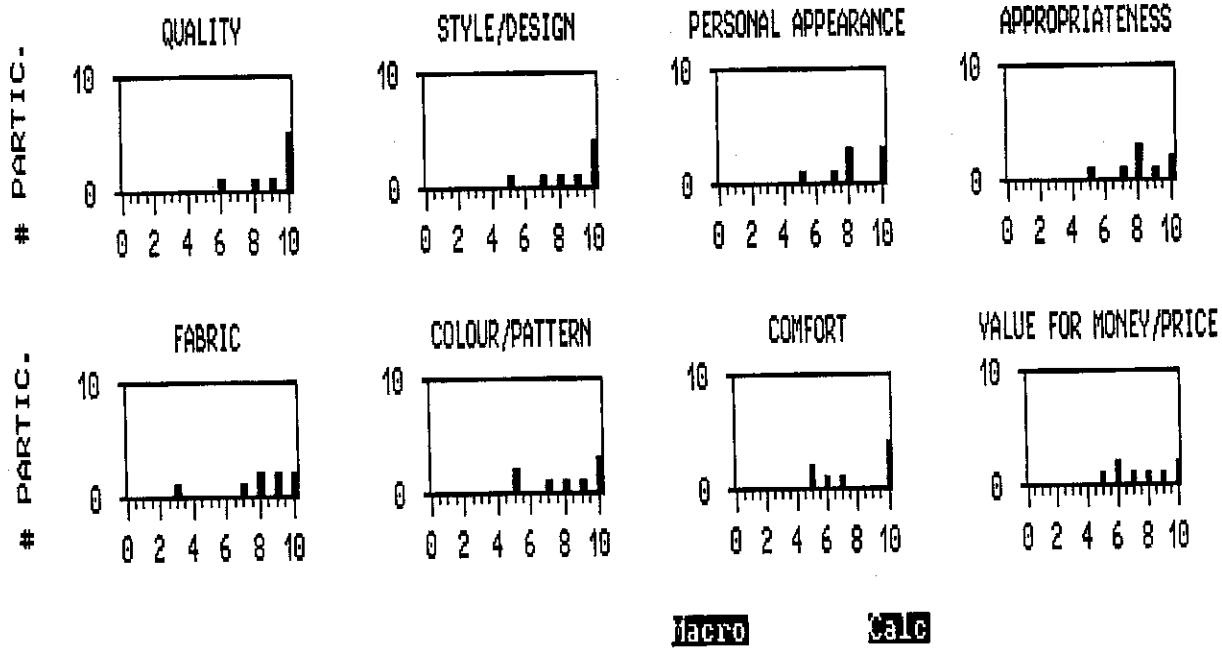

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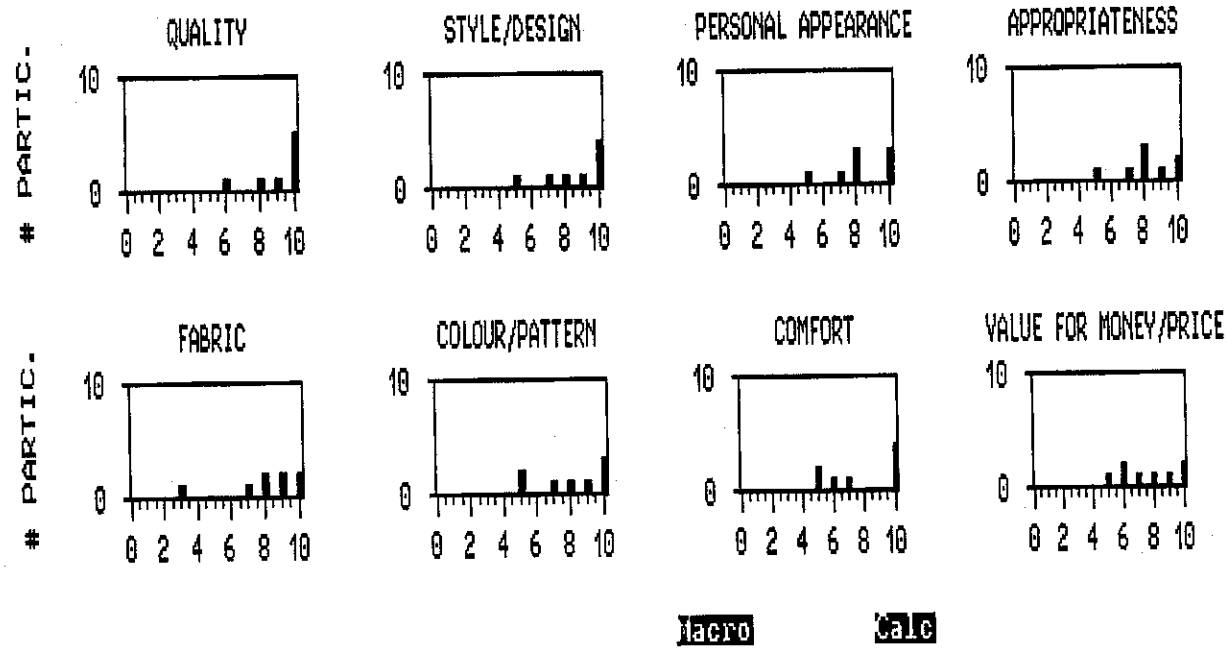

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CONSIDERATIONS WHEN PURCHASING CLOTHING

1. A PRODUCT THAT WONT DATE
2. APPEAL OF GARMENT
3. APPEAL OF GARMENT
4. ARE THE COLOURS RIGHT FOR ME
5. AUSTRALIAN MADE VESUS PRICE
6. BRAND
7. CAN I MAKE IT AT A MUCH LESSER COST
8. CAN IT BE WORN NEXT 5 YEARS
9. CLASSICAL, MEANING THE VALUE IN TIMES I CAN WEAR IT.
10. COLOUR
11. COLOUR DESIGN
12. COLOUR OF GARMENT
13. COMFORT
14. COMFORTABLE FIT
15. CONSIDERATION TO WHAT OCCASION IT IS WORN
16. COST
17. COST
18. CURRENT STYLE V LONGER "LIVE" OF FASHION LOOK
19. CUT AND FIT OF GARMENT
20. DESIGN DESIGN
21. DO I LIKE THE GARMENT/?
22. DO I REALLY NEED IT
23. DOES COLOUR SUIT ME
24. DOES IT FEEL GOOD EMOTIONALLY
25. DOES IT FIT ME
26. DOES IT FIT WELL
27. DOES IT FLATTER ME
28. DOES IT GO WITH OTHER ITEMS IN MY WARDROBE
29. DOES IT SUIT MY AGE
30. DOES IT SUIT MY PERSONALITY
31. DOES IT SUITE ME
32. DOESIT HAVE A NICE FEEL?
33. DURABILITY
34. EHE SPECIFIC OCCASION OR LIFESTYLE THE CLOTHES ARE BEING PU
35. FIT OF GARMENT
36. FUNCTION IE AMOUNT OF WEAR POSSIBLE VERSATILITY
37. HAVE I GOT THE RIGHT ACCESSORIES FOR IT
38. HELPFUL SHOP ASSISTANTS ARE GREAT
39. HOW FUNCTIONAL
40. I WON'T PURCHASE IF THE SHOP ASSISTANT IS A DRAGON
41. INDIVIDUALITY NOT OBVIOUSLY MASS PRODUCED OR DESIGNED
42. IS IT A CURRENT STYLE
43. IS IT DISTINCTIVE
44. IS IT FASHIONABLE
45. IS IT SOMETHING I CAN'T MAKE MYSELF?
46. IS IT THE CORRECT FIT NOT ALL SIZES FIT
47. IS THE COLOUR OK?
48. IS THE GARMENT SIMPLE AND STYLED ELEGANTLY
49. IS THE GARMENT STYLISH AND STAND ALONE

