CHAPTER 4

4. THE ROLE OF PRICE AND PRICING IN TOURISM MARKETING

4.1 INTRODUCTION

Price is part of the marketing mix: "*A product's **price** is that which consumers exchange with the market in order to purchase the product. Consumers consider price to be an important criterion in their evaluation of alternatives, both before and after making a purchase. Furthermore if a product's design requires consumers to exchange both time and money, then the actual price includes more than just its monetary price*" (Wells and Prensky, 1996: 92).

Price shows the published or negotiated terms of an exchange transaction for a product, between a producer who aims to achieve a predetermined sales volume and revenue objectives, and prospective customers who seek to maximise their perceptions of value for money in the choices they make between alternative products. It is one of the variables of the four "P's": product, price, place and promotion (Middleton, 1988: 58-60). "*Pricing is one of the most important elements in the tourism marketing mix. Tourism customers rate the product at a price and without a price there is no indication of value. Pricing decisions are therefore essential for the profitability of the tourist establishment, as it has a tremendous impact on demand and sales volume. Pricing is also often considered an indication of quality…..Although the pricing element is the most important one of the marketing mix in terms of profitability, pricing cannot be seen in isolation from the other elements*". Therefore it must be viewed as an integral part of the marketing process, and the interrelationship with the other elements in the mix must also be taken into consideration (Meidan, 1994: 357).

Price is an important variable in the regional marketing mix especially with regard to the Kruger National Park. The "right" price must satisfy both the tourists and meet the profit objectives of the tourism business. Therefore it is necessary to develop the price structure, objectives and strategies to establish the strategic role of price in the marketing mix, while enough flexibility must be retained to respond to changing conditions Consideration is necessary to pricing strategies for new products (Heath and Wall, 1992: 160).

4.2 TOURISTS' PERCEPTION OF PRICE

According to consumer behaviour research by Stevens (1992: 44) "*consumers perception carry the greatest weight in the various decisions made by tourists - the choice of a destination, the consumption of commodities while on vacation, and the decision to return. Perception are the consumer's subjective reality…..Perception is important because contemporary consumers are becoming more and more discriminating".* They are more experienced travellers, older and more value conscious. It is important in influencing travel behaviour. To stay competitive in such a climate, the tourism product must be perceived as of a quality similar or better to that of other competitors, and its price must be perceived as attractive. Thus the information on tourists' perceptions of prices and quality and on the role price plays in tourist behaviour is of the utmost importance.

Price and quality interact to produce the value for money concept. Because pleasure travel is an experiential product, and therefore the value for money concept must be very subjectively measured by travellers: "*Measurers of travelers' price/quality perceptions are key to determining a country's or industry's competitiveness, because competitive advantage grows out of a value that a country is able to create for its buyers which exceeds the cost of creating it*". Thus studies of price, quality and value can provide insights into a country's tourism product, and eventually give information for a competitive advantage in marketing its product and planning an industrial development strategy (Stevens, 1992: 48).

The real meaning of price to tourists can be overlooked by tourism organisations like the National Parks Board. In a regional context there are actual charges of accommodation facilities, effort costs, time costs and psychological costs, for example, the possibility of a potential tourist patronising the tourism facilities can be based upon:

- The actual price of the tourism facilities in the region.
- The time costs and trouble of travelling a long distance to the specific region.
- If the destination and its offerings are unknown to him, the tourist experiences will be uncertain (Heath and Wall, 1992: 141-142).

"*Consumers do tend to believe that price is a good indicator of quality* (Wells and Prensky, 1996: 276). The price of a product is an indication of its quality. When price differences between several tourism offerings are small, tourists will not use price as a basis for decisions whom to support. Consumers (tourists) tend to lean on price when they make an important decision, especially when they have no self-confidence during decision making. It may happen that tourists are sceptical about tourism destinations that require much less than others of the same kind. They might wonder what is wrong with the tourist destination, and assume that other more expensive places offer better tourism facilities. This price-quality relationship should be taken into account by tourism organisations and tourism businesses during the price-fixing for regional tourism offerings.

Meidan (1994: 357) reckons that when setting prices, the psychology of prices is very important in determining a person's price-value relationship. Attitudes to price are very closely related to the amount of risk the buyer feels is involved in the purchasing decision. Therefore cost-based methods of setting tourism prices could be dangerous - their real value is in determining the lower limits of price.

4.3 PRICE STRATEGY

According to Nellis and Parker (1992: 116-117) the **essence of pricing strategies** is "*Choosing the appropriate price to charge for a good or service is one of the most important challenges facing management….therefore, economists call the price which exactly matches the supply and demand for a particular good or service, the equilibrium price".* The 'best' or 'correct' price to charge must remain uncertain ahead of actual production and sale. Because market conditions are in a constant state of flux, pricing decisions contain risks. To achieve the optimal pricing strategy, there must be perfect information available to managers about consumer demand, competitors' reactions and supply costs, etc. They reckon managers might adopt **various approaches to pricing**.

4.3.1 Price determination and managerial objectives

Price has two broad functions. Firstly, all managers must know that prices raise revenue for the firm. Price multiplied by the quantity sold determines the

firm's total revenue, and depending on the production costs, ultimately the firm's survival. Secondly, price rations out the available production amongst consumers on the basis of their ability and willingness to pay. Thus in a competitive market economy price is determined by the forces of demand and supply. Pricing is driven by managerial objectives. The precise objectives pursued by the management will ultimately determine the price strategy that is adopted.

4.3.2 Generic pricing strategies

There are four strategies:

1) **Marginal cost pricing** involves the setting of prices, and therefore determines the amount produced, according to the marginal costs of production. It is normally associated with a profit maximising objective.
2) **Incremental pricing** deals with the relationship between larger changes in revenues and costs associated with the managerial decisions. To use an incremental analysis properly requires a wide-ranging examination of the total effect of any decision rather than simply the effect at the margin.
3) **Break-even pricing** requires that the price of the product is set so that the total revenue earned equals the total costs of production.
4) **Mark-up pricing** is similar to break-even pricing, except that a desired rate of profit is build into the price. Hence this is also sometimes referred to as cost-plus pricing, full-cost pricing or target-profit pricing.

4.3.3 Pricing and the competitive environment

The nature of the market in which the product is sold will have a major influence on the pricing policy adopted. Markets can be conveniently divided into four broad kinds of markets: perfectly competitive, monopoly, monopolistically competitive and oligopoly markets. The appropriate approach to pricing in each of these is:

1) **Pricing in perfectly competitive markets**. The supplier is a price taker. Because each firm's product is indistinguishable from products of all the other competitive firms the consumer buy only on the basis of price.
2) **Product Pricing in monopoly markets**. The firm is a price-maker. Thus as markets become less competitive (the degree of monopoly increases) and suppliers will have more discretion when setting prices. Price rises will reduce demand but will not completely destroy it. Price elasticity of

demand becomes an important consideration in setting prices - lesser price elastic for the demand for the product will increase the firm's market power which will result in freedom for the firm to set prices.

3) **Pricing in monopolistically competitive markets**. A large number of competitors produce substitutable products, in such a way that an attempt to achieve product differentiation is a dominant feature. This monopolistic competition means that firms still have control over their output. Thus they try segmenting their markets and thereby reducing competition.
4) **Pricing in oligopoly markets**. An individual firm's actions are very likely to provoke a competitive reaction. It is crucial to know how competitors are likely to react to price changes. Various competitive strategies are reflected in which price may or may not be a critical variable.

4.3.4 The marketing mix and the product life cycle

Pricing strategies require the integration of pricing into the **'four P's'** of the marketing mix (product, place, price and promotion), and should complement the other factors of the mix. In developing an effective marketing strategy the 'four P's' determine what is offered to the consumer:

1) **Product** raises the issue of consumers' perception of its characteristics. The perceived value or utility to the consumer becomes the key to non-price factors used to increase the perceived value.
2) **Place** relates to the distribution of the product and how well it is distributed is important to its success
3) **Promotion** of a product involves effective marketing including the provision of adequate credit and advertising. Consumers' perception of the product is shaped by advertising and increases consumer demand at all prices. Successful advertising by increasing market segmentation can reduce price sensitivity
4) **Price**. Product, place and promotion have an effect on both a firm's demand and cost relationship. Therefore price must fit in with remainder of the marketing plan because together they determine the product's 'positioning' in the market place. The positioning of a good or service in the market-place has major implications for pricing policy. Thus it must be priced correctly.

Different strategies are necessary for the various stages of a product's life cycle. When a product is launched a 'promotional' or 'penetration pricing' is used in which the price is set low to enter the market against existing competitors, attract consumers to the new product, and gain market share. Where a new product has a monopoly in the market for a short period, a skimming policy arises when the price is set high initially to cover large unit costs in the early stages of the product life. In the growth stage price may have ceased to be a primary consideration. In the maturity stage the emphasis will be on profit contribution. As the product declines in popularity in the final stage price may have to be cut to maintain demand and hence margins sink.

4.3.5 The economics of price discrimination

It is used by economists specifically to identify only those circumstances where different consumers exhibit different responses to prices: i.e. where there are different price elasticities. Price discrimination represents the practice of charging different prices for various units of a single product when the price differences are not justified by differences in the production/supply cost. For successful price discrimination the firm must be able to control its own prices. There must also be different price elasticities of demand in the various markets - they may reflect different preferences, information and perceptions of the product, and incomes and tastes.

4.3.6 Pricing in multi-plant and multi-product firms

Most firms produce a range of products on more than one site. Thus in a multi-plant firm the profit-maximising output rule (marginal supply costs must equal marginal revenue) is unchanged, but the marginal cost (the sum of the separate plants' marginal costs and production) must be allocated between the plants so that the marginal supply cost at each point is identical. When producing and pricing a product, the multi-product firm must consider the impact for that product of a price change (its own price elasticity of demand) and also the impact in the demand for the other products in the firm's range (the relevant cross price elasticities). Obtaining the desired rate of return from the full product range rather than individual products now influences pricing.

4.3.7 Peak-load pricing

Where the demand for a product varies over time it can pay to introduce a form of discriminatory pricing called peak-load pricing. The factor that causes differentiated pricing is the differences of supply costs over time, i.e. the marginal cost of supplying the product or service is much lower at off-peak times when there is spare capacity, and much higher at peak times when there is congestion. Peak-load pricing is used extensively by travel companies and hotels, which charge much less for the same holiday or room out of, season, i.e. the 'weekend breaks'. Thus consumers might alter their demand pattern and travel during off-peak periods.

4.3.8 Pricing policy and the role of government

All market economies have some state intervention in pricing in the form of taxation and subsidies. Direct controls arise from prices and income policies, anti-monopoly and restrictive legislation, and also regulations and licensing.

The above-mentioned discussion of pricing policies under different market conditions can be summarised as: "*...optimal pricing requires a full consideration of both demand and cost conditions....there is a case for a more flexible approach to pricing where markets with different price elasticities are supplied or where a peak-load problem exists…successful firms are those which gain competitive advantage and price remains an important variable in achieving this advantage*" (Nellis and Parker, 1992: 143).

4.3.9 Factors that affect price strategies

According to McIntosh and Goeldner (1995: 433-434) marketing managers must take the following **factors** into account **that affect price strategies**:

- **Product quality**. The quality of the product really determines the price-value relationship. It is logical that that product that offers greater utility and fills the consumer needs more effectively than a competitive product can command a higher price.
- **Product distinctiveness**. A standard or staple product with no distinctive features offers little or no opportunity for price control. But, a novel and different product may be able to command higher prices. For instance, the Lost City as an attractive novelty, combined with excellent services and

facilities, makes it possible for Sun International to command higher prices (Jooste, 1995: 269).

- **Extent of the competition**. A product that is comparable to that of competitors' must be priced taking the prices of competitors into consideration. To some extent the product's price determines its position in the market.
- **Method of distribution**. The price of the product must include adequate margins for tour operators, travel agents or the company's own sales force.
- **Character of the market**. The type and possible numbers must be considered. If there is a limited number of consumers, then the price must be high enough to compensate for a limited market. But, one must also consider consumer ability and propensity to buy.
- **Cost of the product and service**. The price must be higher than cost over the long run or the business will not survive. Both cost and market conditions should serve as guides to pricing.
- **Cost of distribution**. Distribution costs must also be included in the pricing equation. They are much more difficult to estimate than other costs.
- **Margin of profit desired**. The profit margin build into the product's price must be higher than the returns realised on more conventional investments in order to compensate for the risk involved in the enterprise.
- **Seasonality**. Most tourism products are affected by seasonality because of school-year and holiday patterns. Consequently, the seasonal aspects must be considered when developing prices.
- **Special promotion prices**. It is often a good strategy to offer introduction prices and special one-time price offers to introduce the product to consumers. However, these must be carefully planned so that they achieve the purpose and do not become a regular price.
- **Psychological considerations**. Throughout the economy psychological pricing is applied, usually in the form of prices that are set in odd amounts such as 99c, R19,95 or R29,99. Generally consumers respond well to odd pricing, and there seems something particularly magical about prices that ends in a nine.

Lumsdon (1997: 156-157) discusses the **latest factors that shape pricing strategy**. Internal and external factors are summarised below:

- **Overall marketing policy and objectives**. Pricing is an integral part of position. Because of the intangibility of tourism offerings, price signals to the customer an expectation of what is being sold.
- **The price-quality relationship of the company's range of service offerings, especially with regard to the market life cycle**. Price is in particular associated with quality, the expectation being that the more a customer pays, the higher the expected quality. A similar indication is value, where customers invariably expect higher quality than the price they pay.
- **The uniqueness of the tourism offering and strength of brand**. Premium pricing is used when tourism marketers are selling a unique or unusual type of experience, or when a brand holds great value.
- **The potential to reduce costs through effective us eof the value chain within the company and in terms of suppliers**. Many companies look and try to reduce costs in the supply of tourism services so that it allows for greater in pricing.
- **The structure of the market and the company's position in the market place**. Positioning is important because companies with a large share of the market tend to lead with pricing while competitors follow their pricing structure.
- **Degree of competition**. The level of competition within a market can lead to parity pricing, price following or price warfare that depend on the nature and intensity of competitors.
- **Government involvement in the market**. They can impose taxes, levies or retail price maintenance mechanisms, which affect the market.
- **Currency exchange rates**. When currencies fluctuate between countries, it can lead to international pricing policies which build in safeguards against erratic movements of exchange rates.

4.4 PRICING POLICY

Cooper, Fletcher, Gilbert and Wanhill (1993: 255) reckon that there are **many factors influencing pricing policy**:

- **The perishable nature of the tourism product** - it cannot be stored for future occasions. Thus it leads to various forms of last-minute tactical pricing.
- **The high price** elasticity **of demand** shown by holiday and markets places emphasis on setting prices at the right levels.

- **The volatility of the market** due to short-run fluctuations in international markets, exchange rates, oil prices and political events requires sophisticated forward planning.
- Many companies will **forgo short-run profit** in order to create acceptable load factors or occupancy levels because they are reliant on high volumes to break even.
- **Cost control** is an important part of pricing policy. Many tourism establishments have high fixed costs and price close to break-even positions. This could make them vulnerable to financial collapse or take-over if costs are not controlled.
- For airline travel and hotel accommodation some regions and countries have **price controls**.
- **Seasonal demand** leads to low and peak season periods, which require demand management pricing to cope with short-run capacity problems.
- **Price is associated with the psychological aspects of both quality and status**. It is therefore always important to measure the way prices or the different target segments will perceive their change.
- **Cash flow** is high because much of the payment of tourism products is being made in advance of consumption.

Mill and Morrison (1992: 440-441) add other **factors that influence pricing policy**:

- **Price as a result of supply and demand**. When supply exceeds demand, price will tend to decrease and vice versa. The extent to which demand changes (as measured by the amount purchased) as price changes, called the elasticity of demand, is of greater importance. A %5 reduction in price may lead to a corresponding 10% in the number of buyers and subsequent increase in sales revenue. In this case it is **demand elastic**. Products aimed at the luxury end of the consumer scale are less susceptible to changes in price, and tend to be **price inelastic**. Supply is limited for destinations or properties that are not open all year, and prices will be correspondly higher. Because demand is not often uniform throughout the year, it is common to charge higher prices during the peak season.
- **The expected length of the product life cycle and the destination or organisation's position on it**. This will also affect pricing decisions because a "fad" item with an expected life cycle will have to be charged a high price to recoup the investment in a relatively short period of time.

