THE IMPACT OF PRICE DISCRIMINATION ON TOURISM DEMAND

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Statements and suggestions made in this thesis are those of the author and should not be regarded as those of the North-West University (Potchefstroom Campus)

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SUMMARY

Descriptors: Tourism; tourist; foreign tourist, domestic tourist; market; industry; monopoly; perfect competition; demand; supply; elasticity; inflation; exchange rate; consumer price index; consumer surplus; producer surplus; pareto efficiency and price discrimination.

The primary goal of this study was to determine the impact of price discrimination on tourism demand. Four objectives were defined with reference to the primary research goal.

The first objective was to analyse the concept of price discrimination and relevant theories by means of a literature study. In this regard it was found that price discrimination between markets is fairly common and that it occurs if the same goods were sold to different customers at different prices. Price discrimination is also possible as soon as some monopoly power exists and it is feasible when it is impossible or at least impractical for the buyers to trade among themselves. Three different kinds of price discrimination can be applied, namely first-degree, second-degree and third-degree price discrimination. The data also indicated that price discrimination is advantageous (it mainly increases profit) and that it has several other effects too.

The second objective was to analyse examples of price discrimination by means of international case studies. In these different case studies it was found that demand and supply, therefore consumer and product, formed the basis of price discrimination. If demand did not exist, it would be impossible to apply price discrimination. The findings also indicated that, for an organisation to be able to practice price discrimination, the markets must be separated effectively and it will only be successful if there is a significant difference in demand elasticity between the different consumers. Furthermore, the ability to charge these different prices will depend on the consumer's ability and willingness to pay. If an organisation

should decide to price discriminate, it would lead to a higher profit, a more optimal pricing policy and also to an increase in sales.

The third objective was to analyse national case studies. This was done through comparing the data of a tourism organisation price discriminating (Mosetlha Bush Camp, situated in the North West) to two organisations that did not implement price discrimination (Kgalagadi Transfrontier Park in the Northern Cape and Golden Leopard Resort, also situated in the North West). It was found that a customer with low price elasticity is less deterred by a higher price than a customer with a high price elasticity of demand. As long as the customer's price elasticity is less than one, it will be very advantageous to increase the price: the seller will in this case get more money for less goods. With the increase in price the price elasticity tends to rise above one.

The fourth objective was to draw conclusions and make recommendations. It was concluded that price discrimination could be applied successfully in virtually any organisation or industry. Furthermore, price discrimination does not always have a negative effect; but can have a positive ass well. It can have a positive effect on tourism demand. The findings emphasised that the main reason for implementing price discrimination is to increase profit at the cost of reducing consumer surplus. From the results it was recommended that more research on this topic should be conducted.

OPSOMMING

Sleutelwoorde: Toerisme; toeris; buitelandse toeris; binnelandse toeris; mark; industrie; monopolie; perfekte kompetisie; vraag; aanbod; elastisiteit; inflasie; wisselkoers; verbruikersprysindeks; verbruikersurplus; verskaffersurplus; parreto doeltreffendheid; prysdiskriminasie.

Die primêre doelwit van die studie was om die impak van prysdiskriminasie op toerismevraag te bepaal. Vier doelwitte is geïdentifiseer vanuit die primêre navorsingsdoelwit.

Die eerste doelwit was om die konsep van prysdiskriminasie en relevante teorieë deur middel van 'n literatuurstudie te analiseer. In hierdie verband is daar bevind dat prysdiskriminasie tussen markte redelik algemeen is en dat dit voorkom as dieselfde produk verkoop word aan verskillende verbruikers teen verskillende pryse. Prysdiskriminasie is ook moontlik sodra daar 'n monopolie bestaan en is voordelig wanneer dit onmoontlik is vir kopers om self handel te dryf. Drie verskillende vorms van prysdiskriminasie kan toegepas word, naamlik eerste-, tweede- en derdegraadse prysdiskriminasie. Dit is duidelik dat prysdiskriminasie voordelig is en dat dit hoofsaaklik kan lei tot 'n styging in wins. Hierbenewins het dit ook verskeie ander effekte.

Die tweede doelwit was om voorbeelde van prysdiskriminasie deur middel van internasionale gevallestudies te analiseer. In hierdie gevallestudies is daar bevind dat vraag en aanbod, dus verbruiker en produk, die basis van prysdiskriminasie vorm. As vraag nie bestaan het nie, sou dit onmoontlik gewees het om prysdiskriminasie toe te pas en sou dit ook geen nut gehad het nie. Die bevindinge het ook aangetoon dat vir 'n organisasie om in staat te wees om te prysdiskrimineer, die markte effektief verdeel moet kan word en dat dit ook net suksesvol sal wees as daar 'n beduidende verskil in die vraagelastisiteit van die verkillende verbruikers is. Verder sal die vermoë om verskillende pryse te vra afhang van die verbruikers se vermoë en bereidwilligheid om te betaal. As 'n

organisasie wel sou besluit om prysdiskriminasie toe te pas, kan dit lei tot 'n hoër wins, 'n meer optimale prysbeleid en ook tot 'n styging in verkope.