50. LABEL, MAKER THAT ODOES IT SUIT MY LIFESTYLE
51. LOCALLY MADE
52. LOOK TO SUIT THE OCCASSION
53. MATERIAL THE GARMENT IS MADE OF
54. MY PERSONAL TASTE,
55. OF GARMENT
56. PRACTICLITY FOR MAINTANCE,CARE INSTRUCTIONS.
57. PRICE
58. PRICE
59. QALITY OF FABRIC
60. QALITY OF GARMENT
61. QUALITY
62. QUALITY AS REFLECTED IN PRICING
63. QUALITY OF SEWING AND FINISHING
64. REASONABLE VALUE FOR MONEY
65. SPECIFIC NEED
66. STYLE
67. STYLE
68. SUITS MY FIGURE
69. THE COLOUR OF THE GARMENT
70. THE PARTICULAR OCCASION OR LIFESTYLE.
71. THE PURPOSE OF PURCHASE - IE LEISURE OR WORK
72. THE QUALITY OF GARMENT
73. THE SEASON OR WEATHER.
74. THE STYLE OF OUTFIT - DOES IT SUIT ME
75. THE STYLE OF THE GARMENT - IE IS IT FASHIONABLE
76. THE TYPE FABRIC WHICH THE GARMENT IS MANUFACTURED IN
77. THE VALUE FOR MONEY
78. THE WEIGHT OF THE GARMENT
79. VALUE IN COST AND QUALITY.
80. VALUE IN COST OF GARMENT.
81. VERY IMPORTANT IS THE MANUFACTURING AND FINISH.
82. WHER IT IS MADE
83. WHERE WAS IT MADE?
84. WILL I BE ABLE TO MOVE FREELY IN IT
85. WILL I REALLY LIKE IT IN THREE MONTHS TIME
86. WILL IT LAST AS LONG AS I MAY WANT TO WEAR THE GARMENT
87. WILL IT WEAR WELL
88. WILL IT WORK WITH MY OTHER CLOTHES
89. WILL MY CHILDREN APPROVE WHEN I AM WEARING IT
90. WILL MY COLLEAGUES/FRIENDS/FAMILY LIKE IT
91. WILL THE FABRIC WEAR WELL
92. WILLIT PORTRAY AN IMAGE NOT DESIRED
93. YOW WILL THE GARMENT PERFORM WITH CONSTANT DRYCLEANING/WASHI

RATED LIST

#	ITEM	AVERAGE RATING
1.	PERFORMANCE	9.13
2.	FEEL	8.88
3.	COLOUR	8.88
4.	VISUAL APPEARANCE	8.63
5.	THE RIGHT FABRIC FOR THE RIGHT PRODUCT	8.63
6.	DESIGN/PATTERN	8.50
7.	CARE AND MAINTAINANCE	7.75
8.	FABRIC STRUCTURE	7.38
9.	WEAVE	7.25
10.	VERSATILITY	7.00
11.	ORIGIN OF FIBRE	6.38
12.	SMELL	5.75

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Q 2:

What aspects or attributes of fabric, if any, do you consider when you buy clothes?

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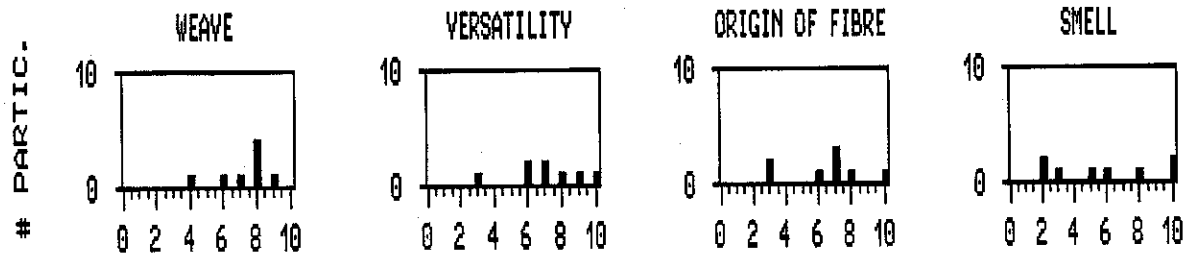

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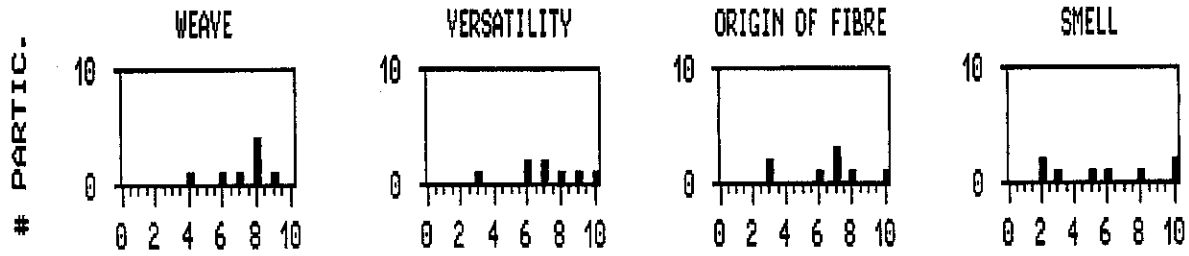

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ASPECTS OR ATTRIBUTES OF FABRIC