- **Competition**. The extent to which the destination area or other tourism service is unique determines whether it can be charge more.
- **The needs of the selected target market(s)**. Pricing policy is also influenced by the needs of the selected target market(s). If a tourism organisation or tourism destination is seen as serving the needs and wants of the market, and if they are perceived to be important to members of the market segment, those members will be willing to pay a higher price. The price charged must be perceived by the market as less or at least equal to the value perceived

4.5 PRICING OF A PRODUCT/SERVICE

In the **marketing mix context** Hind (1989: 226-231) considers **how much should a company charge for its products**. **Pricing decisions are crucial** because ultimately the price that will be charged for the product, in relation to the company's costs, will determine the profit or loss that is made. Price tells the consumer about the product and should give an indication of the quality of the holiday. Further it will also play a part in creating a company's corporate identity. It is therefore of utmost importance that companies should regard pricing decisions as part of their marketing strategy. The price charged is not simply a result of analysing the involved, and adding on a fixed percentage for a profit margin. Rather a few **steps are needed when pricing a product:**

- **Determine the likely level of demand for the product**. Because the market demand will set the upper limit of the price that can be charged, it is important fix the likely demand for the product. If the price is set too high, consumers will be unable or unwilling to buy the product. Market research can be used to get an idea of the likely demand for a product, while previous sales of the product can be used in forecasting potential demand in the future.
- **Determine the price elasticity of demand in each of the market segments in which it operates**. Market segments can be elastic or inelastic. **Inelastic** means that increases or decreases in the price charged would have little effect on the amount of the product that the consumers wish to buy. Luxury holidays are usually more likely to be **demand inelastic** because of the exclusiveness of high prices and the affluence of the consumers. If the demand is **price 'elastic'** changes in the price of the holiday will have a significant effect on the level of sales. Holidays in the mass market fall into this category because the consumers are less

affluent and much more price conscious. The elasticity of demand is not always apparent and prices will vary to 'test the market' before companies can make major policy decisions. Price elasticity could change as fashions dictate the habits of consumers. Therefore the current state of demand in the market place must be understood, to play an important part in the pricing decision.

- **Establish the costs of production**. Demand in an existing market segment determines the highest price that can be charged, while the costs involved in producing the holiday sets the lowest price. Thus the lowest price that a company can sell the holiday for, but still cover the costs. The company must have a full knowledge of both its fixed and variable costs, together with an understanding of how these costs are to be apportioned over the range of products it sells.

Hind (1989: 228-231) also reckons that **other major factors** should be considered by travelling companies **when establishing the price of a product**. A consideration of this will help to establish where between the lowest and highest price, the actual price to be charged should be pitched:

- **The effects of fluctuating exchange rates**
- **Perceptual pricing**
- **Price discrimination**
- **Seasonal pricing**
- **The company's sales history**
- **Competitors' prices**
- **Discount pricing**
- **Promotional pricing**
- **Booking periods**
- **Group discounts**.

According to Meidan (1989: 354) **tourism pricing** is a very complex decision because of the variability of the product, the high degree of competition in certain tourism markets, and difficulties in accurately forecasting the level of demand. The latter may vary because of the special characteristics of the industry, but also because of factors such as the weather, terrorism, strikes, etc. There is thus no one universally accepted pricing method and the approach can vary considerably from one tourism organisation to another. A number of basic characteristics of the tourist industry affects pricing:

- **Perishability**. The tourism product cannot be stored for future use. This means that an unsold service/product is lost revenue, which cannot be recouped later. The profitability of the tourism organisation/establishment will be influenced, especially when the high fixed costs incurred by the industry are considered.
- **Intensive capital investment**. In most investments in tourism facilities up to 90% of the capital is invested in fixed assets. Thus the level of fixed costs is very high in relation to other industries and will affect pricing decisions.
- **The costs of intensive staff employed**. To a large extent the quality of the product of the tourism industry depends on the number and quality of staff employed. Special and professional skills are needed to deal with guest/staff relationships. A big problem is that most of the tourism establishments and facilities are very dependent on occupancy levels at off-peak times, in order to justify the retention of staff at these periods.
- **Customer characteristics**. Different tourist destinations will appeal differently to various income groups and social classes. They will have different spending patterns and lengths of stay, and also different sensitivities.
- **Competition**. Fluctuating demand and overall business conditions also affect tourism pricing.

Middleton (1988: 59-60) is of the opinion that all marketing decisions involve **costs** for an organisation and implications for sales volumes. Three of the 4P's involve significant expenditure, which must be made in advance of the revenue it is expected to generate. Product changes, advertising, sales promotion, brochure production, and the organisation and servicing of distribution channels, are all financial commitments in the expectation of sales results. While pricing decisions do not involve costs in advance of sales, they surely determine the level of revenue achievable, and in the case of price discounting to unsold capacity, they represent revenue foregone.

Vaccaro (1993: 84-85) reckons that price is traditional a basis for **market segmentation**. Price is perceived as a guarantee of confidence for the customer who does not have the experience and knowledge to assess product quality. Therefore, price should be viewed in many occasions as a psychological instrument for communicating the value of the brand.

Pricing is a potentially powerful tool to move towards greater efficiency, fairness and environmentally sustainable nature-based tourism. Moneymaking behaviour is not part of the usual administrative culture for public authorities in charge of parks and wildlife (like the Kruger National Park). Because of the maintenance cost of a park, visitors should pay for their direct use, e.g. capital and operating costs of trails, interpretative centres and information. To visit a park a tourist must be willing to pay some price. A price strategy should include general entrance fee, fees for use, concession fees, royalties and profit shares, licences and permits, taxes and voluntary donations (Laarman and Gregerson, 1996: 250, 253).

4.6 THE COMPETITIVE ENVIRONMENT

Nellis and Parker (1992: 13-15, 17) reckons that economists break it down into four discrete models of market structure, and they "*provide useful information into the operation of competitive markets. They serve as stepping stones towards a more critical awareness of the pressures and challenges facing management today….*":

- **Perfectly competitive markets**. It is made up of numerous small firms each offering identical products with complete freedom of entry for new firms. There is no control over the price of the product - each one is a **price taker** instead of a price maker. They must accept the price that is determined by the interaction of the overall market supply and demand.
- **Monopolistically competitive markets**. These markets arise where there are many buyers but where there is also some degree of differentiation of the product offered by each. Therefore each firm has a degree of monopoly power - it could influence the price of its product insofar that it is independent of its competitors. Nevertheless, the degree of pricing that each firm has is limited.
- **Oligopolistic competition**. It arises where there are a small amount of relatively large firms, which are constantly aware of each other's actions regarding price and non-price competition. A high degree of interdependence exists in these markets. The products may be undifferentiated, but in practice some differentiation usually exists.
- **Monopoly**. A monopolist is the sole supplier. There is virtually no competition because there are no producers or products of the same or similar products. In practice there are no close substitutes.

4.7 THE TASTES AND PREFERENCES OF THE CONSUMER

The nature of consumer's preferences and the indifference curves that it represents, and the concept of utility will be discussed.

4.7.1 The nature of consumer's preferences

One of the most important determinants of consumer's behaviour is his or her tastes or performances. Mansfield (1994: 54-58) explains this concept with different market baskets [product or service]. Suppose the consumer is confronted with any two market baskets, each containing various quantities of commodities. He makes three assumptions:

1) Consumers can decide whether they prefer the first market basket to the second, or are whether they are indifferent between them.
2) The consumers' preferences are transitive.
3) The consumer always prefers more of a commodity to less.

4.7.2 Indifference curves

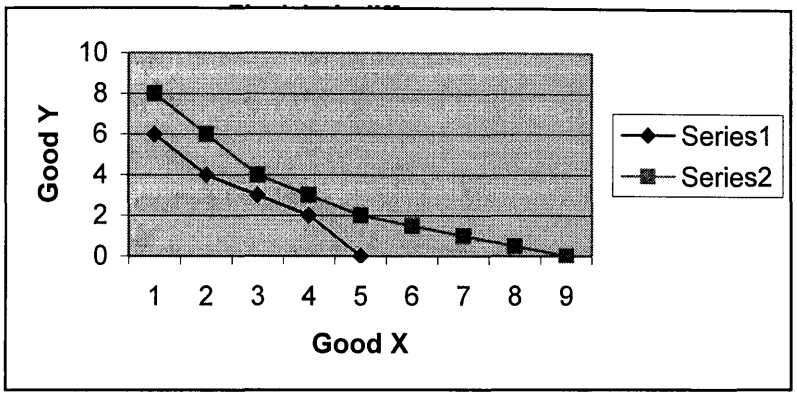
If the above assumptions hold, it can be presented by a set of curves (figure 4.1). An indifference curve can be defined as "*the locus of points representing market baskets [products] among which the consumer is indifferent*". Curve A is the set of points representing market baskets among which the consumer is indifferent. Curve A is an indifference curve. The consumer is indifferent among the market baskets [products] represented by points on indifference curve A. The market baskets [products] on indifference curve B are preferred over those represented by points on indifference curve A. Consumer A's indifference curves are relatively steep, while B's ones are relatively flat. Thus consumer A needs several extra units of good Y to compensate for the loss of a single unit of good (Mansfield, 1994: 56).

4.7.3 Characteristics of indifference curves

The characteristics of indifference curves is described by Mansfield (1994: 57-58): "*All indifference curves must have a negative slope…. Given the fact that every commodity is defined so that more of it is preferred to less, it also follow that the indifference curves that are higher in graphs like in the graph, represent greater levels of consumer satisfaction than indifference curves that*

are lower…. Indifference curves cannot intersect…. If the consumer's tastes are transitive, as were assumed in this model, there cannot be an intersection of indifference curves". Schotter (1994: 40) adds that indifference curves are bowed into the origin. An example of an indifference curve is shown in figure 4.1.

Figure 4.1 Indifference curves



Series 1 = A
Series 2 = B

Source: MANSFIELD, E. 1994. Microeconomics: Theory and applications. Eight Edition. N. Y, London: W.W. Norton & Company: 56.

4.7.4 The concept of utility

The consumer's indifference is a representation of his or her tastes. This is true, because the consumer's indifference map shows each and every of his or her indifferent curves. A number, a **utility**, can be attached to each of the products presented to the consumer. "*This utility indicates the level of enjoyment or preference attached by this consumer to this market basket [product]* (Mansfield, 1994: 58). Monroe (1990: 29) reckons that: " *Given the prices of all products, and given their income, buyers make their purchases according to their own tastes and preferences. The consumer is assumed to be rational and choose among alternative products so as to maximize satisfaction (utility)…..As indicated, utility means want-satisfying power, resides in the mind of the buyer, and is common to all products and services. Utility is subjective, not objective, and it is assumed that a choice of product A over product B means the buyer perceives product A as having more utility than product B*".

4.8 THE ANALYSIS OF CONSUMER DEMAND

The main aim is to identify the forces that determine the demand for a firm's product and to show how management can proceed to measure the magnitude and impact of these forces (Nellis and Parker, 1992: 18).

4.8.1 The market demand curve

Effective demand is the amount consumers are willing to buy at a given price and over a given period of time. At any given time and for any good or service it is possible to perceive a consumer's demand curve: "*A **consumer's demand curve** relates to the amount that the consumer is willing to buy to each conceivable price for the product*". It would be expected that the consumer would be willing to buy more of something the lower its price. From the relationship between an individual's demand for a product and its price "*the **market demand curve** is derived by summing the individual demand curves of consumers horizontally*". Individual and product demand curves show the relationship between different possible prices of goods and the quantity expected to be sold. "*In general there is **a** **central** **law of demand**, which states that there is an inverse relationship between the price of a good and the quantity demanded assuming all other factors that might influence demand are held constantly*". Thus when price increases less will be bought (and vice versa) (Nellis and Parker, 1992: 20-21). Since individual demand curves almost always slope downward to the right, it follows that market demand curves will do so, too.

4.8.2 Concepts of elasticity

The **price elasticity of demand** is defined by Mansfield (1994: 24) as "*to be the percentage change in quality resulting from a 1 percent change in price*". Therefore the price change of demand is expressed as relative changes in price and quantity demanded.

Nellis and Parker (1992: 28-38) reckon that to understand the nature of demand, it would be very useful if management were able to estimate the extent to which demand is likely to respond to a price change. This is known as the **measurement of price elasticity**. Since demand is affected by many factors, the elasticity (i.e. responsiveness of quantity demanded) can be

calculated with respect to a wide range of variables other than price, for instance the price of other goods and income. Thus the following can be defined:

- **Price elasticity of demand**

  This measures the responsiveness of quantity demanded for a product to changes in its 'own price'. For instance, if the price of alcohol increases, what happens to the quantity of alcohol demanded? It can be defined as:

$$E_d = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in the price of the product}}$$

  Therefore when a product has a downward sloping demand curve, the value of price elasticity will always be negative, because when price rises demand falls and when price falls demand rises (Nellis and Parker, 1992: 29-30). Two **different types of elasticities** can be calculated:

  1) Arc elasticity of demand

  It measures the responsiveness of demand between two points on the demand curves such as X and Y. Managers are usually concerned with estimating the effect of demand of, say, a 5% rise in price, the price change will cause a movement along a section of the demand curve. Thus this formula is often used for practical purposes. It can be calculated as:

$$\text{Arc } E_d = \frac{(Q_2 - Q_1)/ \tfrac{1}{2}(Q_2 + Q_1)}{(P_2 - P_1)/ \tfrac{1}{2}(P_2 + P_1)}$$

$$= \frac{(Q_1 - Q_2)}{(P_2 - P_1)} \times \frac{(P_2 + P_1)}{(Q_2 + Q_1)}$$

  Arc elasticity is measured at midpoint between X and Y; i.e. at $\tfrac{1}{2}(Q_1 + Q_2)$ and $\tfrac{1}{2}(P_1 + P_2)$. This assures that the price elasticity is the same regardless of the movement of direction on the demand curve (Nellis and Parker, 1992: 30-31).

  2) Point elasticity of demand

  It is concerned with the elasticity at only one given point on the curve. Point elasticity has a role in demand forecasting. It can be calculated according to Nellis and Parker (1992: 31-32) as:

$$\text{Point } E_d = \frac{(Q_2 - Q_1)/Q_1}{(P_2 - P_1)/P_1}$$

$$= \frac{(Q_2 - Q_1)}{(P_2 - P1)} \times \frac{P_1}{Q_1}$$

Different degrees of elasticity are described by the terms 'elastic' and 'inelastic'. In general (and ignoring the negative sign):

- Products with a price elasticity of demand of < 1 have a relatively inelastic demand with respect to price - they are **price inelastic**.
- Products with a price elasticity of demand of > 1 have a relatively elastic demand - they are **price elastic**.
- Products with a price elasticity of demand = 1 have a **unit elasticity** of demand (Nellis and Parker, 1992: 32).

Lumsdon (1997: 156) adds that another point with regard to the **price elasticity of demand**: "…*while many tourism offerings are price sensitive (i.e. the level of demand is sensitive to price changes), mainly because of readily available substitutes, some are not. Those in the latter category tend to be at the luxury end of the market where the supply is limited, and associated status is high. In such cases, price elasticity of demand is said to be inelastic, so premium prices can be charged without a proportional fall in demand… The concept of price elasticity, or degree of responsiveness of customers to movements in prices, is crucial in determining price levels. Each tourism offering will have a different price elasticity of demand and the marketing manager needs to be aware of this*".

- **Cross-price elasticity of demand**
  It measures the responsiveness of quantity demanded to changes in prices of other goods or services (both complements and substitutes). For example, if the price of one brand of coffee rises, what happens to the other brands of coffee? Or if the price of petrol falls, what happens to the demand for cars? The value of the cross-price elasticity of demand for A with respect to B can be calculated as:

$$\text{Cross-price } E_d = \frac{\text{Percentage change in the quantity of A demanded}}{\text{Percentage change in the price of B}}$$

The concept is most relevant for obvious substitutes or complementary commodities, and is of key importance for businesses, which face major competition.

- **Income-elasticity of demand**

It measures the responsiveness of demand to a change in real income (i.e. nominal income adjusted for inflation) of consumers. For example, if real incomes are rising, on average by R100 per month, what will happen to the demand for housing? Nominal income is defined in terms of either household disposable income (i.e. household income after income tax, and other taxes, plus welfare state payments have been incorporated) or gross national income. Income elasticity can be defined as:

$$\textbf{Income } E_d = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in real income}}$$

(Nellis and Parker, 1992: 24-36).

4.9 PRICE SENSITIVITY

Price sensitivity is defined as: "*the highest price that (what economists call the* reservation price*) that a consumer would pay to buy the desired quantity of that good*". The approach breaks down on a market level price. When we ask: "*How much will our customers pay?*" the question is: "*Which customers?*". A **more operationally useful definition of price sensitivity** to analyse price changes on a market or segment level is called **price elasticity**, and is defined as: "*the percentage change in a product's unit sales resulting from a given percentage in its price*" (see point 4.8.2 above where it was discussed in detail) (Nagle and Holden (1995: 100). Monroe (1990: 14) reckons that price elasticity of demand is a measure of the degree to which buyers are sensitive to price changes. There is thus a close relation between price sensitivity and price elasticity.