Die derde doelwit was om nasionale gevallestudies te analiseer. Hierdie doelwit is bereik deur die data van 'n toerisme-organisasie wat prysdiskriminasie toepas (Mosetlha Bush Camp, geleë in the Noordwes) te vergelyk met twee organisasies wat nie prysdiskriminasie toepas nie (Kgalagadi Transfrontier Park in Noord Kaap en Golden Leopard Resort , ook geleë is in die Noordwes). Daar is bevind dat 'n verbruiker met 'n lae pryselastisiteit minder afgeskrik word deur 'n hoë prys as 'n verbruiker met 'n hoër pryselastisiteit. Solank die verbruiker 'n pryselastisiteit van minder as een het, sal dit baie voordelig wees om die prys te verhoog. Die verkoper sal in hierdie geval meer geld kry vir minder produkte. Met die styging in prys is die pryselastisiteit geneig om te styg tot hoër as een.

Die vierde doelwit was om gevolgtrekkings en aanbevelings te maak. Daar is tot die gevolgtrekking gekom dat prysdiskriminasie suksesvol toegepas kan word in feitlik enige organisasie of industrie. Prysdiskriminasie het ook nie altyd net 'n negatiewe uitwerking nie, maar kan ook positiewe gevolge hê, en dit kan lei tot 'n styging in toerismevraag. Die bevindinge het ook beklemtoon dat die hoofrede vir die toepassing van prysdiskriminasie is om wins te verhoog. Vanuit die resultate is daar aanbeveel dat meer navorsing oor hierdie spesifieke onderwerp aangevoer moet word.

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1

INTRODUCTION, MOTIVATION AND GOAL OF THE STUDY

1.1 INTRODUCTION

Travelling for recreational purpose is not a new phenomenon. It already existed for centuries and dates back to pre-biblical times **(Adler, 1989)**. However, tourism has only become a globally significant enterprise in the latter part of the twentieth century. The growth in tourism since then has been so dramatic that it has been claimed as the single largest industry in the world **(WTTC, 1999; Jenner & Smith, 1992; Miller, 1990)** and the world's largest generator of jobs **(WTTC, 1999)**. It became a significant contributing sector of the global economy and also has a major effect on the economy of a destination area **(Mathieson & Wall, 1982)**. International tourism is growing continuously, making a major contribution to economic viability of many countries today **(Hassan, 2000)**. Organisations such as the World Conservation Union (IUCN), United Nations, large corporations, national governments, education institutions and non-profit groups, as well as researchers, have all recognised this global phenomenon.

Price discrimination between different markets is fairly common **(Tisdell, 1972)** and exists in every industry. If a monopolist decides to practice price

discrimination the following two questions must be considered: What price should it charge each class of buyer and how much output should it allocate to each class of buyer **(Mansfield, 1988)**?

Businesses operating in a competitive market are not restricted to charge only one price for their product **(Ruby, 2003b)**. With price discrimination a monopolist is able to charge different prices to different people or different unit prices for successive units sought by a given buyer **(Miller, 1994)**. The firms may find that by charging these different prices to the different customers for a common product, they may actually increase profit **(Ruby, 2003b)**.

Therefore, the objectives of this chapter are:

- To formulate the reason for this study (problem statement);
- To specify the goal and objectives of the study;
- To give an overview of the method of research; and
- To clarify the most important concepts that will be used frequently in this study.

1.2 PROBLEM STATEMENT

How does a firm with market power set a price? Prices are set according to a pricing strategy. By using a more complicated pricing strategy different customers can be charged different prices. To design such a pricing strategy, managers need more information about the market demand. The more complicated the strategy, the more information about demand will be required **(Pindyck & Rubinfeld, 1989)**.

A pricing strategy's basic objective is to enlarge the customer base to which the firm can sell and to capture as much consumer surplus as possible, transferring it to the producer by converting it into additional profit. There are a number of ways to do this and it usually involves setting more than a single price. The most common way is by using price discrimination **(Pindyck & Rubinfeld, 1989)**.

Price discrimination sounds like a bad thing, something violating our basic constitutional rights. In some instances it has certain advantages and in other instances it may have certain disadvantages. In fact it is often a disguised subsidy to the poor. In tourism context price discrimination occurs when two or more prices are charged for the same tourism product or service **(Slavin, 1998)** or sometimes if different prices are asked for a small variation in the product **(Pindyck & Rubinfeld, 1989)**. Tourism is an industry similar to other industries like agriculture and mining, which depends on the continued availability of resources upon which it is based. In other words, it is a resourced-based industry, selling to non-local and local markets, but one whose failure and success depend on careful management **(Strydom, 1993)**.