+ 1 ORIGIN OF FIBRE
    + 1.1 NATURAL FIBRE
        - 1.1.1 LAMB'S WOOL
        - 1.1.2 CASHMERE
        - 1.1.3 ALPACA
    + 1.2 CHEMICAL
        - 1.2.1 NYLON
    + 1.3 PLANT
        - 1.3.1 COTTON
        - 1.3.2 LINEN
+ 2 FABRIC STRUCTURE
    - 2.1 NATURAL FIBRE
    - 2.2 SYNTHETIC FIBRE
    - 2.3 BLEND
    - 2.4 DURABILITY
    - 2.5 FAULTS IN FABRIC STRUCTURE
    + 2.6 WEIGHT
        - 2.6.1 LIGHT WEIGHT
    - 2.7 STRENGTH
    + 2.8 WELL FINISHED
        - 2.8.1 MANUFACTURE
+ 3 PERFORMANCE
    - 3.1 COLOUR FAST
    - 3.2 DOES IT PILL
    - 3.3 DOES IT DRAPE
    - 3.4 DOES IT HOLD ITS SHAPE
    - 3.5 DOES IT PULL OR RUN
    - 3.6 DOES IT CREASE EASILY
    - 3.7 DOESN'T LOOK TIRED AFTER A FEW WASHES/CLEANS
    - 3.8 DURABILITY/WEAR
    - 3.9 FAULTS IN FABRIC STRUCTURE
    - 3.10 IS IT STABLE
    - 3.11 IS IT STAIN RESISTANT
    - 3.12 MOVEMENT OF FABRIC
    - 3.13 WEARABILITY
+ 4 CARE AND MAINTAINANCE
    - 4.1 EASY CARE
    - 4.2 DOES IT NEED IRONING
    - 4.3 DRYCLEANING
+ 5 COLOUR
    - 5.1 BRIGHT
    - 5.2 CLARITY OF COLOUR
    - 5.3 CONSISTENCY OF COLOUR
    - 5.4 COLOUR FAST
+ 6 FEEL
    - 6.1 APPEAL OF FEEL

- 6.2 COMFORT
- 6.3 COOLNESS
- 6.4 WARMTH
+ 6.5 TEXTURE
  - 6.5.1 LUXURY
- 6.6 NOT SCRATCHY OR ITCHY
- 6.7 SOFTNESS

+ 7 VISUAL APPEARANCE
- 7.1 APPEARANCE OF FABRIC
- 7.2 "COOLNESS"
- 7.3 LUXURIOUS

+ 8 WEAVE
- 8.1 WEAVE
- 8.2 ABILITY TO BREATHE
- 8.3 STRENGTH
- 8.4 TRANSPARENCY

+ 9 SMELL
- 9.1 LEATHER

- 10 THE RIGHT FABRIC FOR THE RIGHT PRODUCT
- 11 VERSATILITY

+ 12 DESIGN/PATTERN
- 12.1 INTERESTING COLOUR
- 12.2 INTERESTING PATTERN
- 12.3 UNUSUAL FABRICS

Appendix 2 Questionnaire

IDENT #:

START TIME	FINISH TIME	TOTAL INT MIN

WELLS AUSTRALASIA

395 NEPEAN HIGHWAY
FRANKSTON VIC 3199

PHONE: 783 7200

PROJECT NAME: FABRIC PREFERENCE

CODE AT END OF INTERVIEW

F	M
1	2

EDITED BY: _____ #: _____

VALIDATED BY: _____ #: _____

PROJECT #: 63 5841

DATE: JUNE 1995

QUOTA CHECK - SUPERVISOR ONLY

1	2	3	4	5	6	7
8	9	10	11	12	13	14

INT NAME: _____ INT #: _____

Good morning/afternoon/evening, I'm ... (***FULL NAME***) from Wells Australasia, the market
research company. We're doing a short but important survey on the fabrics women prefe
to wear. Can you spend some time looking through these fabric swatches to give me you
opinions please. This is purely for research purposes.

LOCATION:

MELB ---------- 1
ADEL ---------- 2
PERTH ---------- 3
GERALDTON ---------- 4
DARWIN ---------- 5

Q1. Which age group do you fall into?

18 - 24 ---------- 1
25 - 35 ---------- 2
36 - 45 ---------- 3
46 - 55 ---------- 4
56 - 60 ---------- 5
60 + ---------- ***THANK AND TERMINATE*** 6

Q2. When choosing a garment, and considering the fabric it is made of, what level
importance do you place on the 5 attributes of fabric? Please allocate 100
points amongst the attributes to indicate the level of importance in relation
each other.

- First read all the attribute definitions.
- Give the most important attribute the largest number of points.
- Give the least important attribute the fewest points.
- Give the other attributes points in relation to their relative importanc
to you, so that the total equals 100, and each reflects their comparativ
importance.

ASK THE INTERVIEWER IF YOU ARE UNSURE OF THE ATTRIBUTE MEANING

	POINTS
Fabric weight	_____
Quality of the fabric	_____
The texture or feel of the fabric	_____
The weave, or knit, of the fabric	_____
The type of fibre the fabric is made from	_____
	100

Q3. Please assess and group these fabrics in terms of the 3 groups listed below:

GROUP #	
1	YES I WOULD WEAR THAT TYPE OF FABRIC
2	MAYBE I WOULD
3	NO I DEFINITELY WOULD NOT

NOW, RESPONDENT, PLACE FABRICS INTO 3 GROUPS - RESPONDENT NOW NEEDS TO RANK FABRICS WITHIN EACH GROUP AS PER FOLLOWING INSTRUCTION

You may wish to read the labels on each fabric. Please ignore the colour, i.e. assume that the colour is to your liking, also assume that the price of each fabric is similar and affordable.

When assessing the fabrics, we ask you to think of the fabric being used for clothing outerwear, and not lingerie (underwear). Try to make your choice on your first reaction to the fibre. Try not to associate the fabric with a product you know. In most cases you will know by the feel whether you like or dislike the fabric.

		YES GROUP 1	MAYBE GROUP 2	NO GROUP 3	
1st	FABRIC #:				1st
2nd					2nd
3rd					3rd
4th					4th
5th					5th
6th					6th
7th					7th
8th					8th
9th					9th
10th					10th
11th					11th
12th					12th
13th					13th
14th					14th
15th					15th
16th					16th
17th					17th
18th					18th
19th					19th
20th					20th

INTERVIEWER TO PULL TO ONE SIDE ALL THOSE MENTIONED AS "A" IN Q3. WRITE THE RESPONSE IN COLUMN 1 (GROUP 1)

Q4. Now please go through the fabrics you said "Yes you would wear: and rank them in the order of preference. ***RECORD ABOVE***

INTERVIEWER TO PULL TO ONE SIDE ALL THOSE MENTIONED AS "B" IN Q3. WRITE THE RESPONSE IN COLUMN 2 (GROUP 2)

Q5. Now please go through the fabrics you said "Maybe you would wear" and rank them in the order of preference. ***RECORD ABOVE***

INTERVIEWER TO PULL TO ONE SIDE ALL THOSE MENTIONED AS "C" IN QUESTION 3. WRITE THE RESPONSE IN COLUMN 3 (GROUP 3)

Q6. Now please go through the fabrics you said "No you would not wear" and rank them in the order of preference. ***RECORD ABOVE***

Q7. Please tell me whether you agree or disagree with the following statements, wher 9 means totally agree and 1 means totally disagree. ***DO NOT ROTATE***

	TOTALLY DISAGREE								TOTALL AGRE
1. Being well dressed is one of the important parts of my life	1	2	3	4	5	6	7	8	9
2. I usually watch for the lowest possible prices when I shop	1	2	3	4	5	6	7	8	9
3. The fabric is very important when I buy a garment	1	2	3	4	5	6	7	8	9
4. I enjoy listening to classical music	1	2	3	4	5	6	7	8	9
5. I like to watch, listen to, or play sport	1	2	3	4	5	6	7	8	9
6. The man should run the family	1	2	3	4	5	6	7	8	9

Q8. Which of the following magazines have you read in the last month? ***MULTIPLE RESPONSE***

Vogue	01
Forum	02
You	03
New Idea	04
Who	05
Dolly	06
Women's Weekly	07
Cleo	08
Woman's Day	09
Cosmopolitan	10
None	11

Q9. Approximately, what percentage of your annual clothing dollars do you spend in purchasing clothes from...