Huisman (1992: 24) is of the opinion that the management of a company must satisfy the needs of three groups: the providers of capital, the providers of labour and the customers. Marketing managers must pay careful attention to their customers and evaluate their decisions with regard to the marketing instruments from their customers' perspective. Product and promotion

campaigns are tested over and again and the distribution strategy is evaluated from the target group's perspective. There is one exception … **price**" *...[the managers] forget about the customer when pricing, focusing instead on the company's need to cover costs, to maintain cash flow, or to achieve a target rate of return.*" as cited by Nagle (1987). To neglect the customer when pricing, the firm will not realise its full profit potential or may even fail to sell, because ultimately it is the buyer who accepts or rejects an offer of a certain product at a certain price. For a transaction to be realised, "*the price of the product has to be less or equal to the product's value as perceived by the buyer*".

As a consequence of accelerating technological developments, the development and restructuring of markets are becoming more and more technologically driven by:

- Shorter production time
- Changing cost structure
- Improved and highly differentiated products tailored to many market niches
- The introduction of ranges of new products
- Shortening product life-cycles.

In view of the above-mentioned description, the **strategic pricing question** should be: "*Which combination of products has to be offered when, where, and at what price range, in order to realize the full profit potential?*" (Huisman, 1992: 25).

4.9.1 Factors affecting price sensitivity

According to Nagle and Holden (1995: 77-100) ten factors influence price sensitivity in a purchase decision. They help to improve their judgements by indicating what factors to consider and how to evaluate them:

1) Perceived substitutes effect

- What are buyers (or segments of buyers) typically aware of when making a purchase?
- To what extent are buyers aware of prices of those substitutes?
- To what extent can buyers' price expectations be influenced by the positioning of one brand relative to particular alternatives, or by the alternatives offered to them?

2) **Unique value effect**
   - Does the product have any unique (tangible or intangible) attributes that differentiate it from competing products?
   - What attributes do customers believe are important when choosing a supplier?
   - How much do buyers value unique, differentiating attributes? How can one increase the perceived importance of differentiating attributes and/or reduce the importance of those offered by the competition?
3) **Switching cost effect**
   - To what extent have buyers already made investments (both monetary and psychological) in dealing with one supplier that they would need to incur again if they switched suppliers?
   - For how long are buyers locked in by those expenditures?
4) **Difficult comparison effect**
   - How difficult is it for buyers to compare the offers of different suppliers?
   - Can the attributes of a product be determined by observation, or must the product be purchased and consumed to learn what it offers?
   - Which portion of the market has positive past experience with the products? With the brands of the competition?
   - Is the product highly complex, requiring costly specialists to evaluate its differentiating attributes?
5) **Price-quality effect**
   - Is a prestige image an important attribute of the product?
   - Is the product enhanced in value when its price excludes some consumers?
   - Is the product of unknown quality and are there few reliable cues for ascertaining quality before purchase?
6) **Expenditure effect**
   - How significant are buyers' expenditures for the product in absolute dollar terms (for business buyers) and as a portion of income (for end consumers)?
7) **End-benefit effect**
   - What end-benefits do buyers seek from the product?
   - How price sensitive are buyers to the cost of the end-benefit?

- What portion of the end-benefit does the price of the product account for?
- To what extent can the product be repositioned in customers' minds as related to an end-benefit for which the buyer is less cost sensitive or which has a larger total cost?

8) Shared-cost effect

- Does the buyer pay the full cost of the product?
- If not, what portion of the cost does the buyer pay?

9) Fairness effect

- How does the product's current price compare with prices people have paid in the past for products in this category?
- What do buyers expect to pay for similar products in similar purchase contexts?
- Is the product seen as necessary to maintain a previously enjoyed standard of living, or is it purchased to gain more out of life?

10) Inventory effect

- Do buyers hold inventories of the product?
- Do they expect the current price to be temporary?

4.9.2 Price sensitivity measurement

"*Any study of price sensitivity should begin with the collection of buyers - who they are, why they buy, and how they make their purchase decisions - since those are the essential inputs in the formulation of the judgments*". **Psychographical profiles** of buyers indicate their psychological motivations for the purchase. The measurement of price sensitivity is not an end result, but a catalyst to learn more about the buyers. For survey research, managerial judgement is necessary for product prescriptions, ensuring that the included variables are relevant to buyers and that they describe them with the appropriate connotations. Results may not agree with expectations. Thus one can learn more about a product's buyers and the factors that determine their price sensitivity (Nagle and Holden, 1995: 350, 352 - 353).

"*In view of the technological influence on new product development and on the development of markets, retrospective price sensitivity measurement has become less tenable. This is especially true because historic price sensitivity*

data for one product cannot be automatically transposed to a comparable or new product. Regrettably, there are few systematic patterns with regard to the price sensitivity of products" (Huisman, 1992: 25).

A second method to measure price sensitivity is the **laboratory purchase test**. It can hardly be applied to products which are multi-attribute (have a number of features that can be adapted and may influence the perception of the product and its price) because of the high cost involved and the fact that only a limited number of product alternatives can be measured.

'Preference studies' is the third and most commonly used category of price sensitivity studies. Trade-off analysis or conjoint analysis is considered to be one of the most promising techniques that can be used among the various techniques (Huisman, 1992: 25-26).

4.9.3 Types of measurement procedures

The dependant variable measured for price sensitivity is actual purchases, or purchase preferences and intentions. In actual purchase studies behaviour is measured, whereas preference-intention studies measure the choices that people claim they would make in a hypothetical purchase situation. Because the ultimate goal of research is to estimate how people respond to price changes in actual purchase situations, research that measures actual behaviour is generally more desirable. It is also more costly, time-consuming, and sometimes impractical. Thus most research on price sensitivity infers behaviour from questions the potential customers answer about their preferences and intentions (Nagle and Holden, 1995: 325, 355).

There are **four types of research techniques for measuring price sensitivity** described by Nagle and Holden (1995: 325-356):

1) Uncontrolled studies of actual purchases.

To estimate price sensitivity a marketing researcher can use three types of past sale data:

- **Aggregate sales data**. It is the reports for a brand from a company's own records or from a sales-monitoring office.
- **Panel data**. It is the individual purchase reports from members of a consumer panel.
- **Store audit data**. It is the sales data for an individual outlet.

2) Experimentally controlled studies of actual purchases.

To estimate price sensitivity two types of experiments can be used:

- **In-store purchase experiments**. It relies on actual purchase data collected when buyers are unaware they are participating in an experiment. The financial and time cost is high.
- **Laboratory purchases experiments**. It attempts to duplicate the realism of inn-store experimentation without the high cost and exposure to competitors.

3) Uncontrolled studies of preferences and intentions.

This is the most common used research technique for directly estimating sensitivity. Various techniques to measure price sensitivity can be used:

- **Direct questioning**. It should never be accepted as a valid methodology because the results are at best useless and also potentially misleading.
- **Buy-response surveys**. It involves showing consumers a product at a preselected price and asking if they would purchase at that price. Such research is useful as a preliminary study to identify a range of acceptable prices for a new product, and to identify changes in price sensitivities at different points in time or place. It must be assumed that the biases, which affect these studies, remain the same and so do not affect the observed change.
- **Attribute positioning**. This method is used for evaluating price sensitivity when price is included as one of the attributes describing a product situation. Consumers rate the importance of each attribute on a scale, which is normally from 1 to 9 (see chapter 5, point 5.5.4.3). Price as an attribute on a nine-point rating scale was used (Huisman, 1992: 26).

4) Experimentally controlled studies of preferences and intentions.

Some control over the purchase situation presented to respondents can be exercised, to solve problems of bias and extraneous factors when measuring preferences and intentions. Thus the questions must be designed to make the survey respondents consider the questions in the same way they would consider an actual purchase decision. Two types of surveys can be used:

- **Simulated purchase survey**. The purchase environment must be simulated as closely as possible when asking respondents the survey questions. The consumers are shown pictures, descriptions, or actual

samples of brands along with prices - they are asked to choose among them given various prices.

- **Trade-off analysis (conjoint analysis)**. It is very popular for measuring price sensitivity as well as sensitivity to other product attributes. The strength is its ability to desegregate a product's price into the values each consumer attaches to each attribute. Thus it can help a company to identify the differentiation value of unique product attributes, but more importantly to design new products that include only those attributes consumers are willing to pay for. From the consumers' questions to answers their purchase intentions are revealed, and also their preferences for a number of products or attribute pairs. The data is then manipulated to identify the value (utility) that each consumer attaches to each product attribute and the relative importance that each attribute plays in the consumer's purchase decision. In the development stage of a product it can identify the value of individual product attributes, and help decide which combination of attributes will help the firm to price the product most profitably. "In particular, *trade-off analysis is proving highly useful in predicting at least that portion of price sensitivity determined by the unique value effect*" (Nagle and Holden, 1995: 356).

4.9.4 Using measurement techniques appropriately

Numerical estimates can benefit or harm the effectiveness of a price strategy, and it must not become a substitute for managerial judgement. Managers who know their customers when they use that knowledge, can achieve substantially better estimates of price sensitivity:

- Select a sample of consumers that accurately represents the product's markets
- Using measurement techniques appropriately - identify and explain extraneous changes in sales that might camouflage an effect
- Provide information to sort out the effects of price from other variables that tend to change with it
- Identify an appropriate equation or experimental structure
- Properly describe the product for survey research.

The most appropriate technique for numerically measured price sensitivity depends on the product's stage of product development. Research or

measuring preferences or intentions is the only option when a product is still in the concept or prototype stage of development. Trade-off analysis is very useful because it can identify the value of the individual product attributes, thus helping to decide which combination of product attributes will enable the firm to price products most profitably. Inn-store or laboratory purchase experiments are more appropriate when a product is ready for the market, because they more realistically simulate the actual purchase environment. After a product has been on the market for a while, actual purchase data can be inexpensive sources of estimates (Nagle and Holden, 1995: 356).

4.10 CONJOINT ANALYSIS

Conjoint analysis (trade-off analysis) can be summarised as: "*by letting respondents trade off a series of products which have been constructed from a number of features it is possible to calculate for each individual the relative value to him/her of each specification of each feature involved*". The relative value is called 'utility'. Estimation methods used are metric methods, non-metric methods and methods based on choice probability. From the utilities of the features as 'raw material' of the product specified it is possible to estimate a respondent's preference and to aggregate the results for all respondents, and will result in indicators of the preference for the product in the market (Huisman 1992: 26).

Four **models** are used **to indicate the preference and simulate with**:

1) **'First-choice model'**. It assumes that each respondent will choose the product with the highest utility. No allowance is made for uncertainty and error.
2) **'Share of preference model without correction for product similarity'**. It assumes that each respondent has some likelihood of choosing every product, and that likelihoods depend on utilities. The preference is divided up, or the probability of purchasing among all products included in accordance with their total utilities is split up.
3) **'Share of preference model with correction for product similarity'**. It attempts to correct for distortion that would occur if the same product was entered into a simulation many times (or double counting a product's share for the same product if included twice), or if several products differed only in minor ways.

4) **'Purchase likelihood model'**. It can be used when purchase likelihood questions have been asked for a number of products. It means that each respondent's likelihood of purchasing each product, rather than shares of preference. It is only appropriate if additional data has been collected to calibrate the utilities.

4.10.1 Measuring price sensitivity with the help of conjoint analysis

In the case of multi-attribute products conjoint analysis can be applied in various ways:

- **The price(s) of the products are specified as an attribute of the product:**
  1) **Using absolute prices** (for instance R1000; R500; R100; etc). In most trade-off studies price is an attribute of the product, specified in money terms. As the buyer of a product normally perceives and evaluates the product as a whole and weighs the product's price, it is often perceived to approach reality best. A typical trade-off question is shown in chapter 5, figure 5.3 (Huisman, 1992: 26-27).
  2) **Using respondent specific prices** (base price + R500; or + 5%; etc). In many transactions where price is not a fixed entity, but it depends on transport costs, quantity purchased, relative power of the buyer, etc. This is usually true in industrial markets. Thus a broad price range must be specified, and in this range the relative sub-range of prices must be isolated for each respondent.
- **The attributes are priced separately:**
  1) **Each attribute is priced separately at various levels, priced attributes are traded off**. In this situation with many attributes, an alternative may be to specify the price the buyer has to pay for each feature separately. To get an idea of the total price, the base price for a 'stripped version' of the product must be specified as well, and the respondent has to add the price for the extra features to the base price. By using the adaptive approach and trading off only combinations of a few 'priced' attributes at a time after the trade-off analysis, it can be learned how price sensitive each respondent is to price changes of each of the attributes.

  This method has three limitations:

- People normally investigate within a price range, which is acceptable to them. These trade-offs include only a few priced attributes at a time. It may fit the budget, but in combination with other attributes they can exceed the budget restriction. It is thus possible that respondents accept higher prices for less important attributes sooner than they would if the consequences for the total budget should be displayed when answering these trade-offs.
- By specifying various prices for an attribute may suggest a 'higher price/better quality' relation and as such have an influence on the utilities.
- To be able to react and give a meaningful response, the respondent must be able to perceive the attribute as a separate item, which can be added on to the product, but can also be left out (Huisman, 1992: 29-30).

2) **Each attribute is priced separately at various levels and the products traded off are priced as the sum of the attributes**. One of the limitations described above can be omitted by cumulating the prices of the attributes. The sum total must reflect the price of the product and be presented to the respondent. The big advantage of this method is that the respondent learns directly if the price fits the budget. In this way he is really able to trade off price with the attributes included within the restraints of the budget. The series of trade-off questions must include the same attributes. This method of measuring price sensitivity is in practice limited to products with a limited number of attributes, because the respondent is only able to take in a limited number of attributes at a time. Theoretically this way of measuring price sensitivity is better than the method described under point 1) above (Huisman, 1992: 30).

4.10.2 Price sensitivity measurement in a broader perspective

Conjoint analysis is very important in helping to estimate price sensitivity. The basis for further data is generated and it helps to understand the buyers. Further analysis with the utilities will help even more in understanding the buyers and in anchoring the price strategy. The next step is clustering on the utilities measured or on the importance of attributes. This will generate groups

of respondents who are sensitive to the same attributes or to price changes caused by the same attributes. By clustering on utilities or on the importance of attributes generates groups of respondents, who are interested in the same benefits, and can be labelled as benefit segments (Huisman, 1992: 31).

CHAPTER 5

5. EXPERIMENTATION, EXPERIMENTAL DESIGN, CONJOINT ANALYSIS, AND RESEARCH METHOLOGY

5.1 THE RESEARCH METHOD

One methodology to answer any research question is the **experimental research** where the extraneous variables and manipulation of at least one variable by the intervention of the investigator can be controlled (Green, Tull and Albaum, 1988: 43).

5.2 RESEARCH DESIGN

It is a series of advanced decisions that, taken together, form a specific master plan or model for the conduct of the investigation (Green et al, 1988: 96). There are three classes of designs: 1) exploratory, 2) descriptive and 3) causal.

5.2.1 Descriptive research is marked by the prior formulation of specific research questions. The investigator should be able to define clearly what it is to be measured and set up the appropriate and specific means for measuring it. It is characterised by a preplanned and stuctured design, and should be planned carefully with respect to the sources of information to be consulted and the procedures to be used in collecting information (Green **et al**, 1988: 102-103).

5.2.2 Simulation is a set of techniques for manipulating some real-world process for the purpose of finding numerical solutions that are useful in the real process that is being modelled. It is defined as: " ...*a set of techniques for manipulating a model of some real-world processes for the purposes of finding some numerical solutions that are useful in processes that is being modelled*" (Green **et al**, 1988: 121).

5.3 EXPERIMENTATION

5.3.1 The nature of experimentation

Experimentation is defined by Tull and Hawkens (1993: 211): "*Experimentation involves the manipulation of one or more variables by the experimenter in such a way that its effect on one or more variables can be measured*". A variable that can be manipulated is called the **independent variable**, and one that will reflect the impact of the independent variable is called the **dependent variable**.

In a **natural experiment** the investigator intervenes only with respect to the measurement, and in a **controlled experiment** two kinds of intervention are needed: 1) manipulation of at least one assumed causal variable and 2) random assignment of subjects to experimental and control groups. All true experiments have common things: treatments (i.e. causal variables), an outcome measure, units of assignment, and some comparison from which change can be inferred with the hope of attributing to the treatment (Green **et al**, 1988: 199).