The literature study indicated a number of studies done in this regard, which are reflected in Table 1.1

Table 1.1: Previous case studies on price discrimination

RESEARCHERS	YEAR	TOPIC
Granberg, T & Meyer, J	1981	Transport inefficiency and the choice of spatial pricing
Hellerstein, R	1996	Price discrimination
Stavins, J	1996	Price discrimination in the airline market: the effect of market concentration
Corts, K	1998	Indiscriminating pricing
Kraft, E.R; Srikar, B.N & Phillips, R.L	2000	Revenue management in railroad application
Alpizar, F	2002	Pricing of protected areas in nature-based tourism
Fetzer, J	2002	Person sitting next to you on the airplane
Leslie, P	2002	Broadway Theatre
Pearson	2002	Airlines in America: Saturday night fever

Giaume, S & Guillou, S	2004	Price discrimination and concentration in European airline markets
Howard, D & Crompton, J	2004	Tactics used by sports organizations in the United States to increase ticket sales

According to the above studies, price discrimination can have the following advantages: a greater total profit than there would have been under a single price; additional profit; bringing new customers into the market; and achieving a more optimal pricing policy. Feasibility is here the main reason for engaging in price discrimination, leading to increased revenues and profits from the same level of output and unit sales **(Miller & Meiners, 1986)**. It can also have disadvantages, where price discrimination in general is not good for consumers and can induce inefficiency by creating gaps between marginal valuations of different customers. The only problem existing here is to identify customers and to get them to pay different prices **(Pindyck & Rubinfeld, 1989)**. However, price discrimination in general is not always possible and cannot always be implemented in every business. According to **Azar (2003)** and **Prusa (1994)** there are several potential reasons why an organisation or company might be unable to price discriminate between markets:

- Regulation: in railroad, transportation, telecommunications, postal services, for example, "governments often impose a universal service requirement that includes a condition that the price in the rural market cannot exceed that in the urban market".
- Anti-dumping provisions in international trade: it involves the comparison of prices across countries **(Prusa, 1994)**.
- Arbitrage: it is particular relevant in the case where various markets represent different geographic locations rather than different products. Consumers may, with a high enough price difference, purchase in a market other than their geographic location. Others may take

advantage of arbitrage opportunity, by purchasing in the cheap market and selling in the more expensive one **(Azar, 2003)**.

Many firms serve more than one market, either because it operates in more than one geographic location or because it sells more than one product. In most cases the firm is free to choose different prices in different markets, sometimes ending up unwilling or unable to price discriminate between these markets.

Based on the above, this study attempts to address the following question: **What is the impact of price discrimination on tourism demand?**

1.3 GOAL OF THE STUDY

The following goal and objectives will guide this study:

1.3.1 Main goal

The goal of this study is to determine the impact of price discrimination on tourism demand.

1.3.2 Objectives

The achievements of this goals relies on the following objectives:

Objective 1

To analyse the concept of price discrimination and the relevant theories.

Objective 2

To analyse examples by means of international case studies to determine the effect of price discrimination on tourism demand.

Objective 3

To analyse the data of tourism organisations implementing price discrimination (national case studies).

Objective 4

To draw conclusions and make recommendations on price discrimination and its implementing.

1.4 METHOD OF RESEARCH

The study followed a two-pronged approached. Firstly, it is based on a literature study and secondly on case studies.

1.4.1 Literature Study

The literature mainly focuses on the analysis of price discrimination as well as examples of price discrimination by means of case studies in order to determine the effect of price discrimination on tourism demand.

A qualitative study was done based on journal articles, books (tourism and economic related) and the internet. The internet in this case played a vital role in the searching for recent publications and information. The study included the following specific keywords, namely *tourism; tourist; foreign tourist, domestic tourist; market; industry; monopoly; perfect competition; demand; supply; elasticity; inflation; exchange rate; consumer price index; consumer surplus; producer surplus; pareto efficiency and price discrimination.*

The above information was interpreted and applied to complete this study.

1.4.2 Case Studies

Information and statistics were gathered on tourism products in South Africa. The target market included was Mosetlha Bush Camp (Madikwe Game Reserve) in the North West, Kgalagadi Transfrontier Park in the Northern Cape and Golden Leopard Resort (Manyane Resort and Bakgatla Resort), also in the North West.

The tourism products were chosen in co-operation with the supervisors of this study, Prof M Saayman and Prof A Saayman of the North-West University, Potchefstroom Campus. The above-mentioned tourism products were the only products willing to co-operate in this matter, by supplying the necessary information and statistics to complete this study. Furthermore, all these products were similar wildlife products.

The aspects this study covered included the background, the maximum tourist carrying capacity, reasons for implementing price discrimination, visitor numbers, effect of price elasticity and negative aspects (if any problems were experienced with the implementing of price discrimination).