Fashion boutique	___
Everyday wear/leisure wear store	___
Department store	___
Supermarket	___
Men's Clothing store (if purchased for women, not men or boys to wear)	100

Q10. During the course of an average week how often do you go out to...

	# OF OUTINGS						
1. Visit friends	0	1	2	3	4	5	6
2. Go to the pub, club or movies	0	1	2	3	4	5	6
3. Go to a restaurant or party	0	1	2	3	4	5	6

Q11. Which of the following categories do you fall into?	Young and unmarried	01
	Young and married without children	02
	Young divorced without children	03
	Young and married with children	04
	Young divorced with children	05
	Middle-aged married without children	06
	Middle-aged divorced without children	07
	Middle-aged married with children	08
	Middle-aged divorced with children	09
	Middle-aged married without dependent children	10
	Middle-aged divorced without dependent children	11
	Older married	12
	Older unmarried	13
	Other (Specify) _____	14
Q12. How much, approximately, do you spend on clothing, excluding lingerie, in one year?	$0 - $1200	
	$1200 - $2400	2
	$2400 - $4800	3
	$4800 - $7200	4
	$7200 +	5
Q13. Please tell me your occupation.	Fulltime home duties	1
	Fulltime professional employment	2
	Fulltime skilled employment	3
	Casual/parttime professional employment	4
	Casual/parttime skilled employment	5
	Student	6
	Retired	7

RESPONDENT'S NAME: _____

TELEPHONE #: _____ _____
(STD)

I certify that this interview was conducted according to the Code of Professional Behaviour ICC/ESOMAR and has been checked for completeness.

INT NAME: _____ INT #: _____

SIGNED: _____ DATE: _____

INTERVIEWER: ***IF RESPONDENT REFUSES TO REVEAL TELEPHONE NUMBER THE BOX BELOW MUST BE READ AND SIGNED BY RESPONDENT IN ORDER FOR THIS INTERVIEW TO BE INCLUDED IN THE SAMPLE***

Dear Respondent,

Thank you for your time and kindness in undertaking this study, it is greatly appreciated.

In order to validate the accuracy of your recorded responses and check on Interviewer attitude/behaviour, we require your telephone number. Our Code of Professional Ethics is such that we cannot pass this number on to either our client or any other person, we do not intend to use your telephone number for anything other than checking the accuracy of this survey.

Should you not be inclined to reveal your telephone number, we would ask that you now take a few extra minutes to check with the interviewer, that ALL questions have been asked and accurately recorded, signing this declaration below.

RESPONDENT'S SIGNATURE: _____

Appendix 3 Cluster Solutions Data

CL5 by CL7

Page 1 of 1

Count	CL7 1	2	3	4	5	6	7	Row Total
CL5 1	2	2	5	17	20			46 17.6
2	1	3	27	4	1		14	50 19.2
3	44	2	3	9	1		5	64 24.5
4		35	2	3	2		8	50 19.2
5			1	4		43	3	51 19.5
Column Total	47 18.0	42 16.1	38 14.6	37 14.2	24 9.2	43 16.5	30 11.5	261 100.0

Number of Missing Observations: 0

CL6 by CL7

Page 1 of 1

Count	CL7 1	2	3	4	5	6	7	Row Total
CL6 1	1	6	27	1	1		13	49 18.8
2	44	2	2	2			5	55 21.1
3		33	2			1	2	38 14.6
4	1		2	33			1	37 14.2
5			2	1	23		2	28 10.7
6	1	1	3			42	7	54 20.7
Column Total	47 18.0	42 16.1	38 14.6	37 14.2	24 9.2	43 16.5	30 11.5	261 100.0

Number of Missing Observations: 0

CL7 by LOCN Location

CL7 Count	LOCN Melbourne 1	Adelaide 2	Perth 3	Geraldton 4	Darwin 5	Row Total
1	7	9	19	3	9	47 18.0
2	4	11	9	14	4	42 16.1
3	9	4	6	9	10	38 14.6
4	8	12	7	2	8	37 14.2
5	2	3	4	11	4	24 9.2
6	12	11	5	8	7	43 16.5
7	9	4	5	3	9	30 11.5
Column Total	51 19.5	54 20.7	55 21.1	50 19.2	51 19.5	261 100.0

Classification results -

Actual Group		No. of Cases	Predicted Group Membership 1	2	3	4
Group	1	47	26 55.3%	2 4.3%	1 2.1%	4 8.5%
Group	2	42	2 4.8%	15 35.7%	10 23.8%	1 2.4%
Group	3	38	2 5.3%	9 23.7%	14 36.8%	5 13.2%
Group	4	37	12 32.4%	3 8.1%	1 2.7%	6 16.2%
Group	5	24	2 8.3%	0 .0%	1 4.2%	1 4.2%
Group	6	43	2 4.7%	6 14.0%	4 9.3%	3 7.0%
Group	7	30	3 10.0%	2 6.7%	2 6.7%	2 6.7%

Actual Group		No. of Cases	Predicted Group Membership 5	6	7
Group	1	47	5 10.6%	7 14.9%	2 4.3%
Group	2	42	3 7.1%	5 11.9%	6 14.3%
Group	3	38	4 10.5%	2 5.3%	2 5.3%
Group	4	37	6 16.2%	2 5.4%	7 18.9%
Group	5	24	17 70.8%	2 8.3%	1 4.2%
Group	6	43	4 9.3%	21 48.8%	3 7.0%

Actual Group		No. of Cases	Predicted Group Membership 5	6	7
Group	7	30	2 6.7%	4 13.3%	15 50.0%

Percent of "grouped" cases correctly classified: 43.68%

Classification processing summary

261 (Unweighted) cases were processed.
0 cases were excluded for missing or out-of-range group codes.
0 cases had at least one missing discriminating variable.
261 (Unweighted) cases were used for printed output.
261 cases were written into the working file.