5.3.2 Ingredients of a marketing experiment

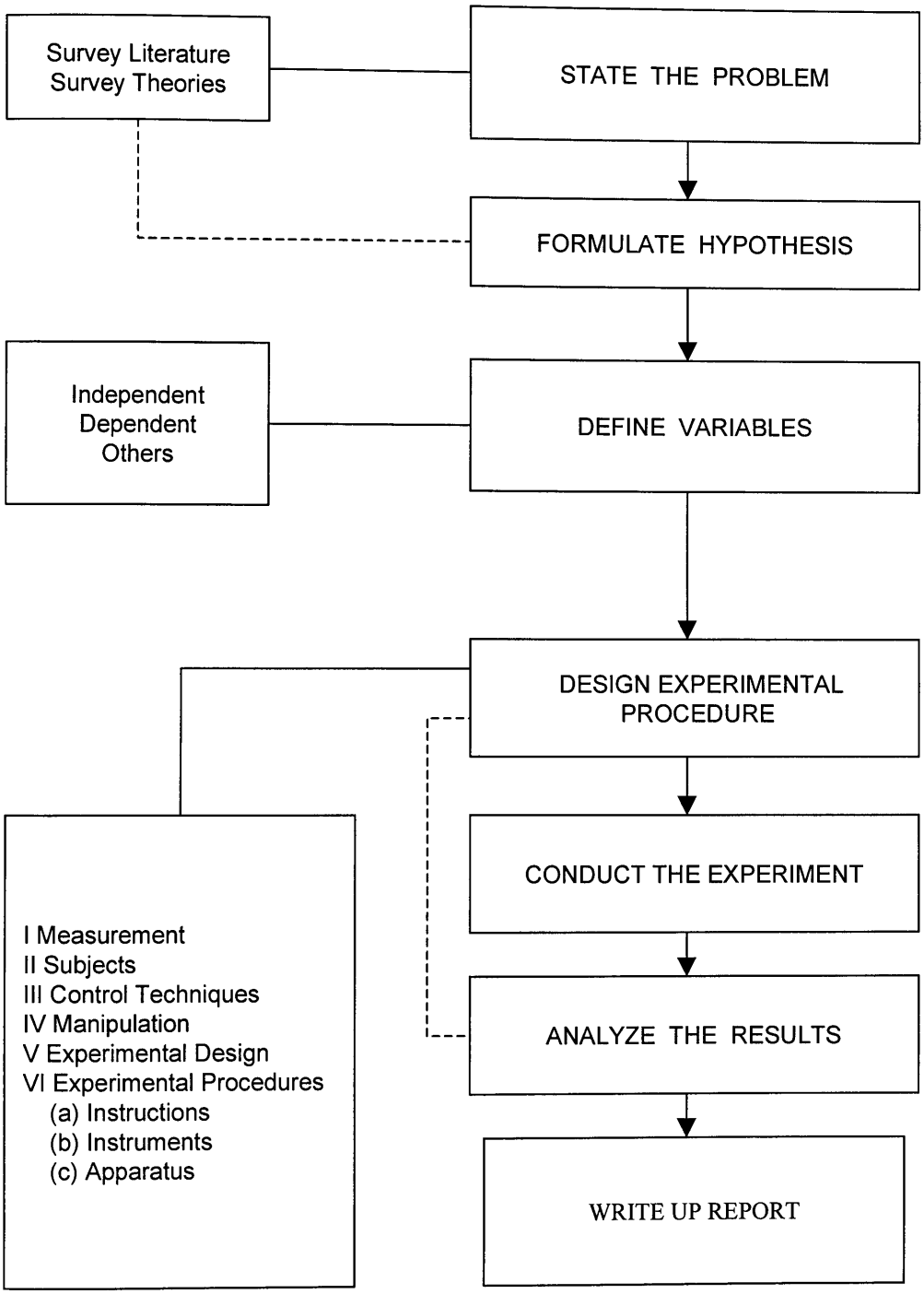
An experiment has interrelated steps (figure 5.1). All experiments have three types of variables:

- **Independent variable** (IV) - Because this variable is manipulated, it is known as the **treatment**. Sometimes there are also interaction effects.
- **Dependant variable** (DV) – It is the effect of interest or outcome.
- **Extraneous variable**. It could influence the observed effect, and unless controlled adequately they are sources of error(s) in an experiment.

5.3.3 Measurement, manipulation, and experimental procedures

In a marketing experiment the outcome (dependent variable) is measured. Through manipulating, an experimental treatment must be capable of variation.

Figure 5.1 Components of an experiment



Source: Green, P. E., Tull, S. and Albaum, G. 1988. Research for marketing decisions. Fifth edition. Englewood Cliffs, New Jersey: Prentice Hall: 202.

All phases of a marketing experiment should be planned in advance. In designing the experiment the effects of uncontrolled variables must not obscure and bias the nature of the response to the treatment variables that *are* being controlled (Green **et al**, 1988: 204-205).

Internal validity shows how good the experiment is, as an experiment. **External validity** is concerned with how good an experiment is in terms of the extent to which conclusions can be made to and across populations of persons, settings, times, and so on.

5.3.4 Sources of invalidity

The major types of **classical designs** are pre-experiment, quasi-experiment and true experiment, and the **statistical ones** are completely randomised, factorial, latin square, cross over and co-variance (Green **et al**, 1988: 214-233). Schreuder (1992: 172-227) describes the design of experiments in detail.

5.3.5 Models of experimental designs

All phases of a marketing experiment should be planned in advance. In designing the experiment the effects of uncontrolled variables must not obscure and bias the nature of the response to the treatment variables that *are* being controlled (Green **et al**, 1988: 204-205).

5.4 CONJOINT ANALYSIS

Conjoint analysis is one of the competitive research tools for quantifying the trade-offs consumers make among product attributes. A **working definition of conjoint analysis** is: "*Conjoint analysis refers to the measurement of multiattribute preferences using a full-profile experimental design approach. The design is framed in terms of a single product category with a common set of attributes. The respondent evaluates a series of product profiles by rating or ranking them in order of preference. The analysis is done at the individual respondent level*". A list of marketing issues would include new product

development, competitive context, price, brand and segmentation (Wyner, 1995: 32).

5.4.1 Issues addressed by conjoint analysis

Conjoint analysis can provide answers to several questions typically asked by persons responsible for the marketing and planning for consumer and industrial products and services.

5.4.1.1 Understanding market preferences

At the most basic level, conjoint analysis provides an understanding of the structure of a market with regard to the expressed preferences of its members for particular product attributes. The question is answered: *"Why do customers buy the products they do*?" The answer is approached in terms of the specific options or levels of the attributes that affect preferences among alternative products. It can tell us how important each product attribute is to the consumer, and how much the addition of particular product features or improvements are "worth" to the consumer. The extent to which consumers are willing to trade off among different attributes is quantified. The whole product is desegregated into its component parts and thus the value or utility of each element is revealed.

When a product, has for instance, five key attributes: price, quality, style, brand and package, these attributes and their associated levels represent the factors that materially affect consumer preferences. These attributes and their associated levels represent the factors that materially affect consumer preference. Thus conjoint analysis reveals their relative importance of price vs. quality, price vs. brand, and similar comparisons among all the other attributes. It does this in relation to the amount of impact each attribute has on the consumer's utility. The attributes and their associated levels represent the factors that materially affect consumer preferences. Thus it shows the relative importance of comparisons among all the attributes in relation to the amount of impact that each attribute has on the consumer's utility. The conjoint results provide quantitative measures of the relative appeal of the specific levels of the

attributes. By looking at one attribute at a time the change is indicated in value or utility for the products as the level of attribute change. Because all the attribute levels are on a common utility scale the differences between levels or options on one attribute on another can be equated. The comparative analysis highlights the trade-offs that the consumers are willing to make. One of the premises of a traditional conjoint analysis model is that the consumer's overall utility for a product is equal to the sum of the utilities of the component parts. Consumers might be willing to pay a higher price for improved quality (Wyner, 1992: 42-43).

5.4.1.2 Predicting market choices

It is logical to compare trade-offs between pairs of attributes. The additive model gives conjoint analysis a powerful predictive capability. A particular selection of attribute levels is defined as a product. For each product the overall utility value is derived, and the results are compared. With the "first choice model" an individual can be expected to select the product for which he or she has the highest utility value. Thus a prediction can be made for how this person would decide in this situation. Simulations can be made. The simulation capability of conjoint analysis enables the analyst to explore alternative market scenarios. The impact on market share of changes in the product can be assessed and the impact of competitive moves can then be anticipated (Wyner, 1992: 43).

5.4.1.3 Developing market strategies

The simulation capability can be used to isolate marketing strategies in achieving some measurable goal, such as maximum share or revenue. The first step is to look for product concepts that are extremely attractive from the consumer's perspective. Any concepts that are not technically or financially feasible can be eliminated. Then the best of the remaining products must be selected, and then the attributes of this product must be fine-tuned to achieve the stated objective. A series of simulation must be run to identify the point at which the product performs best (Wyner, 1992: 43).

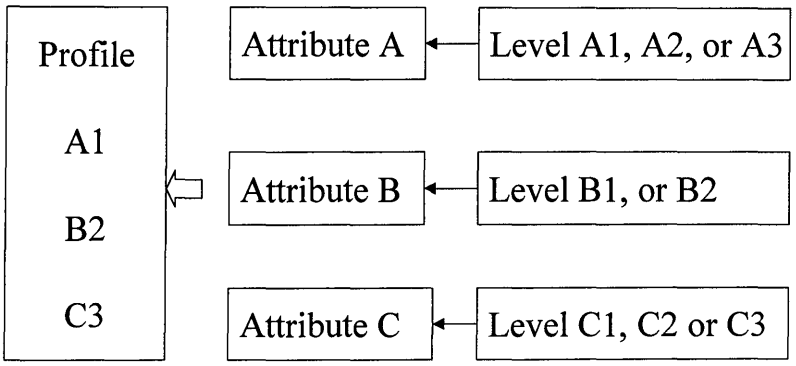
5.4.1.4 Segmenting the market

Conjoint results are very useful for segmentation purposes. Consumers may be segmented on the basis of utility values or attribute important scores. Thus simulations can be viewed as segmentation analysis that group people together according to their most preferred product amongst the ones available (Wyner, 1992: 43).

5.4.2 The basics of conjoint analysis

Hu (1996: 1-2) gives a good description of conjoint analysis, the researched products or services are described by "**profiles**". Each profile is a combination of one arbitrarily selected level for each of the attributes. The **attributes** are the key dimensions (features) of products or services, and the **levels** are those specific points along the key dimensions (figure 5.2). The object of the study is to identify the single profile that contains the most preferred level for each of the attributes.

Figure 5.2 The relationship among a profile, attributes and levels



Source: Hu, 1996: Conjoint analysis page. Internet, 29 January 1996 [WWW document], URL http://www.nevada.edu/~huc/html/doca.html: 1-2.

One of the major purposes of a conjoint analysis is **to measure consumer preferences among competitive products and services**. The technique is based on the assumption that consumers make complex decisions not on one

factor alone but on several factors "jointly". If products are composed of attributes, **conjoint analysis determines which combination of attribute levels are most preferred by consumers.** They indicate their preferences by ranking a number of different combinations of attribute levels. Conjoint analysis assumes that consumers make purchases by simultaneously considering several attributes of a product or service. The ability to analyse several attributes at once distinguishes conjoint analysis from traditional market research methods where each attribute is studied separately. Conjoint analysis helps one to discover how consumers make trade-offs between the various possible combinations available.

Conjoint has two **objectives**: 1) To determine the contribution of predictor variables (levels) and their respective values (utilities) to the determination of consumer preferences, and 2) to establish a valid model of consumer judgements useful in predicting the consumer acceptance of any combination of attributes. To achieve these objectives, coefficients called **"utilities" ("part worths")** among different levels of attributes are first estimated, and then **"relative importance"** among attributes and **"profile utilities"** are developed to quantitatively measure preferences in consumer decisions.

Level utility (part worth) is defined as "*A numerical expression of the value that consumers place on each level of each attribute*". All individual level utilities are estimated by a conjoint analysis model".

Attribute relative importance is defined as "*The computation of the relative importance for each attribute depends on the relative range between maximum and minimum level utilities within each attribute*". It is based on the assumption that the larger the difference between maximum and minimum level utilities within the attribute, the more determinative and salient the attribute is in the overall evaluation of profiles. The relative importance is described in percentage terms to reflect its weighted importance across all involved attributes.

Profile utility is defined as: "*Overall utility of a profile calculated by summing all utilities of attribute levels defined in that profile*". Thus preferences toward different profiles can be compared.

5.4.3 D-efficient experimental design

"*The design of experiments is a fundamental part of marketing research. Experimental designs are required in widely used techniques, such as preference-based conjoint analysis and discrete choice studies…..Ideally, marketing researchers prefer* ***orthogonal designs***". They are usually quite good, and when they are not available **nonorthogonal designs** must be used. A third alternative are **optimal** (or nearly optimal) **designs**; they are efficient in the sense that the variances and co-variances of the parameter estimates are minimised. Thus computer-generated experimental designs can provide both better and more general designs for discrete choice and preference-based conjoint studies. "*When the design is nonstandard and there are restrictions, a computer can* generate *a design, and it can be done quickly*" (Kuhfeld, Tobias and Garret, 1994: 545, 555). The **benefits of computer-generated designs** are:

- The efficiency of an experimental design can be quantified as a function of the variances and co-variances of the parameter estimates.
- Orthogonality is a secondary goal in design creation, associated with the primary goal of minimising the variances of the parameter estimates.

5.4.3.1 Overview of the theory of efficient experimental design

In conjoint analysis, each subject rates all products, and separate **ordinary least squares analysis** (OLS) are run for each subject. The assumption is made that more efficient designs mean better estimates of the part-worth utilities, which lead to better estimates of product utility and market share. The OLS is a method of calculation and is used in most conjoint studies. It is relatively fast and can provide valuable diagnostic information about the quality of the calculated utilities.

5.4.3.2 Design of experiments

"*An experimental design is a plan for running an experiment. The factors of an experimental design are variables that have two or more fixed values, or levels. Experiments are performed to study the effects of the factor levels on the dependant variable. In a conjoint or discrete-choice study, the factors are the attributes of the hypothetical products or services, and the response is preference or choice*". A simple experimental design is the **full-factorial design**, which consists of all possible combinations of the levels of the factors. A special type of this design is the **orthogonal array**, in which all estimable effects are uncorrelated (Kuhfeld, Tobias and Garret, 1994: 546). The **design efficiency** will be discussed under point 5.5.2.2.

5.5 CONDUCTING THE CONJOINT ANALYSIS EXPERIMENT

The design of a conjoint experiment was done according to Hair, Anderson, Tatham and Black (1995: 564-581), and it was then conducted in the Kruger National Park during the last two weeks of November 1997.

5.5.1 Research problem

After the general election in 1994 the Kruger National Park lost its traditional component of accommodation of the local tourists, e.g., the man on the street who used to have a normal holiday in the Park. He always picnicked, did his shopping, and his children played on the grass in the evening. Five years ago there was an average supply of 130 percent of the existing accommodation in the rondavels above the availability (supply) thereof. During the December, April, July and October school holidays there was however a bigger demand for accommodation and everybody could not be accommodated; in July the demand was 5 times more than the supply. There was more accommodation available during the less busy periods (out-of-season times). **During the last five years there was a diminishing trend in the total demand against the supply.** It appears as if less and less local tourists visit the Park. The surplus was progressively less than the supply. The trend was clearly observable, but

only slightly financial perceptible for the Kruger National Park. The cost to take a holiday in the park is still high - but the Parks Board is of the opinion that it still remains value for money.

The main aim of this study is to determine the role of price sensitivity and pricing in the demand for accommodation of local visitors to the Kruger National Park, especially during the last few years. The aim is to give guidelines for the potential of a better occupancy rate of the available accommodation of local visitors. **Conjoint analysis** was specifically chosen as a as a multivariate technique to understand how tourists develop preferences for the Park's products or services. In conjoint analysis, the **experimental design in the analysis of consumer decisions has two objectives:**

- To determine the contributions of predictor variables and their respective values to the determination of consumer preferences.
- To establish a valid model of consumer judgements useful in predicting the consumer acceptance of any combination of attributes, even those not originally evaluated by consumers. The **elements of the utility for the product/ service/idea** that are considered can be described. The **key decision criteria** involved in the choice process for this type of product or service will be described under the attributes and levels. It is based on the assumption that consumers evaluate the value or utility of a product/ service/idea by combining the separate numbers of utilities provided by each attribute (Hair **et al**, 1995: 560, 566).

The Kruger Park was chosen as the study area because of its many camps and administration that are concentrated in one area.