The above-mentioned aspect captured the following calculations: inflation rate (the general change in price), real change in price (the nominal change in price minus inflation rate) and price elasticity of demand (the percentage change in quantity demand divided by the percentage change in price). To determine the price elasticity of demand, the real change in price will be used, because the price of some products may increase more than that of other products. Therefore, it would be better to make use of the average change in price (the assumption is all other factors are equal).

To determine the impact of price discrimination, which is the aim of this study, the price elasticity of demand will be calculated and used (price discrimination is about selling the same product at different prices to different consumers). The price elasticity of demand is the percentage change in quantity demand divided by the percentage change in price. It will be used to measure the consumer's degree of sensitivity and responsiveness to the change in price and also to determine its impact on tourism demand. The above will show if the consumers were relatively responsive to price changes (elastic demand – coefficient has a value bigger than one) or if the consumers were relatively unresponsive to price changes (inelastic demand – the coefficient has a value between 0 and 1). These results will make it possible to determine the impact of price discrimination on tourism demand.

The information and statistics of this study were gathered through interviews, e-mail interviews, WebPages, brochures and pamphlets. The above-mentioned information and statistics were processed and compared with each other.

1.5 DEFINITION OF TERMS

The following concepts are used in this study and are defined below.

1.5.1 Tourism

Table 1.2: Definitions of the term *tourism*

Saayman (2000), Saayman (1996b), and Foster (1985)	The total experience that originate from the interaction between tourists, job providers, government systems and communities in the process of attracting, entertaining, transporting and accommodating tourists.
Saayman & Van Niekerk (2002)	Tourism in a simple form can be seen as journeys to other places, where the tourist spend money, makes new friends, learns new cultures, and where the tourist can enjoy himself or herself.
Bull (1991:1)	A human activity which encompasses the use of resources, human behaviour and interaction with other people, environment and economies.
Holloway (1998), Botha (1996), Nickerson (1996); Pearce (1995) and Middelton (1988).	An activity concerned with the temporary short-term movement of people to destinations outside the places where they normally work and live and the activities at the destinations during their stay, it includes every visit.

Middelton (1994) and Williams & Shaw (1991)	Travelling away from home for a period of more than 24 hours, the principal purpose is business or recreation activities, but may also include educational motives, visiting family or health reasons.
Lickorish & Jenkins (as quoted by Tranter, 2000)	This movement can be the movement of national (domestic), residents travelling only within this country or international (inbound tourism), that involves non-residents travelling in a given country outside the borders. Then there is outbound tourism, which involves residents travelling in other countries.

According to Table 1.2, the core elements of the tourism definitions include a total experience from a visit, short-term movement, outside the living and work place, activities during the stay and spending money. Thus, for the purpose of this study the definitions of **Holloway (1998), Botha (1996), Nickerson (1996), Pearce (1995)** and **Middelton (1988)** will be used. The above definitions were combined and can be defined as an activity concerned with the temporary short-term movement of people to destinations outside the places where they normally work and live and the activities at the destination during their stay, including every visit.

1.5.2 Tourist

Tourists are potential markets who purchase a number of diverse tourism and travel services. If a destination has a clearer understanding of why products are in demand, it will not only be able select the advertising and sales message used to inform and persuade those tourists to buy the product, but also to tailor the products more closely to the needs of their tourists **(Holloway *et al.*, 1995)**.

Various authors have endeavoured to define the term *tourist*. Table 1.3 contains selected definitions of this term.

Table 1.3: Definitions of the term tourist

Saayman (1996b) & Foster (1985)	• A person who travels under normal circumstances from place to place. • A person who spends money while travelling. • Someone who spends more than one night but less than a year, including business trips.
Holloway (1998)	Someone who travels for a period of at least 24 hours in a country other than that at which he usually resides.
Truter (1994)	A tourist is a developed, intelligent, cultured and confident person. It is a person who determines the nature of tourism.

Table 1.3 identifies the following important points in determining whether a person is a tourist: a tourist is a person who spends money, travelling period, travelling outside the country where he or she usually resides, and someone who is a voluntary visitor. Based on this, the definition of **Saayman (2000)** will be used for the purpose of this study, in which a tourist is defined as a person who voluntarily visits a place away from his normal abode, for a period of at least 24 hours, contributing an economic input.

1.5.2.1 A foreign tourist

A foreign tourist is any person visiting a country other than the home country, for a period of at least 24 hours **(Saayman, 2000)**.

1.5.2.2 A domestic tourist

A domestic tourist is a local inhabitant who travels within a country from one area or province to another area or province for a vacation or business **(Saayman, 2002)**.

For the purpose of this study, *respondents* or *visitors* implies *tourists*.

1.5.3 Market

The market consists of consumers and organisations buying and selling a well-defined product **(Anon, 2005c)**.