Appendix 4 Discriminant Analyses Results

```
dsc gro=locn(1,5)/var=weight1 to type3/met=rao/opt=4,7/sta=1,5,6,13/fun=2.

- - - - - - - -  D I S C R I M I N A N T   A N A L Y S I S  - - - - - - - -

On groups defined by LOCN      Location

Number of Cases by Group

                Number of Cases
 LOCN       Unweighted      Weighted  Label
    1              51          51.0  Melbourne
    2              54          54.0  Adelaide
    3              55          55.0  Perth
    4              50          50.0  Geraldton
    5              51          51.0  Darwin
Total             261         261.0

Group means

 LOCN          WEIGHT1         WEIGHT2         WEIGHT3         QUAL1
    1          -.73058          .29911          .43147        2.82846
    2          -.66722         -.28213          .94935        2.54417
    3          -.55094          .34820          .20274        3.03758
    4           .00566         -.43533          .42967        1.32205
    5           .07873         -.46338          .38466        1.43413
Total          -.38044         -.10049          .48093        2.25267

 LOCN          QUAL2           QUAL3           TEXT1           TEXT2
    1         -1.50230        -1.32615          .09405          .20189
    2         -1.09502        -1.44915         -.09154         -.22580
    3         -1.08649        -1.95109         -.04953          .02774
    4           .18377        -1.50582         -.00949         -.31949
    5          -.11963        -1.31450          .35606         -.34002
Total          -.73723        -1.51544          .05676         -.12907

 LOCN          TEXT3           WEAVE1          WEAVE2          WEAVE3
    1          -.29594         -.15805          .54104         -.38298
    2           .31734         -.37457          .41414         -.03957
    3           .02178          .49735         -.12481         -.37254
    4           .32899         -.45202          .33101          .12101
    5          -.01605         -.16771         -.13428          .30199
Total           .07231         -.12294          .20227         -.07933

 LOCN          TYPE1           TYPE2           TYPE3
    1           .26942        -1.21559          .94617
    2          -.08389        -1.64093         1.72482
    3          -.01761        -1.57756         1.59517
    4          -.02434        -1.10283         1.12717
    5          -.31670         -.87596         1.19266
Total          -.03497        -1.29190         1.32687

Wilks' Lambda (U-statistic) and univariate F-ratio
with   4 and       256 degrees of freedom

 Variable   Wilks' Lambda         F          Significance
 --------   -------------   -------------   ------------
```

WEIGHT1	.96265	2.483	.0443
WEIGHT2	.95198	3.229	.0131
WEIGHT3	.97485	1.651	.1619
QUAL1	.87077	9.498	.0000
QUAL2	.89790	7.277	.0000
QUAL3	.98094	1.244	.2929
TEXT1	.98873	.7293	.5727
TEXT2	.98044	1.277	.2795
TEXT3	.96000	2.667	.0329
WEAVE1	.95648	2.912	.0221
WEAVE2	.95402	3.085	.0166
WEAVE3	.97986	1.315	.2647
TYPE1	.98330	1.087	.3634
TYPE2	.96410	2.383	.0519
TYPE3	.97232	1.822	.1251

F statistics and significances between pairs of groups after step 7
Each F statistic has 7 and 250.0 degrees of freedom.

Group	Group	1 Melbourne	2 Adelaide	3 Perth	4 Geraldton
2	Adelaide	2.8581			
		.0069			
3	Perth	2.3710	2.4338		
		.0231	.0198		
4	Geraldton	5.8928	3.0008	5.7949	
		.0000	.0048	.0000	
5	Darwin	5.6095	3.7375	4.8833	.73667
		.0000	.0007	.0000	.6411

Summary Table

Step	Action Entered	Removed	Vars In	Wilks' Lambda	Sig.	Rao's V	Sig.	Change in V	Sig.
1	QUAL1		1	.87077	.0000	37.99214	.0000	37.99214	.0000
2	WEIGHT1		2	.81340	.0000	58.52372	.0000	20.53158	.0004
3	TEXT3		3	.77794	.0000	70.71755	.0000	12.19382	.0160
4	WEAVE2		4	.74361	.0000	82.68200	.0000	11.96445	.0176
5	TYPE3		5	.71884	.0000	92.07413	.0000	9.39214	.0520
6	WEIGHT3		6	.69622	.0000	100.82910	.0000	8.75497	.0675
7	TEXT1		7	.68288	.0000	106.80804	.0000	5.97894	.2007

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr		After Fcn	Wilks' Lambda	Chisquare	DF	Sig
					:	0	.6829	96.886	28	.0000
1*	.2717	65.12	65.12	.4622	:	1	.8684	35.840	18	.0074
2*	.0682	16.35	81.46	.2527	:	2	.9276	19.081	10	.0393
3	.0672	16.11	97.57	.2509	:	3	.9900	2.559	4	.6340
4	.0101	2.43	100.00	.1001	:					

* marks the 2 canonical discriminant functions remaining in the analysis.

Standardized Canonical Discriminant Function Coefficients

	FUNC 1	FUNC 2
WEIGHT1	.72903	.17433
WEIGHT3	.16891	.29979
QUAL1	-.88670	.17206
TEXT1	.29831	-.25524
TEXT3	.38182	.61091
WEAVE2	.00073	-.15327
TYPE3	.13365	.70033

Structure Matrix:

Pooled-within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1	FUNC 2
QUAL1	.72892*	.22542
QUAL2	.61634*	-.06904
WEIGHT2	.39635*	-.18171
WEIGHT1	.35349*	-.13101
TEXT2	-.24612*	-.21020
WEAVE3	.24135*	.11615
WEAVE1	-.21029*	-.06033
TEXT3	.20228	.62353*
TYPE3	-.07686	.60457*
TYPE2	.14708	-.44058*
WEIGHT3	.01080	.32663*
TYPE1	-.06094	-.27979*
TEXT1	.09132	-.26345*
QUAL3	.11140	-.16960*
WEAVE2	-.09214	-.09503*

Varimax Rotation Transformation Matrix

	FUNC 1	FUNC 2
% Variance	77.71	22.29
Func 1	-.98124	-.19280
Func 2	-.19280	.98124

Rotated correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	FUNC 1	FUNC 2
QUAL1	.67179*	.36173
QUAL2	-.59146*	-.18657
WEIGHT2	.42395*	-.10189
WEIGHT1	-.32160*	-.19671
TEXT2	.28202*	-.15881
WEAVE3	-.25922*	.06744
WEAVE1	.21798*	-.01866
WEAVE2	.10873*	-.07548
TYPE3	-.04114	.60805*
TEXT3	-.31870	.57284*
TYPE2	-.05938	-.46067*
WEIGHT3	-.07357	.31842*
TEXT1	-.03882	-.27611*

TYPE1	.11374	-.26279*
QUAL3	-.07661	-.18789*

Rotated standardized discriminant function coefficients
based on rotation of structure matrix

	FUNC 1	FUNC 2
WEIGHT1	-.74896	.03050
WEIGHT3	-.22354	.26160
QUAL1	.83689	.33979
TEXT1	-.24350	-.30797
TEXT3	-.49244	.52584
WEAVE2	.02883	-.15053
TYPE3	-.26617	.66142

Canonical Discriminant Functions evaluated at Group Means (Group Centroids)

Group	FUNC 1	FUNC 2
1	.63140	-.26787
2	.05082	.39162
3	.45432	.23076
4	-.64113	-.12901
5	-.54660	-.26916

- Fabric Junctions.