5.5.2 Designing stimuli

The next step is to decide which attributes to include, and how many levels for the attributes. The attributes that were used to describe the product or service, and their various levels for the conjoint analysis, are shown in table 5.1.

Table 5.1 Attributes and levels

ATTRIBUTES	LEVELS
1) Brand	• Kruger National Park • Private Game Farm • Private Game Lodge
2) Type of accommodation	• Camping (Caravans and tents) (shared ablution) • Furnished tent (shared ablution) • Cottage/rondavel/hut (shared ablution) • Cottage/rondavel/hut (private ablution)
3) Meals	• Prepare own meals • Eat in restaurant
4) Season	• In season (peak) time • Out of season time
5) Price	• R75 • R125 • R175 • R225 • R275 • R325

5.5.2.1 Selection of attributes (factors) and levels

A number of issues were considered that relates type and character of variables and levels:

- The actionable measures mean that the attributes and levels are capable of being put into practice, and it means that the are distinct.

- The factors and levels can also be easily communicated for a realistic evaluation.
- The number of attributes included in the analysis directly affects the statistical efficiency and reliability of the results.
- The number of levels is balanced across the attributes.
- The attributes and levels have realistic ranges. There are 5 attributes and 17 levels (figure 5.1). The prices are the average per person per night.
- All the factors/levels are actionable, communicable, and have balanced levels and realistic ranges.

5.5.2.2 Design efficiency

Efficiencies are measures of design goodness. The common measures of the efficiency of a N_d x p design matrix **X** are based on the information matrix **X'X**. The variance-covariance matrix of the vector of parameter estimates ß^ in a squared analysis is proportional to $(\mathbf{X'X})^{-1}$. An efficient design will have a "small" variance matrix, and the eigenvalues of $(\mathbf{X'X})^{-1}$ provide measures of its "size".

Efficiency measures are least:

1) **A-efficiency** is a function of the arithmetic mean of the eigenvalues, which is given by trace (**X'X**)-1/p.
2) **D-efficiency** is a function of the geometric mean of the eigenvalues, which is given by $|(\mathbf{X'X})^{-1}|^{1/p}$.
3) **G-efficiency** based on σM, the maximum standard error for prediction over the candidate set. All three of these criteria are convex functions of the eigenvalues of $(\mathbf{X'X})^{-1}$ and hence are usually highly correlated. Thus the more efficient a design is, the more it tends toward balance and orthogonality (Kuhfeld **et al**, 1994: 546).

The D-efficiency of the experimental design was done by the **Conjoint Value Analysis (CVA), Version 2.0** computer program (table 5.2). The values show that when a respondent exercises a choice, the type of accommodation will play the biggest part in the decision.

Table 5.2 D-efficiency design effectivity

EFFICIENCY COMPONENTS FOR ATTRIBUTES	
Attribute	**Value**
Brand	0.928
Type of accommodation	0.956
Seaon	0.949
Meals	0.921
Price	0.948

5.5.2.3 Specifying the basic model form

To explain a respondent's preference structure only from overall evaluations of a set of stimuli, the **composition rule** describes how the respondent combines the part-worths of the factors to obtain overall worth. An **additive model** is the most common, basic composition rule, because the respondent only "adds up" the values for each attribute (part-worths) to get the total value for a combination of attributes (product/service). In defining the type of relationship, the analyst focuses on how the *levels* of a *factor* are related, The **part-worth form** was chosen as the most general, because it allows for each level to have its own part-worth estimate (Hair **et al**, 1995: 570-571).

5.5.3 Data collection

The type of presentation of the stimuli, type of response variable, and method of data collection follows. The objective is to convey to the respondent the attribute combinations (stimuli) in the most realistic and efficient manner possible.

5.5.3.1 Choosing a presentation model

The three methods of stimulus presentation most widely associated with conjoint analysis are the **trade-off**, **full-profile** and **pairwise comparison methods**. The **trade-off method** compares attributes two at a time by ranking all combinations or levels. The limitation is that it can only use two factors at a time and its inability to use fractional factorial stimuli designs to reduce the number of comparisons to be made. The **pairwise comparisons** have displaced the trade-off methods for second place in commercial applications. At present the most

popular method is the **full-profile presentation** because of its ability to reduce the number of comparisons through the use of fractional factorial designs. Each stimulus is described separately on a profile card. It elicits fewer judgements, but each is more complex and the judgements can either be ranked or rated. The **pairwise combination** combines the two methods mentioned above. It is a comparison of two profiles with the respondent most often using a rating scale to indicate strength of preference for one profile versus the other. Only a few attributes are selected at a time in constructing profiles. In the pairwise comparison method the pairs are profiles with multiple attributes (figure 5.3).

5.5.3.2 Creating the stimuli

Because all the combinations of stimuli cannot be used in a full-profile method and pairwise comparison (**factorial design**), it must be decomposed to a subset of stimuli by a **fractional factorial design**. It selects a sample of possible stimuli in a **full-profile method** to ensure realism and allow for the use of ratings, with the number of stimuli depending on the type of composition rule assumed to be used by the respondents. The simplest and most popular composition rule is the **additive model**, which assumes only main effects for each factor with no interactions. The 17 stimuli must be carefully constructed for **orthogonality** to ensure the correct estimation of the main effects. For the **pairwise comparisons** a computer generated program was used to select the optimal sets of pairs for the paper-and-pencil questionnaire (Hair, **et al**, 1995: 574-576). The **Conjoint Value Analysis (CVA), Version 2.0** system provided the tools to design **the thirty pairwise comparisons of two profiles** (figure 5.3). The **d-efficiency** (Kuhfeld **et al**, 1994: 545-548) was used to measure the goodness of design relative to the hypothetical orthogonal designs.

5.5.3.3 Selecting a measure of consumer preference

The pairwise comparison was chosen because it can evaluate the preference either by obtaining a rating of preference of one stimulus over the other or just a binary measure of which is preferred (figure 5.3).

Figure 5.3 Example of a conjoint trade-off question

WHICH WOULD YOU PREFER?

A	B
- Kruger National Park - Cottage/rondavel/hut (shared ablution) - Out-of-season time - Eat in restaurant - R175 per person per night	- Private Game Lodge - Cottage/rondavel/hut (private ablution) - In-season (peak) time - Prepare own meals - R225 per person per night

CHOOSE A NUMBER TO SHOW YOUR PREFERENCE

Strongly prefer left				Indifferent				Strongly prefer right
1	2	3	4	5	6	7	8	9

Price as an attribute on a nine-point rating scale was used (Huisman, 1992: 26).

5.5.3.4 Survey administration

The **available accommodation** in the rest camps of the **Kruger National Park** (**KNP**) as on the 1st October 1987 were tabulated (table 5.3). Initially each camp was subdivided into big, medium and small ones with >400, 100-399 and <300 available beds per night respectively, and they were also further subdivided into **luxurious accommodation** (cottage/rondavel/hut with shared or private ablution) and **camping** (furnished tents with shared ablution, caravans and tents). The **luxurious accommodation** in the **rest camps** consists of big guest houses, family cottages, huts, rondavels, chalets and furnished tents, while beds and fully-equipped kitchen utensils are provided. Additional convenience range from electricity/lanterns, wardrobes en showers. Most camps have a restaurant. In total 3629 persons can be accommodated per night. **Campsites** in the **rest camps** can have caravans and camping facilities, which are available in a few camps only - a maximum of 6 persons per site, are allowed per night. The sites are not equipped with electric outlets and visitors may use generators from one hour after sunrise to one hour before sunset only. Most camps have a restaurant, while communal kitchen and ablution facilities are always available.

Table 5.3 Available accommodation in the rest camps of the Kruger National Park

- 1 OCTOBER 1997 -

NUMBER OF PERSONS THAT CAN BE ACCOMMODATED PER NIGHT

	A	B	C	D	E	F
	Large >400		Medium 100-399		Small <100	
PUNDA MARIA				300	48	
SHINGWIDZI			270	300		
MOPANI	506					
LETABA			360	180		
OLIFANTS			264			
BALULE					18	90
SATARA	439			360		
TAMBOTI					90	
MAROELA				120		
ORPEN					44	
SKUKUZA	621	480				
PRETORIUSKOP			317	240		
BERG-EN-DAL		420	356			
LOWER SABIE			225	168		
CROCODILE BRIDGE					58	72
BOULDERS					12	
ROODEWAL					19	
NWANEDZI					16	
JOCK OF THE BUSHVELD					12	
MALELANE					19	
SIRHENI					80	
BATELEUR					34	
SHIMUWINI					71	
TALAMATI					80	
JAKKALSBESSIE					32	
BIYAMITI					70	
TOTAL	1566	900	1792	1668	703	162

Cooking utensils, crockery and cutlery are not provided. In total 2814 persons can be accommodated per night. In total 2814 persons can be accommodated per night. In total the luxurious accommodation and camp sites = 6443 available beds per night.

The **Kruger Park's rest camps** were divided into three areas: **Northern** (Punda Maria, Shingwidzi and Mopani), **Central** (Letaba, Olifants, Balule, Satara, Tamboti, Maroela, and Orpen) and **Southern** (Skukuza, Pretoriuskop, Berg-en-Dal, Lower Sabie, Crocodile Bridge and Malelane). The **Private** and **Bushveld camps** are sporadically distributed in these areas and are not representative of the rest camps because they consist only of luxurious accommodation. If they were included the sample will be too large because it must be enlarged by 25%. For the **number of questionnaires per representative camp** they were **subdivided only in large and small ones** only with **>300** and **< 300** available beds per night (table 5.3). The weights were calculated from table 5.3 as follows:

1) 506 ÷ 6443 = 0,0785348 (Mopani camp, northern area, luxury accommodation).

2) Where there are, for instance, more than two large camps in an area, only one representative camp was chosen for the distribution of the questionnaires, e.g. (300 + 300) ÷ 6443 = 0,0931243 (Punda Maria and Shingwidzi, Northern area) to facilitate the administration.

3) The weights were then multiplied by the sum of the northern, middle and southern camps for columns A, B, C and D for a sample of 357 to determine the questionnaires per camp for each category. Per category the smallest number of respondents was 16 (Lower Sabie, Crocodile Bridge and Malelane). Because of the disproportionate relationship between the large and small camps, the minimum sample was enlarged by 20% from 357 to 428. The sample was proportionally enlarged by 20% from 357 to 428. The sample is proportionally allocated for the total of 6443 available number of beds that can be accommodated per night by visitors in 1) **the luxurious accommodation** and 2) the **camping sites.** Orpen (only luxurious accommodation) and Maroela/Tamboti (camping and caravans/furnished

tents) will be treated as one camp. Only one representative camp will be chosen per area for a proportional stratified sampling of 428 (table 5.4).

Table 5.4 Number of questionnaires per representative camp

Camp	A	B	C	D
	Large camp (>300)		Small camp (<300)	
Punda Maria Mopani	34	40	21	
Satara Orpen Maroela/Tamboti	53	24	27	26
Skukuza Lower Sabie	86	60	20	37
TOTAL	173	124	68	63

A + C = Luxurious accommodation

B + D = Camping (Furnished tents, caravans and tents)

The aim of the stratification is to determine if a profile can be determined for each separate category of accommodation - large and small, as well as luxury accommodation and campsites.

The **methodology** that was used is:

- **A detailed literature research** (qualitative research).
  - All secondary data about tourism marketing and **price sensitivity** and measurement thereof were checked in detail in existing research articles, tourism handbooks and magazine articles.
- **A Survey** (quantitative research):
  - A structured questionnaire (Afrikaans or English), including a **pairwise trade-off conjoint analysis** to simulate a real purchase situation, and **additional questions** was used for the survey over two weeks.

- Before the commencement of the real survey, the questionnaire was tested in a pilot survey to determine whether the respondents understood the questions correctly, were able and prepared to answer them, and if the information that would be collected, was really the information that was needed.
- Local tourists in the selected camps were asked if they would be interested to co-operate in a survey that would test the **price sensitivity and pricing in the demand for accommodation of local tourists in the Kruger National Park.**
- Subsequently the questionnaires with the **30 trade-off questions** (Section A) and **additional questions** (Section B) were presented to the respondents. The **trade-off technique was explained**, and then they were asked to read the instructions to fill in the questionnaire (in which the difference between a **Private Game Farm** (**PGF**) and a **Private Game Lodge** (**PGL**) were also given). They could use the language of their choice. After the completion of the questionnaires every-one was checked to see whether every question was filled in. Thus in reality it almost resembled a 'personal interview'.

5.5.4 Assumptions

Conjoint analysis has the least restrictive set of assumptions involving of the conjoint model. The structured experiment design and generalised nature of the model make most of the tests performed in other dependence methods unnecessary.

5.5.4.1 The appropriateness of model form

The decompositional model is a multivariate model that 'decomposes' the respondent's preference. The pairwise method was used where the respondent was presented with a set of independent variables and has then been asked for his/her preference of the product/service. Then the preference was 'decomposed' by relating the known attributes of the product/service (independent variables) to the evaluation (dependant variable) (Hair **et al**, 1995:

558, 577) (See point 5.5.4.1 and figure 5.3). The research design was done accordingly.

5.5.4.2 Representative of sample

The formula that is used when the population for a **stratified random sampling** is bigger than 1000:

$$no = \frac{t^2 * p * q}{d^2}$$

no = rough estimate

n = sample size

t = confidence level

p = probability = 3629÷6443 = 0,5632

q = 1 - p = 1 - (3629÷6443) = 0,4368

d = accuracy

The confidence interval is 95%, thus is the p = 1,96. The probability is 50% * ratio of the luxurious accommodation ÷ total accommodation (luxurious accommodation + camping sites) per night. The accuracy is 95%, thus d is = 5% = 0,05.

$$no = \frac{(1.96)^2 * (0,5632) * (0,4368)}{(0.05)^2}$$

= 378,022= 378 (rough estimate)

$$n = \frac{no}{1 + \frac{no}{N}}$$

$$= \frac{378}{1 + \frac{378}{6443}}$$

$$= \frac{356{,}491}{1{,}059}$$

= 357 = sample size

Because a minimum of 20 respondents was needed in a category to perform a conjoint analysis, the sample size was enlarged by 20% to 428 to accommodate the smallest amount of respondents, i.e. 16 to 20 in Lower Sabie, for instance.

5.5.5 Selecting an estimation technique

"*In metric conjoint, the solution technique involves a type of analysis of variance in which the respondent's overall preferences serve as a criterion variable and the predictor variables are represented by the various factor levels making up each stimulus*" (Green **et al**, 1988: 616). The Conjoint Value Analysis (Version 2.0) computer program did the statistical relationships and evaluations. The results will be discussed in chapter 6.

5.5.6 Evaluating the results

The conjoint results must be examined to assess the accuracy of the estimated models at both the individual and aggregate levels. The ability of the conjoint model to predict consumer preferences accurately will be assessed for the metric responses.

5.5.6.1 Assessing reliability

The various **part-worths** were estimated. The objective of assessing reliability is to ascertain how consistently the model predicts across the set of preference evaluations given by each person. The actual and predicted preferences are to be correlated for each person, and these values can then be tested for statistical significance (e.g., Pearson correlation) (Hair, et al, 1995: 578).

5.5.6.2 The relative importance of attributes

Stated as percentage, it represents the **maximum** amount of variation in the rankings or ratings of the pairwise comparisons which can be explained by **changes in the levels or values for that attribute**, i.e. the degree of influence changes in attribute levels have on pairwise rankings. The more important an **attribute** is, the more frequently a pairwise comparison with the most preferred **level** of that attribute will be shown (Conjoint analysis **In** Analytical techniques: 1997: 1). It was calculated.

5.5.6.3 The relative sensitivity to changes in the individual levels for each attribute as expressed by 'utility' scores

It provides a clear means of revealing the sensitivities of the attributes and their values. The following analysis can be done:

- Determine the level at which significant changes in importance or value occur.
- Allow comparisons of total utility scores for products or of individual attribute levels.
- Allow utility scores for **untested** products, or untested attribute level values, to be predicted and compared through interpolation.

In summary one can say: "*Conjoint's relative importance and utility scores allows us to model 'What If' scenarios and clearly see the likely marketplace results of features/features level trade-offs for conceptualized products*" (Conjoint analysis **In** Analytical techniques: 1997: 1).

CHAPTER 6

6. CONJOINT AND PRICE ELASTICITY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 ANALYSING THE DATA OF THE CONJOINT EXPERIMENT

6.1.1 Base-case specifications or the real situation

The base case is a number of products (that is accompanied by the introduction of changes) which is defined by the researcher. To get satisfying results different product concepts must be examined. Different situations could also be examined, that will entail that certain changes to the base case should be introduced. The base case is thus the starting point from where comparisons can be made. In the base case six products, each with five attributes was identified. A correlation is a criterion that addresses the internal consistency of the respondent's responses against the specific profile. A correlation normally ranges between 1.0 and 0.0 with a value closest to 1.0 as the better (Van Heerden, 1997: 33-34). A correlation cut-off of 0.4000 was used in the research design. From the 385 respondents, the data of 377 respondents was used.