According to **Holloway & Robinson (as quoted by Saayman, 2001)**, a market is a set of all the actual and potential buyers of a product.

1.5.4 Industry

An industry is a group of organisations that sells a closely related set of products or a well-defined product, for example, the safari and game hunting industries **(Anon, 2005c)**.

1.5.5 Monopoly

In the case of a monopoly, there exists only one, sole supplier of commodity for which there are no close substitutes. It may be a group of organisations operating together or a single organisation. In this case the organisation has the total power over the market to influence the price or other terms on which the product is sold. Monopoly organisations can set the price **(Wikipedia, 2006)**.

1.5.6 Perfect competition

It is a market structure in which an individual organisation has no power to influence the price or any other terms on which the product is sold. The individual organisation sells their products at the prevailing market price **(Anon, 2005c)**.

Assumptions

- The market contains a large number of sellers and buyers, each of which cannot individually influence supply or demand, hence price.
- Organisations produce goods that are close substitutes or identical, so that the consumers do not care which organisation's product they buy.
- All sellers and buyers are well informed about price and alternatives.
- All factors of production are free and can move from one organisation to another throughout the industry.
- There are no exit barriers and entry to organisations **(Anon, 2005c)**.

1.5.7 Demand

Demand refers to the quantities that individuals will purchase of a service or good during a specified period at various possible prices, if all other things are constant **(Miller, 1994)**. It also relates to the price a person is willing to pay for different quantities of a service or a good. According to **Bull (1993)** demand may be defined as the driving force of need in the economy, which stimulates entrepreneurial activity in producing goods and services required to satisfy that need, in exchange for the appropriate reward.

1.5.8 Supply

Supply may be defined as the value of final output that firms are prepared to sell, plus the value of imports **(Cullen, 1997).** It may also be a planned amount, thus the amount that producers or sellers planned to sell at each price. Here there is no guarantee that the amount supplied will be sold. The amount sold depends on the demand for the specific product and is measured over a period such as a hour, week, day, month and so on **(Fourie *et al.*; 1996)**.

Law of supply: If demand is held constant, a decrease in supply leads to an increase in price, while an increase in supply leads to a decreased price **(Anon, 2005e)**.

1.5.9 Elasticity

Elasticity of demand measures how much the quantity demand changes with a given change in consumers' income, a change in the price of the item, or a change in the price of a related product **(Anon, 2005b)**.

The law of demand may be defined as follows: "When the price of goods increase, people buy less of a product, other things being equal. When the price of goods decrease, people buy more of it, other things being equal" **(Fourie *et al.*, 1996)**.

The degree of sensitivity or responsiveness of consumers to a change in price can be measured by the concept of price elasticity of demand.

- Demand is said to be elastic if consumers are relatively responsive to price changes.
- Demand is inelastic if consumers are relatively unresponsive to price changes.

The terms *inelastic* or *elastic* describe the degree of responsiveness.

Price elasticity formula

Price elasticity of demand is the percentage change in quantity demand divided by percentage change in price.

$$Ed = \frac{Q_2-Q_1}{Q_1} / \frac{P_2-P_1}{P_1}$$

(Anon, 2005b).

E_v=0: Total inelastic

The price does not have any effect on the quantity of goods that are bought.

E_v<-1: Inelastic demand

In this case the coefficient has the values between 0 and 1, thus one or another facture. The proportional change in quantity demand is smaller than the proportional change in price.

E_v=-1: Unit elasticity

The percentage change in quantity demand is the same as the percentage change in price. The answers in both cases are not 1.

	E_v>-1	E_v=-1	E_v<-1
Price decreasing	TR increase	TR is constant	TR decrease
Price increasing	TR decrease	TR constant	TR increase

TR = Total income

P x Q (price of a product multiplied by the quantity of the product).

E_v>-1: Elastic demand

The percentage change in quantity demand is bigger than the percentage change in price.

E_v=-∞:Total elastic demand

For example:

	P	Q
A	3	2
B	3	4

(Van der Merwe *et al.*, 1997).

1.5.10 Inflation

Inflation is a considerable and continues rise in price in general. Four important aspects of this definition have to be considered. Firstly, there is the neutral definition, not attempting to define inflation in terms of a specific cause. The media often define inflation as "too much money chasing too few goods" or as "excessive increase in the money supply". The above definitions

exclude all the possible causes of inflation and only highlights a particular cause. Secondly, the definitions describe *inflation* as a process: inflation refers to a continuous increase in price. Inflation is a process in which the price of most services and goods are increasing from year to year or even month to month. Thirdly, inflation is a considerable increase in price.

Fourthly, inflation is an increase in price in general - an increase in the price of a particular good is not inflation (petrol or meat). Even when the overall level of prices remains constant, some prices decrease while others increase, in a response to a change in demand and supply. Inflation only occurs when the price of most services and goods increase. Therefore, economists often refer to inflation as an increase in general (or average) price level **(Anon, 2005d)**.