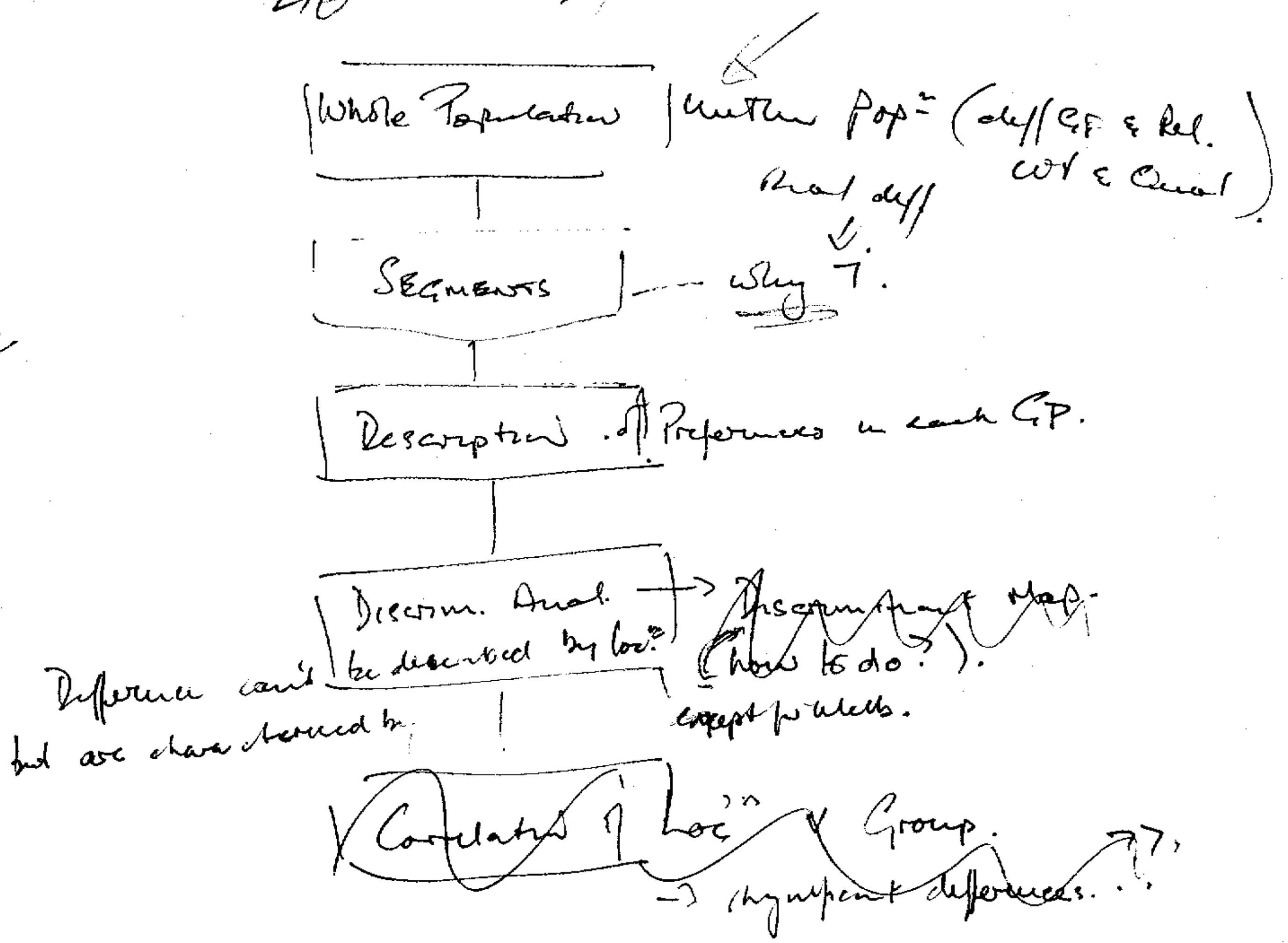
Classification Results -

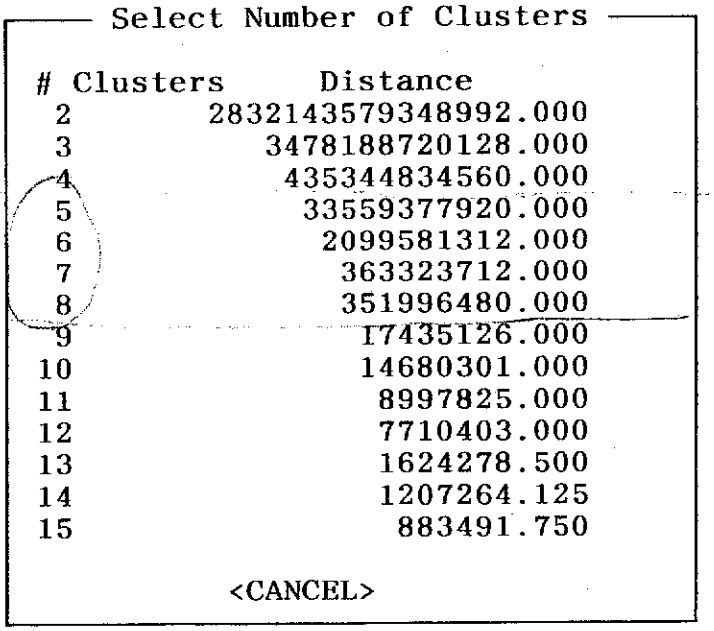
Actual Group		No. of Cases	Predicted Group Membership 1	2	3	4
Group Melbourne	1	51	26 51.0%	6 11.8%	8 15.7%	5 9.8%
Group Adelaide	2	54	9 16.7%	16 29.6%	14 25.9%	13 24.1%
Group Perth	3	55	18 32.7%	10 18.2%	18 32.7%	6 10.9%
Group Geraldton	4	50	7 14.0%	10 20.0%	4 8.0%	19 38.0%
Group Darwin	5	51	12 23.5%	11 21.6%	4 7.8%	10 19.6%
			72	53	48	53

Actual Group		No. of Cases	Predicted Group Membership 5
Group Melbourne	1	51	6 11.8%
Group Adelaide	2	54	2 3.7%
Group Perth	3	55	3 5.5%

umber of Respondents = 261.
verage Adjusted Rsquare = 0.247% (SE = 0.019)

eight - Indiv. Rel.Imp. = 19.58% (SE = 0.58); Group Rel.Imp. = 9.09		
ight	Medium	heavy
0.120 (0.064)	0.092 (0.065)	0.028 (0.062)
uality - Indiv. Rel.Imp. = 25.26% (SE = 0.67); Group Rel.Imp. = 36.97		
ery stiff	stiff	non crease
0.276 (0.076)	-0.293 (0.077)	0.569 (0.080)
exture - Indiv. Rel.Imp. = 16.48% (SE = 0.51); Group Rel.Imp. = 16.39		
soft	harsh	sheen
.034 (0.058)	-0.208 (0.048)	0.174 (0.054)
eave - Indiv. Rel.Imp. = 18.88% (SE = 0.56); Group Rel.Imp. = 14.53		
pen	closed	structured
0.102 (0.063)	0.221 (0.066)	-0.118 (0.062)
ibre - Indiv. Rel.Imp. = 19.80% (SE = 0.58); Group Rel.Imp. = 23.02		
lend	synthetic	natural
0.265 (0.067)	0.272 (0.074)	-0.007 (0.054)