From the four **market simulation choice models** in the Conjoint Value Analysis (Version 2.0) computer program, the **Share of Preference with Correction for Product Similarity model** was chosen because it "*corrects for the often undesirable counting a product's share for the same product if included twice, or for similar although not identical products*" (Huisman, 1992: 26). This option attempts to correct distortion that might occur if the same product were entered into a simulation many times, or if several products differed only in minor ways. The 'share of preference' is an option, which does not assume that the respondent necessarily will choose the product with the highest 'utility value'. It rather determines the probability that the respondent will choose the product, which was simulated or changed, by indicating the so-called 'share of preference' for the distinct product.

The **base-case specifications**, **product specifications, average utility values**, **simulation results** and **attribute importance** are shown in tables 6.1, 6.2, 6.3, 6.4 and 6.5 respectively. **KNP** = Kruger National Park, **PGF** = Private Game Farm, **PGF** = Private Game Lodge, and **sh ab** = shared ablution, **pr ab** = private ablution.

Table 6.1 Real situation or base-case specifications

Base-case	
Number of Products	6
Number of Attributes	5
Correlation Cutoff	0.400
Simulation Mode	SIMULATION
Respondent Weighting	NONE
Respondent Segment	NONE
Model	SHARE OF PREFERENCE
Adjustment for Product Similarity	YES
Exponent	1.00

Table 6.2 Product specifications

Product specifications					
Product	**Attributes**				
	1	**2**	**3**	**4**	**5**
1) KNP - Camping (Caravans & tents) (sh ab)	1.000	1.000	1.000	2.000	75.00
2) KNP - Furnished tent (sh ab)	1.000	2.000	1.000	2.000	125.00
3) KNP - Cottage/rondavel/hut (sh ab)	1.000	3.000	1.000	2.000	225.00
4) KNP - Cottage/rondavel/hut (pr ab)	1.000	4.000	2.000	2.000	275.00
5) PGF - Cottage/rondavel/hut (pr ab)	2.000	4.000	1.000	2.000	125.00
6) PGL - Cottage/rondavel/hut (pr ab)	3.000	4.000	2.000	2.000	325.00

Products with a utility value in one level of an attribute cannot be compared with a utility value in another level. It is therefore not correct to compare a single value in one attribute with a single value in another product. It is better to compare the differences in the specific values. It will be demonstrated with regard to the information about the **average utility values** in table 6.3. It is not correct to refer to the **Kruger National Park** (utility value = 34) and show that it carries the same degree of desirability as **a price of R225 per person per night** (utility value = 34). It is indeed correct to show that the difference in values between the two types of accommodation e.g. **KNP - Furnished tent (shared ablution) and KNP - Camping (Caravans and tents)** (utility value of 19 -14 = 5) is the same as the difference between **Prepare own meals** and **Eat in**

restaurant the two types of KNP accommodation and the two types of meals (utility value of 13 - 8 = 5). The respondent will thus choose 'indifferent' between the two types of KNP accommodation and the two types of meals.

Table 6.3 Average utility values

AVERAGE UTILITY VALUES		
Attribute	**Level**	**Average utility**
Brand	Kruger National Park	34
	Private Game Farm	11
	Private Game Lodge	17
Type of Accommodation	Camping (Caravans and tents) (shared ablution)	14
	Furnished tent (shared ablution)	19
	Cottage/rondavel/hut (shared ablution)	32
	Cottage/rondavel/hut (private ablution)	43
Meals	Prepare own meals	13
	Eat in restaurant	8
Season	In-season (peak time)	4
	Out-of-season time	18
Price	R75 per person per night	98
	R125 per person per night	76
	R175 per person per night	59
	R225 per person per night	34
	R275 per person per night	19
	R325 per person per night	0

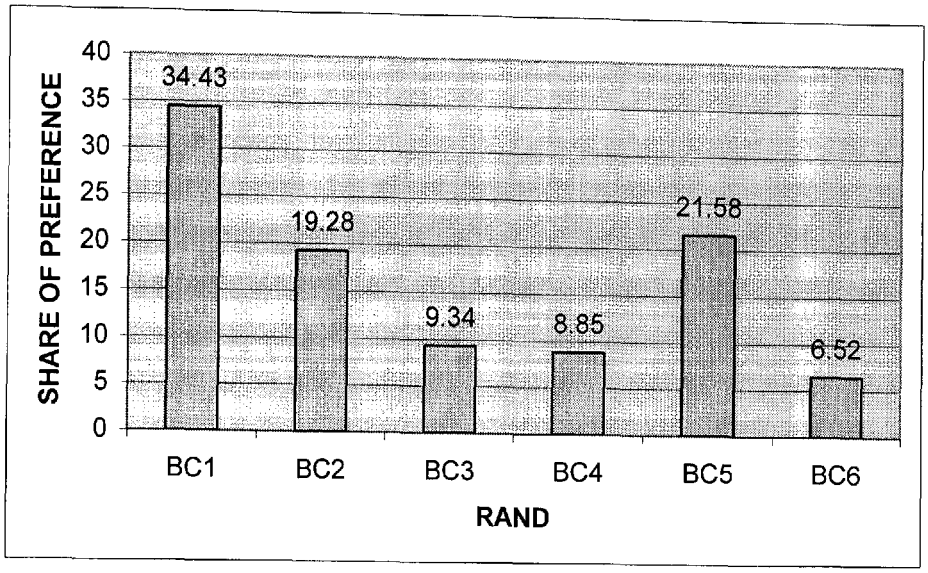
Table 6.4 Simulation results

SIMULATION RESULTS		
(Respondents included = 377)		
Product	**Share of preference**	**Standard error**
1) KNP - Camping (Caravans and tents) (sh ab)	34.43	1.16
2) KNP - Furnished tent (shared ablution)	19.28	0.65
3) KNP - Cottage/rondavel/hut (shared ablution)	9.34	0.46
4) KNP - Cottage/rondavel/hut (private ablution)	8.85	0.54
5) PGF - Cottage/rondavel/hut (private ablution)	21.58	0.85
6) PGL - Cottage/rondavel/hut (private ablution)	6.52	0.59

Table 6.5 Attribute importance

Attribute	Average	Standard error
Brand	17.463	0.720
Type of accommodation	22.310	0.784
Meals	7.952	0.460
Season	8.620	0.460
Price	43.655	1.106
Total	**100.000**	

Figure 6.1 Base-case - share of preference values



From the simulation results of table 6.4 the **base-case - share of preference values** for the type of accommodation can be shown (figure 6.1). The attribute with the highest value of 34.43 is the KNP - Camping (Caravans and tents) (shared ablution), and it is followed by the Private Game Farm - Cottage/rondavel/hut (private ablution) with a value of 21.58. The attribute with the lowest value of 6.52 is the Private Game Lodge - Cottage/rondavel/hut (private ablution).

The **attribute importance** was calculated with the Conjoint Value Analysis (CVA) (Version 2.0) computer program (table 6.5). The **relative importance of attributes** is: "*Stated as percentage, it presents the* ***maximum*** *amount of variation in the rankings or ratings of the cards which can be explained by changes in the levels or values for that attribute, i.e. the degree of influence changes in attribute levels have on a card rankings. The more important an attribute is, the more frequently cards with the most preferred level of that attribute will appear toward the top of the sorted deck (or show the highest ratings* " (Conjoint analysis **In:** Analytical techniques, 1997: 1). The averages of the attributes must in total be 100. These figures show the importance of the various attributes when choosing between them. It is undeniably apparent that

price with an average of 43.655 is the strongest attribute in this study, while meals the lowest with an average of 7.952.

6.1.2 Scenarios for price sensitivity

After the base case has been simulated, several **simulations and sensitivity analysis can be done** with the **product specifications for the six scenarios** (table 6.6). The next part focuses on the price sensitivity simulations for the six products (scenarios) (adapted to Van Heerden (1997: 39-40).

The first scenario will be described in detail to show how the demand curves for each of the products are obtained. The demand curves will be illustrated separately, and then a combined graph for the six products. This will facilitate the comparison between the various demand curves. The various steps are:

- Specify the conditions for the sensitivity simulation. It is the same as the **real situation or base-case specifications** (table 6.1).
- **Simulation analysis is** then done for each of the price levels of the six products from table 6.6 (**product specifications for the six scenarios)**, i.e. the first product (KNP - Camping (Caravans and tents) (shared ablution) will begin with a value of 75 for the 5th attribute, and will be increased with a value of 50 up to last value = 325 - this is **scenario 1**. The same procedure was done for every product that followed.
- After the price sensitivity simulation has been done, the **average utility values** are shown. It is the same as for the base case and remains the same for every scenario - it will be shown only once (table 6.3).
- After the price sensitivity simulation the **simulation results of the scenarios for all the products - at all six price levels** are given (table 6.7).
- Table 6.8 was derived from table 6.7 and shows the **share of preference values of the scenarios – in decreasing order – for the six price levels**.
- The **scenarios 1-6** showing the types of accommodation in the Kruger National Park, Private Game Farm and Private Game Lodge, were plotted

separately as **demand curves** to show the share of preference all six price levels (figures 6.2 - 6.7).

Table 6.6 - Product specifications for the six scenarios

PRODUCT SPECIFICATIONS FOR THE SIX SCENARIOS					
Product	**Attributes**				
	1	2	3	4	5
Scenario 1					
1) KNP - Camping (Caravans & tents) (sh ab)	1.000	1.000	1.000	2.000	**75.00**
2) KNP - Furnished tent (sh ab)	1.000	2.000	1.000	2.000	125.00
3) KNP - Cottage/rondavel/hut (sh ab)	1.000	3.000	1.000	2.000	225.00
4) KNP - Cottage/rondavel/hut (pr ab)	1.000	4.000	2.000	2.000	275.00
5) PGF - Cottage/rondavel/hut (pr ab)	2.000	4.000	1.000	2.000	125.00
6) PGL - Cottage/rondavel/hut (pr ab)	3.000	4.000	2.000	2.000	325.00
Scenario 2					
1) KNP - Camping (Caravans & tents) (sh ab)	1.000	1.000	1.000	2.000	75.00
2) KNP - Furnished tent (sh ab)	1.000	2.000	1.000	2.000	**75.00**
3) KNP - Cottage/rondavel/hut (sh ab)	1.000	3.000	1.000	2.000	225.00
4) KNP - Cottage/rondavel/hut (pr ab)	1.000	4.000	2.000	2.000	275.00
5) PGF - Cottage/rondavel/hut (pr ab)	2.000	4.000	1.000	2.000	125.00
6) PGL - Cottage/rondavel/hut (pr ab)	3.000	4.000	2.000	2.000	325.00
Scenario 3					
1) KNP - Camping (Caravans & tents) (sh ab)	1.000	1.000	1.000	2.000	75.00
2) KNP - Furnished tent (sh ab)	1.000	2.000	1.000	2.000	125.00
3) KNP - Cottage/rondavel/hut (sh ab)	1.000	3.000	1.000	2.000	**75.00**
4) KNP - Cottage/rondavel/hut (pr ab)	1.000	4.000	2.000	2.000	275.00
5) PGF - Cottage/rondavel/hut (pr ab)	2.000	4.000	1.000	2.000	125.00
6) PGL - Cottage/rondavel/hut (pr ab)	3.000	4.000	2.000	2.000	325.00
Scenario 4					
1) KNP - Camping (Caravans & tents) (sh ab)	1.000	1.000	1.000	2.000	75.00
2) KNP - Furnished tent (sh ab)	1.000	2.000	1.000	2.000	125.00
3) KNP - Cottage/rondavel/hut (sh ab)	1.000	3.000	1.000	2.000	225.00
4) KNP - Cottage/rondavel/hut (pr ab)	1.000	4.000	2.000	2.000	**75.00**
5) PGF - Cottage/rondavel/hut (pr ab)	2.000	4.000	1.000	2.000	125.00
6) PGL - Cottage/rondavel/hut (pr ab)	3.000	4.000	2.000	2.000	325.00
Scenario 5					
1) KNP - Camping (Caravans & tents) (sh ab)	1.000	1.000	1.000	2.000	75.00
2) KNP - Furnished tent (sh ab)	1.000	2.000	1.000	2.000	125.00
3) KNP - Cottage/rondavel/hut (sh ab)	1.000	3.000	1.000	2.000	225.00
4) KNP - Cottage/rondavel/hut (pr ab)	1.000	4.000	2.000	2.000	275.00
5) PGF - Cottage/rondavel/hut (pr ab)	2.000	4.000	1.000	2.000	**75.00**
6) PGL - Cottage/rondavel/hut (pr ab)	3.000	4.000	2.000	2.000	325.00
Scenario 6					
1) KNP - Camping (Caravans & tents) (sh ab)	1.000	1.000	1.000	2.000	75.00
2) KNP - Furnished tent (sh ab)	1.000	2.000	1.000	2.000	125.00
3) KNP - Cottage/rondavel/hut (sh ab)	1.000	3.000	1.000	2.000	225.00
4) KNP - Cottage/rondavel/hut (pr ab)	1.000	4.000	2.000	2.000	275.00
5) PGF - Cottage/rondavel/hut (pr ab)	2.000	4.000	1.000	2.000	125.00
6) PGL - Cottage/rondavel/hut (pr ab)	3.000	4.000	2.000	2.000	**75.00**

Table 6.7 - Simulation results of the scenarios for all the products - at all six price levels

SIMULATION RESULTS (Respondents included = 377)						
PRICE	SHARE OF PREFERENCE					
	Product					
	1	2	3	4	5	6
75	34.43	29.76	32.05	34.15	32.14	31.82
125	21.18	19.28	19.71	22.15	21.58	20.99
175	15.82	13.91	15.68	17.73	15.99	16.84
225	8.45	7.22	9.34	10.43	9.30	10.32
275	6.16	5.17	6.81	8.85	7.62	7.95
325	4.23	3.52	4.74	5.74	5.36	6.52

LEGEND

Product 1 = KNP - Camping (Caravans and tents) (shared ablution)
Product 2 = KNP - Furnished tent (shared ablution)
Product 3 = KNP - Cottage/rondavel/hut (shared ablution)
Product 4 = KNP - Cottage/rondavel/hut (private ablution)
Product 5 = Private Game Farm - Cottage/rondavel/hut (private ablution)
Product 6 = Private Game Lodge - Cottage/rondavel/hut (private ablution)

Table 6.8 Share of preference values of the scenarios - in decreasing order - for the six price levels

VALUES IN DECREASING ORDER (Respondents included = 377)						
PRICE	SHARE OF PREFERENCE					
	Product					
	1	2	3	4	5	6
75	1	6	4	2	3	5
125	3	6	5	1	2	4
175	4	6	5	1	3	2
225	5	6	3	1	4	2
275	5	6	4	1	3	2
325	5	6	4	2	3	1

LEGEND

Product 1 = KNP - Camping (Caravans and tents) (shared ablution)
Product 2 = KNP - Furnished tent (shared ablution)
Product 3 = KNP - Cottage/rondavel/hut (shared ablution)
Product 4 = KNP - Cottage/rondavel/hut (private ablution)
Product 5 = Private Game Farm - Cottage/rondavel/hut (private ablution)
Product 6 = Private Game Lodge - Cottage/rondavel/hut (private ablution)

NOTE: The highest value of table 6.6 is shown as 1, and the lowest by 6.