1.5.11 Exchange Rate

Exchange rate is the price of one currency (eg. Rand) in terms of another currency (eg. Dollar). Exchange rates can be quoted indirectly or directly. Quoted indirectly the amount of foreign currency required to purchase one unit of domestic currency is expressed. The direct method, on the other hand, shows how much of the local currency has to be exchanged for one unit of the foreign currency. For example, if one has to pay R8 to obtain one US dollar, the direct quotation is $1 = R8.00. Most countries use the direct method. In the above example the indirect quotation will thus be R1 = $ 0.125.

- **Nominal and real exchange rate**

The exchange rate quoted in money terms at any particular time is a nominal exchange rate. A real exchange rate can be calculated by taking price movements into account. For example, in the case of the United States and South Africa, the real exchange rate between the Dollar and the Rand is obtained by adjusting the nominal exchange rate by the ratio of United States prices to South African prices **(SARB, 2005b)**.

1.5.12 Consumer Price Index (CPI)

To measure inflation, a yardstick of general price levels will be needed. The most popular is the consumer price index, an index of prices of a reprehensive "basket" of consumer services or goods.

Once a set of CPI figures is available, an inflation rate can be calculated. This is done by calculating the percentage change from one period to the next. The inflation rate can always be expressed as an annual rate. For example, if the inflation rate is 10%, the prices are increasing at a rate of 10% per year. The most common method for calculating the inflation rate is by comparing the last month's CPI with that of the corresponding month of the previous year.

For example:
CPI for December 1999 = 132.3
CPI for December 1998 = 129.4

The inflation rate then will be:
(132.3-129.4) / 129.4 x 100
2.9/129.4 x 100
0.022 x 100
2.2%

When a calendar year's inflation rate has to be calculated, the average of all monthly indices in a particular year is to be compared with the corresponding average for the previous year.

For example:
Average monthly CPI 1999 = 131.1
Average monthly CPI 1998 = 124.6

The annual inflation rate for 1999 can be calculated by comparing the two figures.

(131.1 – 124.6) / 124.6 x 100
6.5 / 124.6 x 100
0.052 x 100
5.2% **(SARB, 2005a)**.

1.5.13 Consumer surplus

Consumer surplus measure the difference between the amount the consumer is actually required to pay and what he or she is willing to pay for a commodity. Thus, it compares the price of each commodity against the value of each unit of a commodity consumed **(Ruby, 2003a)**. According to **Hope (1999)** it is "simply the difference between what the individual pays at the market price and what he or she would be willing to pay as indicated by their demand curve".

Consumer demand, on the other hand, is a method used to measure willingness to pay **(Ruby, 2003a)**.

1.5.14 Producer surplus

Producer surplus is used to measure the welfare of a group of firms that sell a particular product at a particular price. Producer surplus is defined as the difference between the amount a producer would be willing to accept for a unit of the good and what the producer actually receives when selling a product. A market supply curve for a product can be used to read the organisation's willingness to accept payments; it shows the quantity of the good that a organisation would supply at each price that might prevail. In other words, the supply curve tells us the minimum price producers would accept for any quantity demand by the market **(Suranovic, 1999)**.

1.5.15 Pareto efficiency

An allocation is Pareto efficient if there is no other allocation in which one individual is worse off and some other individual is better off **(Osborne, 1997)**.

1.5.16 Price discrimination

Price discrimination involves selling different units of output at different prices **(Varian, 1996)**. It occurs when a firm charges some customers higher prices than others for the same product. The price difference cannot be explained by a difference in the cost of supplying.

According to **Robinson (as quoted by Wolfstetter, 1999)** it may also be defined as the act of selling the same article produced under single control, at different prices to different buyers.

Price discrimination can be categorised into three types:

- **First-degree price discrimination:**

Different units of output are sold for different prices; the prices may differ from person to person. This is also sometimes known as the case of perfect price discrimination **(Varian, 1996).** The different prices asked equal the consumer's exact willingness to pay **(Anon, 2003a)**.

- **Second-degree price discrimination**

The monopolist sells output to different people for different prices. In this case every individual who buys the same amount of goods pay the same price. Thus, price differs across the units of goods, but not across people **(Varian, 1996)**.

- **Third-degree price discrimination**

This type of price discrimination occurs when the monopolist sells output for different prices to different people, but every unit of the output sold to a given person sells for the same price. This is the most common form of price discrimination. Examples include: student discounts, senior citizens' discount and so on **(Varian, 1996).**

The above three types of price discrimination involve additional efforts on the part of the organisation to determine the willingness of the different customers

to pay and their preferences. Greater levels of profit relative to this can justify the efforts, which can be earned by charging a single price.