Select Number of Clusters
Clusters Distance
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3 3478188720128.000
4 435344834560.000
5 33559377920.000
6 2099581312.000
7 363323712.000
8 351996480.000
9 17435126.000
10 14680301.000
11 8997825.000
12 7710403.000
13 1624278.500
14 1207264.125
15 883491.750
<CANCEL>

Summary Table

Step	Action Entered	Removed	Vars in	Wilks' Lambda	Sig.	Label
1	NC		1	.71585	.0000	
2	OPN		2	.57782	.0000	
3	STF		3	.48299	.0000	
4	CLS		4	.42756	.0000	
5	NAT		5	.38525	.0000	

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chi-square	df	Sig
					0	.385246	242.284	30	.0000
1*	.6158	54.20	54.20	.6173	1	.622472	120.410	20	.0000
2*	.2516	22.15	76.35	.4484	2	.779118	63.397	12	.0000
3*	.1935	17.03	93.38	.4027	3	.929878	18.466	6	.0052
4*	.0732	6.45	99.82	.2612	4	.997989	.511	2	.7745
5*	.0020	.18	100.00	.0448					

* Marks the 5 canonical discriminant functions remaining in the analysis.

Standardized canonical discriminant function coefficients

	Func 1	Func 2	Func 3	Func 4	Func 5
CLS	.61692	-.10002	-.23685	.84777	.64158
NAT	-.40579	.23573	.30540	.54661	-.70984
NC	.98052	-.09399	.57383	-.39704	-.36453
OPN	.31441	.91965	-.40476	.39614	.55287
STF	.16976	.14474	1.16033	-.27317	.19469

Final Cluster Means - 7 Groups

Group 1 - N=47

Weight - Rel. Imp. = 13.20%

light	Medium	heavy
-0.452	0.340	0.111

Quality - Rel. Imp. = 42.62%

very stiff	stiff	non crease
-0.348	-1.104	1.452

Texture - Rel. Imp. = 7.40%

soft	harsh	sheen
0.201	-0.243	0.042

Weave - Rel. Imp. = 19.23%

open	closed	structured
0.451	0.252	-0.703

Fibre - Rel. Imp. = 17.54%

blend	synthetic	natural
-0.465	0.586	-0.121

Group 2 - N=42

Weight - Rel. Imp. = 24.96%

light	Medium	heavy
0.282	-0.361	0.079

Quality - Rel. Imp. = 21.70%

very stiff	stiff	non crease
0.098	0.230	-0.329

Texture - Rel. Imp. = 4.21%

soft	harsh	sheen
0.004	0.052	-0.056

Weave - Rel. Imp. = 24.42%

open	closed	structured
0.136	-0.383	0.246

Fibre - Rel. Imp. = 24.72%

blend	synthetic	natural
-0.366	0.271	0.095

Group 3 - N=38

Weight - Rel. Imp. = 24.46%

light	Medium	heavy
-0.403	0.422	-0.019

Quality - Rel. Imp. = 22.12%

very stiff	stiff	non crease
-0.456	0.167	0.289

Texture - Rel. Imp. = 15.36%

soft	harsh	sheen
-0.008	-0.255	0.263

Weave - Rel. Imp. = 17.44%

open	closed	structured
0.179	0.205	-0.383

Fibre - Rel. Imp. = 20.62%

blend	synthetic	natural
-0.247	-0.201	0.448

Group 4 - N=37

Weight - Rel. Imp. = 10.43%

light	Medium	heavy
-0.035	0.247	-0.212

Quality - Rel. Imp. = 28.88%

very stiff	stiff	non crease
-0.282	-0.495	0.777

Texture - Rel. Imp. = 21.27%

soft	harsh	sheen
-0.409	-0.120	0.529

Weave - Rel. Imp. = 1.23%

open	closed	structured
-0.026	-0.002	0.028

Fibre - Rel. Imp. = 38.20%

blend	synthetic	natural
-0.763	0.920	-0.158

Group 5 - N=24

Weight - Rel. Imp. = 10.98%

light	Medium	heavy
0.326	0.149	-0.476

Quality - Rel. Imp. = 51.50%

very stiff	stiff	non crease
-1.976	0.191	1.785

Texture - Rel. Imp. = 13.71%

soft	harsh	sheen
-0.171	-0.415	0.586

Weave - Rel. Imp. = 17.87%

open	closed	structured
-0.138	0.721	-0.584

Fibre - Rel. Imp. = 5.94%

blend	synthetic	natural
-0.180	0.254	-0.074

Group 6 - N=43

Weight - Rel. Imp. = 23.39%

light	Medium	heavy
-0.489	0.064	0.425

Quality - Rel. Imp. = 15.83%

very stiff	stiff	non crease
0.176	-0.397	0.221

Texture - Rel. Imp. = 11.73%

soft	harsh	sheen
0.166	-0.293	0.127

Weave - Rel. Imp. = 44.97%

open	closed	structured
-0.913	0.845	0.068

Fibre - Rel. Imp. = 4.08%

blend	synthetic	natural
0.093	-0.066	-0.026

Group 7 - N=30

Weight - Rel. Imp. = 15.99%

light	Medium	heavy
0.264	-0.278	0.014

Quality - Rel. Imp. = 17.26%

very stiff	stiff	non crease
0.258	-0.327	0.069

Texture - Rel. Imp. = 19.66%

soft	harsh	sheen
0.386	-0.280	-0.107

Weave - Rel. Imp. = 32.74%

open	closed	structured
-0.563	0.017	0.546

Fibre - Rel. Imp. = 14.35%

blend	synthetic	natural
0.202	0.083	-0.284

- - - - - - - - - D I S C R I M I N A N T A N A L Y S I S - - - - - - - - -

On groups defined by CL7

Analysis number 1

Stepwise variable selection
Selection rule: maximize Rao's V

Maximum number of steps	10
Minimum tolerance level	.00100
Minimum F to enter	3.84000
Maximum F to remove	2.71000
Minimum increase in Rao's V	.00000

Canonical Discriminant Functions

Maximum number of functions	5
Minimum cumulative percent of variance	100.00
Maximum significance of Wilks' Lambda	1.0000

Prior probability for each group is .14286

---------- Variables in the Analysis after Step 1 ----------

Variable	Tolerance	F to Remove	Rao's V
L4	1.0000000	5.1043	

---------- Variables not in the Analysis after Step 1 ----------

Variable	Tolerance	Minimum Tolerance	F to Enter	Rao's V
L1	.9505566	.9505566	1.2648899	38.2672415
L2	.9374716	.9374716	1.5288891	39.8723282
L3	.9418772	.9418772	2.1941012	43.8455724
L5	.9470441	.9470441	.8504645	35.7487335

F statistics and significances between pairs of groups after step 1
Each F statistic has 1 and 254 degrees of freedom.