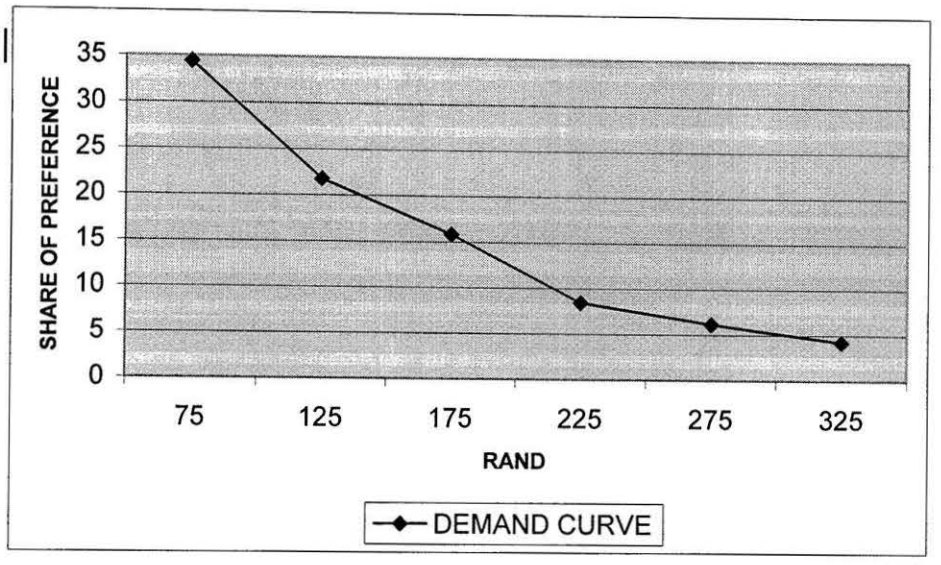
The **share of preference of the scenarios for all the products - at all six price levels** (figure 6.8) was enlarged to show more detail (figure 6.8(a)). From figure 6.8 it can clearly be seen that all the demand curves are very close to each other and almost parallel to each other. They all slope from left to right, and the dip decreases toward the highest value of R375. From table 6.8 at a **price level** of R75 the KNP - Camping (Caravans and tents) (shared ablution) {product 1} has the highest share of preference of 34.43, followed closely by the KNP - Cottage/rondavel/hut (private ablution) {product 4} with a value of 34.15. The products 5, 3 and 6 whose values are close to each other follow them. They are Private Game Farm - Cottage/rondavel/hut (private ablution), KNP - Cottage/rondavel (private ablution) and KNP - Cottage/rondavel/hut (private ablution) and Private Game Lodge - Cottage/rondavel (private ablution), whose values of 32.14, 32.05 and 31.14 are close to each other. The lowest share of preference is the KNP - Furnished tent (shared ablution) with 29.76. The same can be done for the price levels of R125 - R325 (table 6.7). It is also good to compare the price levels with the data in table 6.8.

The **share of preference values of the scenarios - in decreasing order - for all the products** are shown in table 6.8. The highest value is = 1 (the equivalent of 34.43 in table 6.7) and the lowest = 6 (the equivalent of 29.76 in table 6.7). The **share of preference for a single product** will be illustrated in the data of fig. 6.8(a), and tables 6.7 and 6.8. It can be seen that at R75 the KNP - Camping (Caravans and tents) (shared ablution) {product 1} has the highest share of preference. At R125 and R175 it has the third and fourth highest share of preference respectively, while at R225, R275 and R325 it has the fifth highest share of preference. All the other products can be compared in the same manner (figure 6.8(a), tables 6.7 and 6.8). Only the KNP - Furnished tent (shared ablution) {product 5} has the lowest share of preference for all the price levels. Another way of comparison is to look at the **highest share of preference at all six price levels**, because at R75 it is the KNP - Camping (Caravans and tents) {product 1}. From R125 - R275 it is the KNP - Cottage/rondavel/hut (private ablution) {product 4} and at R325 it is the Private Game Lodge (private ablution) {product 6}. The same can be done for the

second highest to lowest share of preference at the other price levels (figure 6.8(a), tables 6.7 and 6.8).

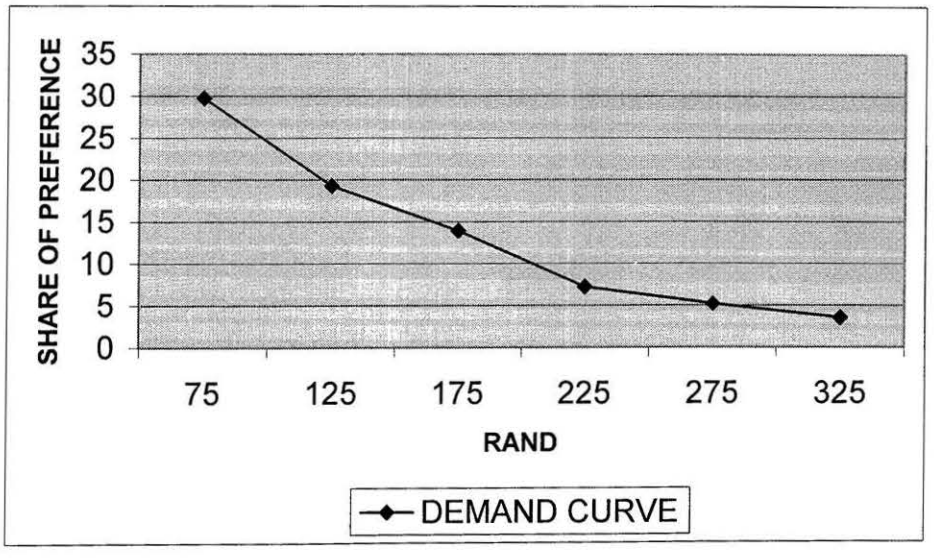
6.1.3 Scenario 1 KNP - Camping (Caravans and tents) (shared ablution)

Figure 6.2 Share of preference at all six price levels



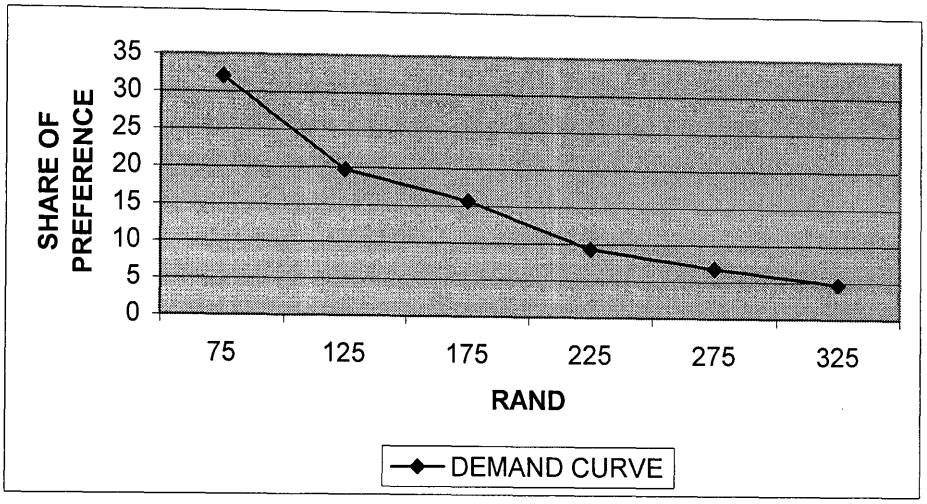
6.1.4 Scenario 2 KNP - Furnished tent (shared ablution)

Figure 6.3 Share of preference at all six price levels



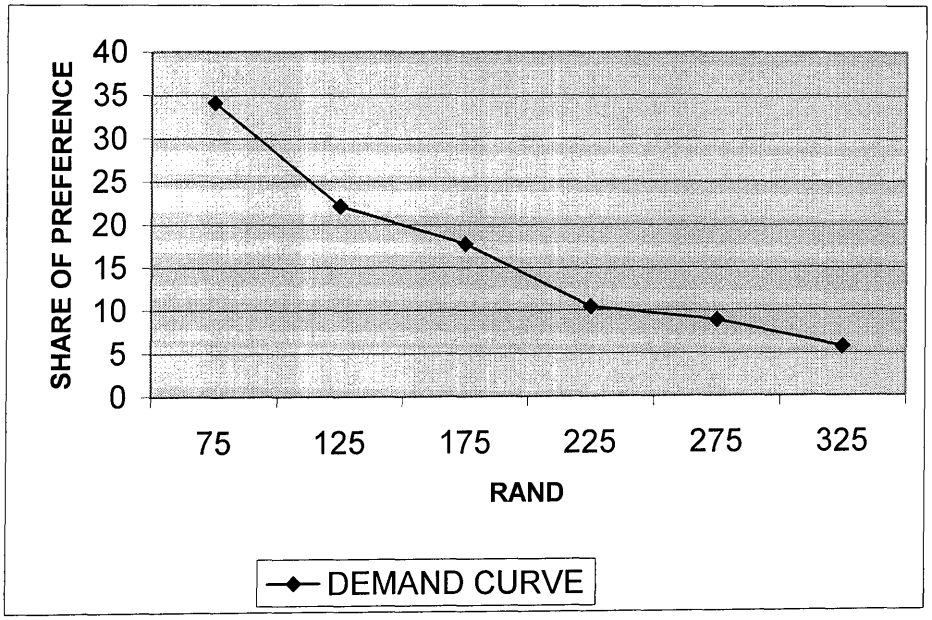
6.1.5 Scenario 3 KNP - Cottage/rondavel/hut (shared ablution)

Figure 6.4 Share of preference at all six price levels



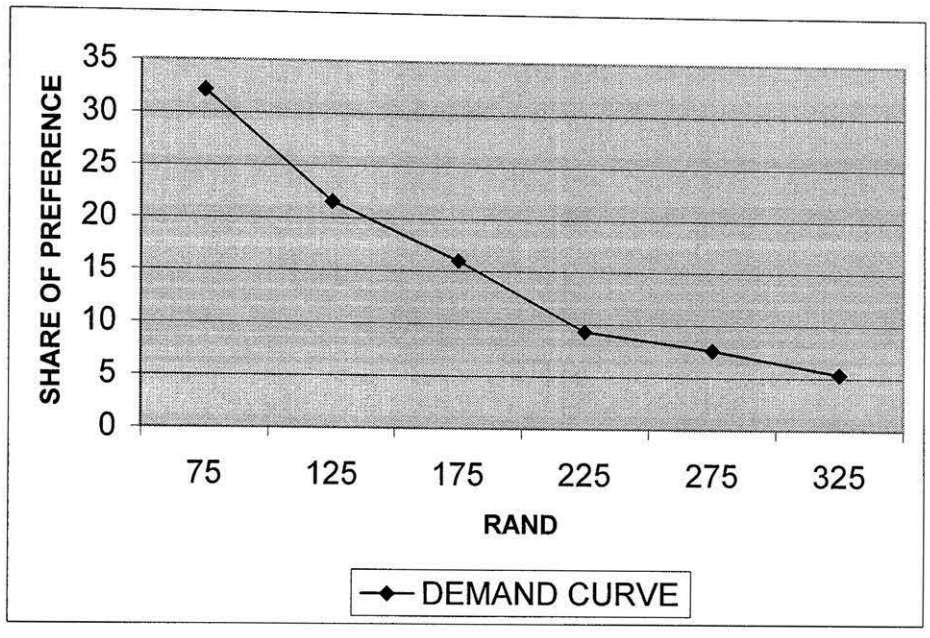
6.1.6 Scenario 4 KNP - Cottage/rondavel/hut (private ablution)

Figure 6.5 Share of preference at all six price levels



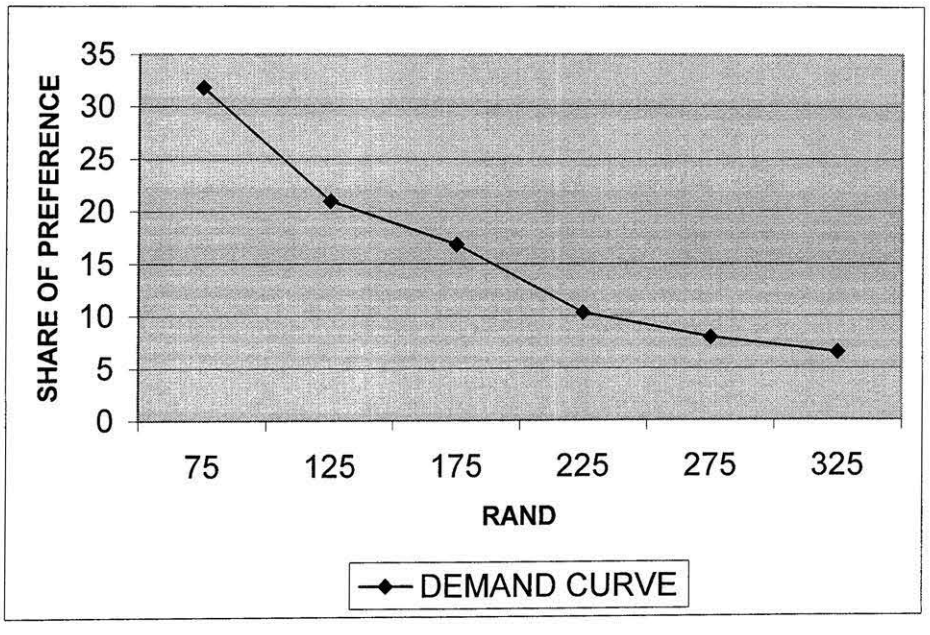
6.1.7 Scenario 5 PGF - Cottage/rondavel/hut (private ablution)

Figure 6.6 Share of preference at all six price levels



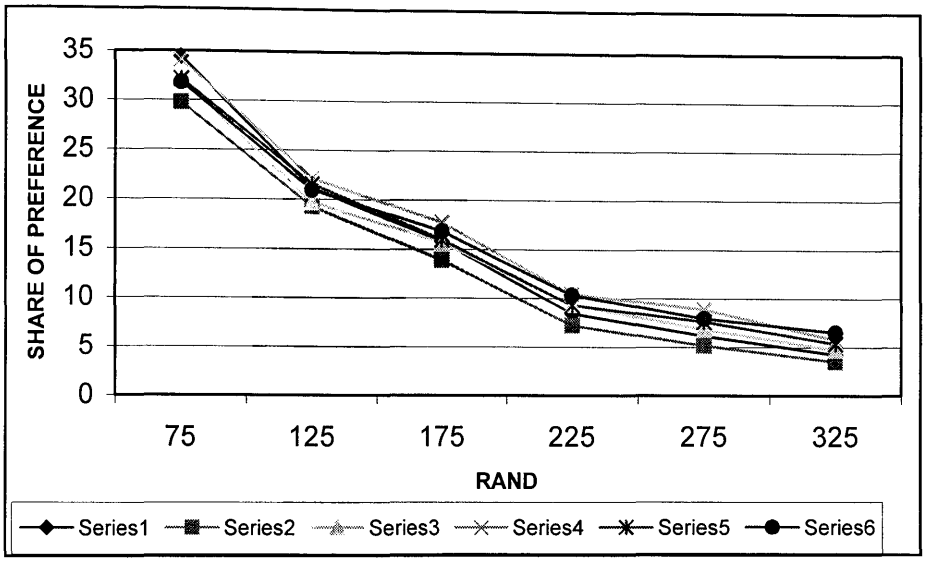
6.1.8 Scenario 6 PGL - Cottage/rondavel/hut (private ablution)

Figure 6.7 Share of preference at all six price levels



6.1.9 Summary: Share of preference of the scenarios for all the products - at all price levels

Figure 6.8 Share of preference of the scenarios for all the products - at all six price levels