1.6 CHAPTER CLASSIFICATION

The study consists of five chapters. Chapter one is a general introduction to the study and deals with the motivations, goals and method of research. In chapter two price discrimination will be analysed, to give an overview of the broad topic. In chapter three, examples by means of case studies will be analysed to determine the effect of price discrimination on tourism demand. Chapter four focuses on organisations that implement price discrimination, and the results of the research will be analysed and discussed. Chapter five will present certain conclusions and recommendations.

CHAPTER

2

ANALYSIS OF PRICE DISCRIMINATION

2.1 INTRODUCTION

Tourism is universally the fastest growing and largest industry and has the prospect of increasing in growth and size **(Saayman & Saayman, 1997)**. Foreign tourism to South Africa has increased by more than 10% per annum since 1988 **(Saayman, 2000)**, making South Africa one of the fastest growing tourism destinations worldwide **(Van der Merwe, 2000)**.

Tourism interests people because it is associated with so many exciting things, such as holidays, unknown places, escape from routine, meeting new people, long journeys, rest and peace and enjoying other climates **(Truter, 1994)**. Each destination's attractiveness reflects the beliefs, feelings and opinions that an individual has about the perceived ability of a destination to provide satisfaction in relation to his or her special vacation needs **(Hu & Ritchie, 1993)**.

Sellers with a degree of monopoly power have the ability to charge different consumers different prices **(Rodda, 2001 & Wolfstetter, 1999)**. Price discrimination is a practice that cannot prevail in a competitive market, because of arbitrage. Arbitrage is a resale problem: those who buy at a low

price may resell to those who are charging a high price. Therefore, its existence suggests imperfection of competition **(Gravelle & Rees, 1992)**. Price discrimination is often assumed to be present if the same goods are sold to different customers at different prices **(Wolfstetter, 1999)**. The two essential ingredients for successful price discrimination are (i) the existence of different demand functions in the market segments and (ii) the ability to segment the market **(Russell & Wilkinson, 1979)**.

Therefore, the aim of this chapter is to analyse the concept of price discrimination and relevant theories. In order to achieve this, the chapter will be divided into the following sections:

- Different kinds of price discrimination;
- When is price discrimination required?;
- Steps for differential pricing;
- Effects of price discrimination; and
- Limits to price discrimination.

2.2 DIFFERENT KINDS OF PRICE DISCRIMINATION

Price discrimination is a device some organisations use for charging different consumers different prices for the same commodity **(Anon, 2005f)**. The main aim here is to ensure a desirable profit situation in the long run and furthermore to eliminate or limit competition **(Anon, 2004)**.

In order for a organisation to accomplish price discrimination, the organisation must firstly have some way of keeping speculators from buying the service or product at a low price and then simply reselling it at a high price **(McConnell & Brue, 1998; Miller, 1994)**. Secondly, they must have some market power **(Pigou, 1920)**. If price discrimination results from the presence of power on the buying side it will be profitable to the purchaser and not the seller **(Scherer, 1980)**. Thirdly, buyers in various markets must have different price elasticities of demand and finally, it must be possible to distinguish markets at

a reasonable cost **(Miller, 1994)**. Whether price discrimination is possible is very often determined by the characteristics of the product.

Price discrimination can take on a number of forms **(Mansfield, 1996)**. Economists generally consider different kinds of price discrimination. **Pigou (1920)** distinguishes three degrees of discriminating powers that lead to three types of price discrimination, namely first-degree price discrimination – charging whatever the market will bear, second-degree price discrimination – quantity discounts or versioning, and third-degree price discrimination – separate markets and consumer groups. Each of the above-mentioned types will be explained accordingly.

2.2.1 First-degree price discrimination

First-degree price discrimination involves charging different prices for every sale **(Rodda, 2001)**. Producers' ability to use first-degree price discrimination rests on consumers' willingness to pay for different units of the product **(Carroll & Coates, 2001)**. Under first-degree price discrimination each unit of the product that is valued most highly by individuals, is sold to them at the maximum price that they are willing to pay for it.