Group	1	2	3	4
Group				
2	11.3435 .0009			
3	4.4287 .0363	1.3079 .2538		
4	.0139 .9061	10.8035 .0012	4.4104 .0367	
5	17.4106 .0000	1.6803 .1961	5.0813 .0250	16.7536 .0001
6	2.3618 .1256	3.2456 .0728	.3665 .5455	2.4397 .1195
7	.1687 .6816	6.7089 .0101	2.2105 .1383	.2463 .6201

Group	5	6
Group		
6	8.0412 .0049	
7	12.0552 .0006	.9213 .3380

F level or tolerance or VIN insufficient for further computation.

Summary Table

Step	Action Entered	Action Removed	Vars in	Wilks' Lambda	Sig.	Rao's V	Sig.	Change in V	Sig.
1	L4		1	.89240	.0001	30.62564	.0000	30.62564	.0000

Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chi-square	df	Sig
1*	.1206	100.00	100.00	.3280	0	.892400	29.143	6	.0001

* Marks the 1 canonical discriminant functions remaining in the analysis.

Standardized canonical discriminant function coefficients

	Func 1
L4	1.00000

Structure matrix:

Pooled within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	Func 1
L4	1.00000
L2	-.25006
L3	-.24109
L5	-.23012
L1	-.22236

Canonical discriminant functions evaluated at group means (group centroids)

Group	Func 1
1	-.33897
2	.37618
3	.12013
4	-.36491
5	.70787
6	-.01466
7	-.24299

```
compute ce1=0.
if (clothexp eq 1) ce1=1.
compute ce2=0.
if (clothexp gt 1) ce2=1.
frequencies variables=ce1 ce2.
```

Group standard deviations

CL7	CE1	CE2
1	.49977	.49977
2	.32777	.32777
3	.41315	.41315
4	.43496	.43496
5	.44233	.44233
6	.41163	.41163
7	.46609	.46609
Total	.43549	.43549

Wilks' Lambda (U-statistic) and univariate F-ratio
with 6 and 254 degrees of freedom

Variable	Wilks' Lambda	F	Significance
CE1	.95187	2.1406	.0494
CE2	.95187	2.1406	.0494

- - - - - - - - D I S C R I M I N A N T A N A L Y S I S - - - - - - - -

On groups defined by CL7

Analysis number 1

Stepwise variable selection
Selection rule: maximize Rao's V
Maximum number of steps..... 4
Minimum tolerance level..... .00100
Minimum F to enter..... 3.84000
Maximum F to remove..... 2.71000
Minimum increase in Rao's V..... .00000

Canonical Discriminant Functions

Maximum number of functions..... 2
Minimum cumulative percent of variance... 100.00
Maximum significance of Wilks' Lambda.... 1.0000

Prior probability for each group is .14286

---------- Variables not in the Analysis after Step 0 ----------

Variable	Tolerance	Minimum Tolerance	F to Enter	Rao's V
CE1	1.0000000	1.0000000	2.1405600	12.8433602
CE2	1.0000000	1.0000000	2.1405600	12.8433602

F level or tolerance or VIN insufficient for further computation.

No variables qualified for the analysis, so it is being abandoned.

Wilks' Lambda (U-statistic) and univariate F-ratio
with 6 and 254 degrees of freedom

Variable	Wilks' Lambda	F	Significance
JOB1	.98409	.6845	.6624
JOB2	.99153	.3615	.9027
JOB3	.98240	.7582	.6034
JOB4	.97392	1.1336	.3432

Wilks' Lambda (U-statistic) and univariate F-ratio
with 6 and 254 degrees of freedom

Variable	Wilks' Lambda	F	Significance
WD1	.97769	.9660	.4488
WD2	.98541	.6266	.7089
WD3	.98645	.5813	.7451

Wilks' Lambda (U-statistic) and univariate F-ratio
with 6 and 254 degrees of freedom

Variable	Wilks' Lambda	F	Significance
LP1	.99488	.2180	.9708

LP2	.97278	1.1844	.3150
LP3	.98786	.5201	.7929

Wilks' Lambda (U-statistic) and univariate F-ratio
with 6 and 254 degrees of freedom

Variable	Wilks' Lambda	F	Significance
FI1	.97012	1.3040	.2557
FI2	.96187	1.6780	.1267
FI3	.97015	1.3023	.2565

Wilks' Lambda (U-statistic) and univariate F-ratio
with 6 and 254 degrees of freedom

Variable	Wilks' Lambda	F	Significance
MN1	.98965	.4428	.8497
MN2	.99461	.2296	.9668
MN3	.97906	.9056	.4914
SIC1	.96981	1.3177	.2496
SIC2	.97086	1.2705	.2714
SIC3	.98905	.4685	.8314
ST1	.98542	.6265	.7090
ST2	.96574	1.5019	.1779
ST3	.97370	1.1436	.3375

F level or tolerance or VIN insufficient for further computation.

No variables qualified for the analysis, so it is being abandoned.

Wilks' Lambda (U-statistic) and univariate F-ratio
with 6 and 254 degrees of freedom

Variable	Wilks' Lambda	F	Significance
MG1	.98570	.6140	.7190
MG10	.96192	1.6760	.1272
MG11	.96205	1.6699	.1288
MG2	.98423	.6782	.6674
MG3	.98707	.5546	.7662
MG4	.98411	.6834	.6632
MG5	.98764	.5296	.7856
MG6	.98696	.5592	.7626
MG7	.97779	.9615	.4518
MG8	.96789	1.4046	.2132
MG9	.96447	1.5596	.1594

Wilks' Lambda (U-statistic) and univariate F-ratio
with 6 and 254 degrees of freedom

Variable	Wilks' Lambda	F	Significance
FS1	.95567	1.9636	.0713
FS2	.96051	1.7407	.1120
FS3	.97485	1.0923	.3674
EVD1	.97991	.8680	.5190
EVD2	.98985	.4341	.8558
EVD3	.97274	1.1864	.3139
DT1	.98111	.8149	.5592
DT2	.98612	.5959	.7335
DT3	.99035	.4124	.8705
SK1	.97712	.9914	.4316
SK2	.97873	.9199	.4811
SK3	.96023	1.7532	.1092
EN1	.97965	.8796	.5104
EN2	.98249	.7546	.6063
EN3	.97311	1.1698	.3229

Wilks' Lambda (U-statistic) and univariate F-ratio
with 6 and 254 degrees of freedom

Variable	Wilks' Lambda	F	Significance
VF1	.96157	1.6918	.1233
VF2	.98737	.5413	.7765
VF3	.98141	.8017	.5694
GP1	.98109	.8160	.5583
GP2	.97653	1.0175	.4143
GP3	.96800	1.3995	.2152
GR1	.97770	.9657	.4490
GR2	.97680	1.0056	.4221
GR3	is a constant.		

F level or tolerance or VIN insufficient for further computation.

No variables qualified for the analysis, so it is being abandoned.