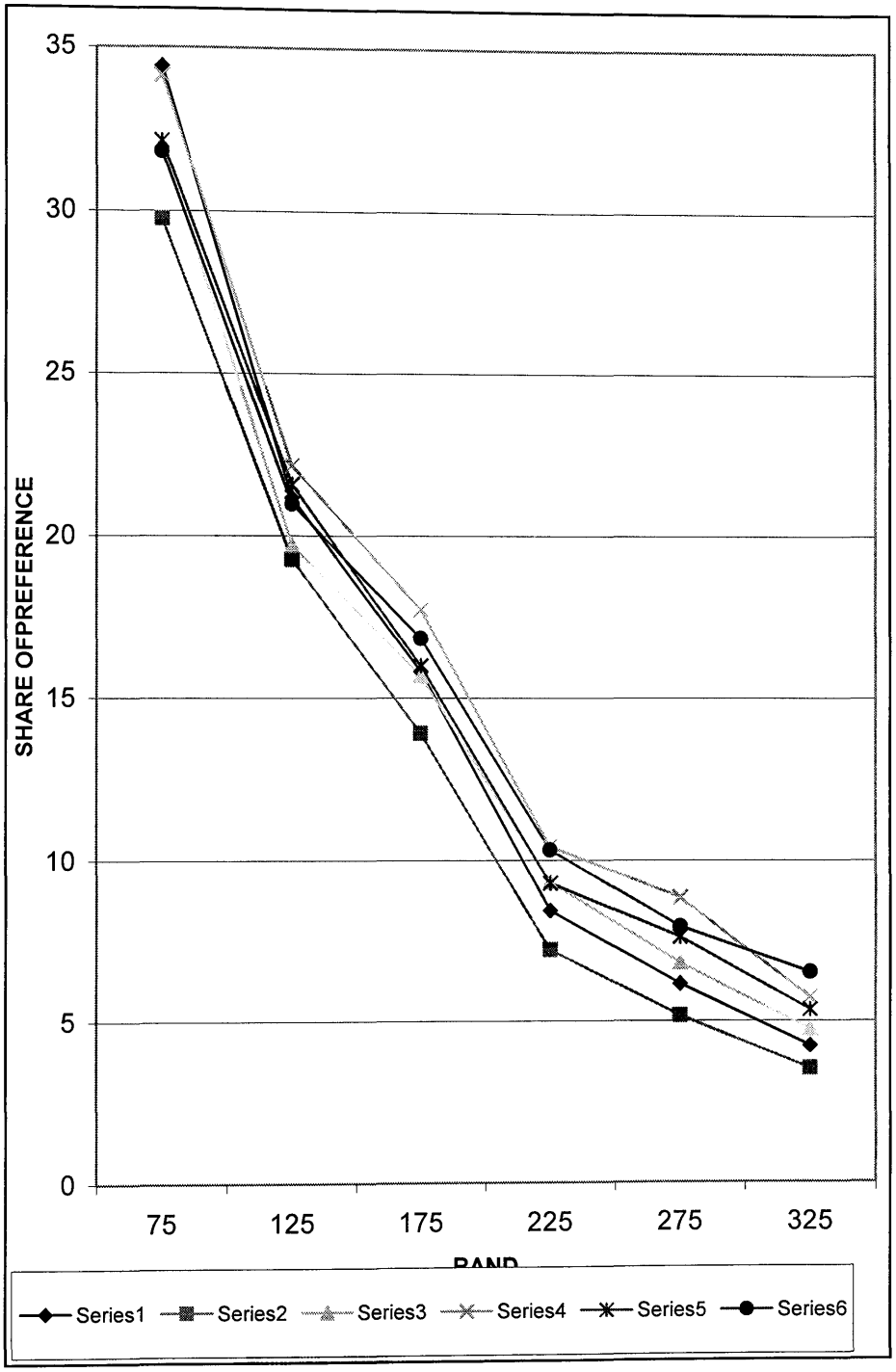


LEGEND

Series 1 = KNP - Camping (Caravans and tents) (shared ablution)
Series 2 = KNP - Furnished tent (shared ablution)
Series 3 = KNP - Cottage/rondavel/hut (shared ablution)
Series 4 = KNP - Cottage/rondavel/hut (private ablution)
Series 5 = Private Game Farm - Cottage/rondavel/hut (private ablution)
Series 6 = Private Game Lodge - Cottage/rondavel/hut (private ablution)

Because the share of preference of the products (1, 2, 3, 4 and 6) varies, the demand curves intersect in a few places between the various price levels (figure 6.8(a)). An example where two demand curves, i.e. the KNP - Cottage/ rondavel/hut (private ablution) {product 4} and the Private Game Lodge (private ablution) {product 6} intersect is between the price levels of R275 and R325 (figure 6.8(a)). All the indifference curves have a negative slope. Because every commodity is defined so that more of it is preferred to less, it also follows that the indifference curves that are higher in figure 4.1 represent greater levels of consumer satisfaction than indifference curves that are lower. Indifference curves cannot intersect. If the consumer's tastes are transitive, as were assumed in the model, there cannot be an intersection of indifference curves (chapter 4, point 4.3.3.3). This is only partly in agreement with Mansfield (1994: 57-58) because the demand curves intercept in places in figure 6.8(a).

Figure 6.8(a) Share of preference of the scenarios for all the products - at all six price levels



LEGEND

Series 1 = KNP - Camping (Caravans and tents) (shared ablution)
Series 2 = KNP - Furnished tent (shared ablution)
Series 3 = KNP - Cottage/rondavel/hut (shared ablution)
Series 4 = KNP - Cottage/rondavel/hut (private ablution)
Series 5 = Private Game Farm - Cottage/rondavel/hut (private ablution)
Series 6 = Private Game Lodge - Cottage/rondavel/hut (private ablution)

The local visitors' preferences (tastes) are not always transitive, but are shown by their share of preference for the various price levels and the six types of accommodation {products} (figure 6.8(a), tables 6.7 and 6.8).

6.2 PRICE ELASTICITY FINDINGS

From table 6.7 the **price elasticity** was calculated and is shown as 1) **Point elasticity of demand** (table 6.9), and 2) **Arc elasticity of demand** (table 6.10). The elasticity of demand refers to proportional quantity changes in comparison with prices. **Point elasticity** is concerned with the elasticity at only one given point on a demand curve. It was calculated according to Nellis and Parker (1992: 31-32) as:

$$\textbf{Point } E_d = \frac{(x_2 - x_1)}{(x_1)} \times \frac{(y_2 - y_1)}{(y_1)}$$

It can be seen that the elasticities change when moving from one price level to a higher one.

Arc elasticity measures the responsiveness of demand between two points on the demand curves such as X and Y. It is measured at midpoint between X and Y; i.e. at $\frac{1}{2}(Q_1 + Q_2)$ and $\frac{1}{2}(P_1 + P_2)$. This assures that the price elasticity is the same regardless of the movement of direction on the demand curve.
It was calculated according to Nellis and Parker (1992: 30-31) as:

$$\textbf{Arc } E_d = \frac{(x_2 - x_1)}{(y_2 + y_1)} \times \frac{(y_2 + y_1)}{(x_2 - x_1)}$$

It is important to note that traditional texts place price on the vertical axis and quantity on the horizontal axis. However, assuming that quantity demanded depends on price, then the correct procedure is to place price on the horizontal axis and quantity on the vertical axis. In this case of price sensitivity analysis price was placed on the horizontal axis and utility on the vertical axis. Thus x = price and y = utility.

Table 6.9 - Point elasticity of demand- for all the products - - with change in price (Rand)

POINT ELASTICITY VALUES (Respondents included = 377)						
PRICE CHANGE	VALUE					
	Product					
	1	2	3	4	5	6
75 - 125	1.732327	1.893130	1.713496	1.897222	2.029040	1.9587568
125 - 175	1.580597	1.436127	1.965328	2.004525	1.544186	2.0231325
175 - 225	0.613297	0.594064	0.706624	0.693933	0.682896	0.7379489
225 - 275	0.819990	0.782656	0.820378	1.466948	1.230159	0.9676513
275 - 325	0.580311	0.569697	0.598155	0.517392	0.613033	1.010870

LEGEND

Product 1 = KNP - Camping (caravan and tents) (shared ablution)
Product 2 = KNP - Furnished tent (shared ablution)
Product 3 = KNP - Cottage/rondavel/hut (shared ablution)
Product 4 = KNP - Cottage/rondavel/hut (private ablution)
Product 5 = Private Game Farm - Cottage/rondavel/hut (private ablution)
Product 6 = Private Game Lodge - Cottage/rondavel/hut (private ablution)

Table 6.10 Arc elasticity of demand - for all the products - with change in price (Rand)

ARC ELASTICITY VALUES (Respondents included = 377)						
PRICE CHANGE	VALUE					
	Product					
	1	2	3	4	5	6
'75 - 125	1.049245	1.169847	1.048622	1.172917	1.271780	1.2190674
125 - 175	1.150498	1.031055	1.463606	1.503771	1.120155	1.5192771
175 - 225	0.411635	0.394806	0.493297	0.482182	0.472534	0.5207055
225 - 275	0.637991	0.604390	0.638340	1.220253	1.007143	0.770886
275 - 325	0.448618	0.438889	0.464976	0.390943	0.478614	0.843240

LEGEND

Product 1 = KNP - Camping (Caravans and tents) (shared ablution)
Product 2 = KNP - Furnished tent (shared ablution)
Product 3 = KNP - Cottage/rondavel/hut (shared ablution)
Product 4 = KNP - Cottage/rondavel/hut (private ablution)
Product 5 = Private Game Farm - Cottage/rondavel/hut (private ablution)
Product 6 = Private Game Lodge - Cottage/rondavel/hut (private ablution)

- From a specific graph the price elasticity can be calculated. Price elasticity measures the sensitivity of the amount that is asked if prices should change.

Price elasticity of demand is a measure of the degree to which buyers are sensitive to price changes.

- The price sensitivity for each of the products is illustrated by the dip of the demand curve, which determines to which degree the demand is elastic.
- The steeper the dip, the more price elastic is the demand and the more price sensitive is the product, while the flatter curve is inelastic and indicate less price sensitivity (Nellis and Parker, 1992: 28-36).
- There are three possibilities for price elasticity:
  - E<1 - the demand for the product profile is **inelastic** when the given percentage change in price (increase) leads to a relative small change (decrease) in the percentage market share.
  - E>1 - the demand for the product is **elastic** when the given percentage change in price (increase) leads to a relative big change (decrease) in the percentage market share.
  - E=1 - the demand for the product is **unit elastic** when a given percentage change in price leads to a similar percentage change (decrease) in market share (Van Heerden, 1997: 40).

In general figure 6.8(a) shows that at the start of the curves of products 1 and 2 preference is highly elastic. This means that local visitors are highly price elastic at lower prices and lead to high demand. Thus they will act strongly negative. The products 3 - 5 are less price elastic as the demand is small. These visitors are mostly high income people where price does not play a major role. If price elasticity > 1 then price increases, which leads to the fact that total expenditure decreases. If price elasticity is < 1 then price increases, which leads to the fact that the total expenditure will increase. They are thus price elastic.

Price elasticity measures the sensitivity of demand if prices should change. Price elasticity of demand is a measure of the degree to which local visitors are sensitive to price changes. From tables 6.9 and 6.10 some interesting observations were made. The **point elasticity of demand** (**Point E_D**) of product 1 will be illustrated as an example. A price change from R75 to R125 gives a value of 1.732327. This means that a 1% increase in price will cause an

decrease in quantity demanded = 1.732327%. A price change from R275 to R325 only gives a value of 0.580311. This means that a 1% increase in price will cause a decrease in quantity demanded = 0.580311%. Consumers are thus more sensitive to price changes at lower than higher prices. The values indicate the price sensitivity for the product.

For the products 1, 2 and 3 the point elasticity of demand (E_D) > 1 for price changes of R75 - R125 and R125 - R175. They are **price elastic**. But for price changes of R175 - R225, R225 - R275 and R275 - R325 they are **price inelastic** because E_D < 1. For the products 4 and 5 the E_D > 1 for price changes of R175 - R225, R225 - R275 and R 225 - R275. They are **price elastic**. But for price changes of R175 - R225 and R275 - R325 they are **price inelastic** because E_D < 1. For the product 6 the E_D > 1 for price changes of R175 - R225, R225 - R275 and R 275 - R325. They are **price elastic**. But for price changes of R175 - R225 and R225 - R275 they are **price inelastic** because E_D < 1. Consumers are thus more sensitive to price changes at the lower than higher prices. The lower price changes are R75 - R125 and R125 - R175, while the higher price are R175 - R225, R225 - R275 and R275 - R325. There are three exceptions: the products 4 and 5 with a price change from R R225 - R275, and product 6 with a price change from R275 - R325, where they are more sensitive to price changes at the higher prices.

The same observation is made with respect to the **arc elasticity of demand** (**Arc E_D**) as in the discussion above. All the values are lower than that of point elasticity. Consumers are just as price sensitive to all the price changes. There is only one exception: the product 6 with a price change from R275 - R325, where they are less sensitive to price changes at this higher price.

6.3 CONCLUSIONS

Hypothesis 1: Local tourists are equally price sensitive for the **various types of accommodation** in the Kruger National Park.

From the data of table 6,3 the **highest average utility value** at a price R75/person/night = 98 and decreases at R325/person/night to a **lowest value** = 0. This is shown by every scenario (figures 6.2 - 6.7) because the curves slope all from left to right. Thus hypothesis 1 is accepted.

Hypothesis 2: Local tourists are **not satisfied with the present prices for accommodation** in the Kruger National Park.
From the results of question 39 (Section B) the people are not satisfied with the present prices for accommodation in the Kruger National Park. The percentage results show values of 28,9% in the **not satisfied** block, and 20,4% in the block between **not satisfied** and **unsure** respectively. Thus hypothesis 2 is accepted. See also Appendix A, question 39.

Hypothesis 3: Local tourists are **not satisfied with the present prices of goods in the shops** of the Kruger National Park.
From the results of question 39 (Section B) the people are not satisfied with the present prices of goods in shops of the Kruger National Park. The percentage results show values of 33.5% in the **not satisfied** block, and 24,2% in the block between **not satisfied** and **unsure** respectively. Thus hypothesis 3 accepted. See also Appendix A, question 39.

Hypothesis 4: Local tourists are **not satisfied with the price of meals in the restaurants** of the Kruger National Park.
From the results of question 39 (Section B) the people are not satisfied with the present prices of meals in restaurants of the Kruger National Park. The percentage results show values of 25,5% in the **not satisfied** block, and 24,4% in the block between **not satisfied** and **unsure** respectively. Thus hypothesis 4 is accepted. See also Appendix A, question 39.

Hypothesis 5: Local tourists are satisfied with the **quality of accommodation** in the Kruger National Park.
From the results of question 40 (Section B) the people are satisfied with regard to all four **aspects: consistency, reliability of information before**

reservation, product/service knowledge and **value for money** (values in the **satisfied** block are 23%, 35,1%, 25,8% and 20,1% respectively). In the block between **unsure** and **satisfied** the values were 30,0%, 32,05%, 35,3% and 32,25% respectively. Thus hypothesis 5 is accepted. See also Appendix A, question 40.

Hypothesis 6: Local tourists **prefer the most luxurious type of accommodation** more than the less luxurious types of accommodation provided by the Kruger National Park.

From the data of table 6.3 the **highest average utility value** for a 'Cottage/rondavel/hut (private ablution)' = 43 - it is the most luxurious type of accommodation. It is followed by a 'Cottage/rondavel/hut (shared ablution)' (value = 32), then a 'Furnished tent (shared ablution)' (value = 19), and the **lowest value** = 14 for 'Camping (Caravans and tents)'. Thus hypothesis 6 is accepted.

Hypothesis 7: Under the same conditions, local tourists prefer the accommodation at the **Kruger National Park** above that of **Private Game Farms** and **Private Game Lodges**.

From the data of table 6.3 the **highest average utility value** = 34 for the 'Kruger National Park', followed by 17 for a 'Private Game Lodge', while the **lowest value** = 11 for a 'Private Game Farm'. Thus hypothesis 7 is accepted.

Hypothesis 8: Local tourists prefer to visit the Kruger National Park **out of season**.

From the data of table 6.3 the **highest average utility value** = 18 for 'Out of season', and the **lowest value** = 4 for 'In season (peak time)'. Thus hypothesis 8 is accepted.

Hypothesis 9: Local tourists' **booking for accommodation** in the Kruger National Park is very obvious for the first three months.

From the results of question 32 (Section B) the percentage values for the <1, 1, 2 and 3 **booking in advance months** blocks are 29,3%, 13,2%, 14,5%

and 16,4%. Thus hypothesis 9 is accepted. See also Appendix A, question 32.

Hypothesis 10: Local tourists prefer to **make their own meals** independent of their income.

From the data of table 6.3 the **highest average utility value** = 13 for 'Prepare own meals', and the **lowest value** = 8 for 'Eat in restaurant'. Thus hypothesis 10 is accepted.

6.4 RECOMENDATIONS

Some of the recommendations and discussions have been described in chapter 3 under points 3.6 (Marketing of the Kruger National Park), 3.6.1 (Economic, financial and ecotourism aspects) and 3.6.2 (Marketing aspects of the Kruger National Park). It should be seen and implemented together with the following recommendations:

Ecotourism

- During the planning stage look intensively at the accessibility, carrying capacity and visitor-friendly service
- Make some unknown areas more accessible for nature lovers.

Service

- The service given to sister organisations, government departments, schools, universities, other tertiary organisations and the local general public must be of the highest standard possible - therefore try to make the Kruger National Park a service-driven organisation
- Improve the efficient conservation communication with emphasis on:
  - Give as much interesting and stimulating information as possible through the media
  - Give environmental interpretation and education
  - Put special emphasis on public relations
  - Make TV-programs, talks and write articles for the media

  - Emphasise Africa's fascination and uniqueness as a continent with its breathtaking nature life phenomena
- More participation of local communities' through the marketing and selling of their handicraft.

Pricing

- Lower the prices of accommodation for local tourists
- Lower the prices of goods in the shops for local tourists
- Lower the prices of meals in the restaurants for local tourists
- Lower the entrance fees for scholars, students and pensioners
- Give special discounts during the out-of-season times for photographers and nature lovers
- Educate the local tourists more about the environment
- Strive to be more financially independent from funds of local tourists if possible
- Use the income generated by the Kruger National Park for the Park only
- Do research on the possibility of a **two-tier price system for local and foreign tourists** - i.e. local visitors must pay less for a visit to the Kruger National Park as in Botswana for instance.

Marketing

- Research the divergent tastes of local tourists
- Improve the marketing efforts of the National Parks Board for the Kruger National Park
- Improve the image of the Kruger National Park.