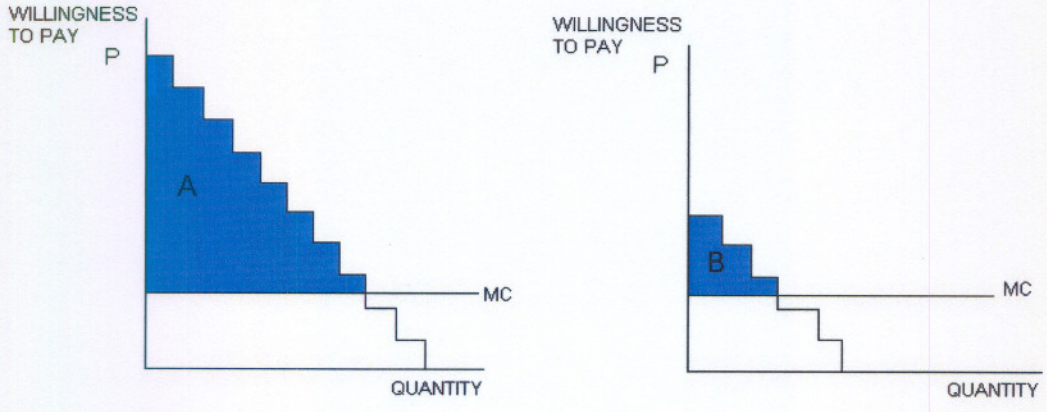


FIGURE 2.1: Two consumer demand curves for goods (Mansfield, 1996)

Figure 2.1 illustrates two consumer demand curves for goods. The organisation is aware of the maximum amount each consumer will pay for each amount of a commodity. Since it is assumed that products cannot be resold, the organisation can charge each consumer a different price. Since the organisation is assumed to be the profit maximiser, the prices will be established to extract the full value of consumer surplus from each consumer.

This price discrimination is a limiting case. It can only occur in the few cases in which an organisation has a small number of buyers and where they are able to guess the maximum price each buyer is willing to accept **(Mansfield, 1996)**.

If the organisation is able to perfectly price discriminate the organisation will be able to sell each unit of the goods at the highest price each consumer is willing to pay (known as the reservation price). Since each of the units is sold to each of the customers at his or her reservation price for that unit, no consumer surplus is generated in this market; thus the entire surplus goes to the producer. The shaded areas in Figure 2.1 indicate the producer surplus accruing to the monopolist. In the case of an ordinary competitive market setting, these areas would represent the consumer surplus.

In the case of price discrimination the monopolist is able to appropriate this surplus for himself. This can be looked at in another way: since the producer gets the entire surplus in the market he or she will most likely make sure that the surplus is as large as possible. The goal of the producers is to maximise profit (producer's surplus), to the constraint that consumers are willing to purchase the goods. The outcome will thus be Pareto efficient, and there will be no way to make both producers and customers better off: the consumer surplus cannot be increased without reducing the profit of the producer and the producer's profit can not be increased since it is already the maximum possible profit **(Varian, 1996)**.

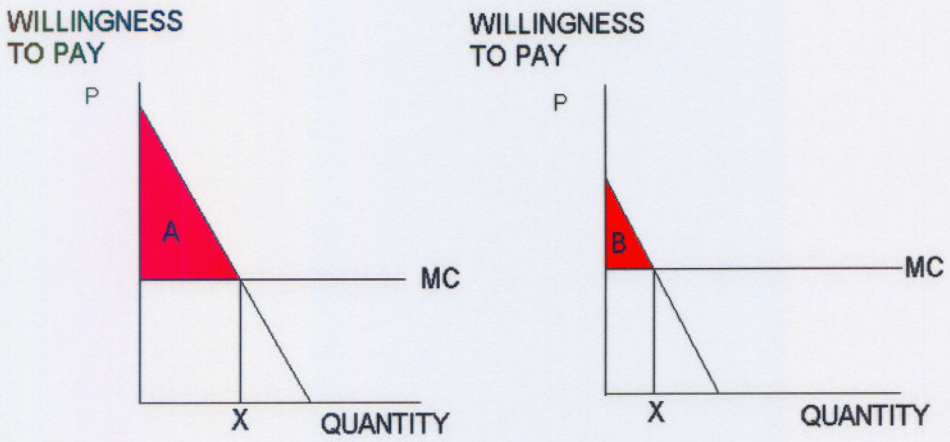


FIGURE 2.2: First-degree price discrimination (Varian, 1996)

Figure 2.2 shows two consumers' smoothed demand curves for goods, along with the constant marginal cost curve. The producer maximises profit by producing where price equals marginal cost. Here, it is possible to see that a price discrimination monopolist (perfectly) must produce at an output level where price equals marginal cost. If someone is willing to pay more than the cost to produce an extra unit of output, the price will be greater than marginal cost.

The sum of consumer surpluses and producer surpluses is maximised, but in the case of perfect price discrimination the producer ends up getting the entire surplus generated in the market.

First-degree price discrimination has been interpreted as selling each unit at the maximum price it will command. It can also be thought of as selling a fixed amount of the goods at a "take it or leave it" price. In Figure 2.2 the monopolist offers to sell X units of goods to person 1 at a price that is equal to area A and X units of the goods to person 2 at the price equal to area B. The entire surplus will end up in the hands of the monopolist, and each person will end up with zero consumer surplus **(Varian, 1996)**.

2.2.1.1 Perfect first-degree price discrimination

The term *first-degree price discrimination* is used to describe the largest possible extent of market segmentation **(Frank, 1997)**. To illustrate:

For monopolists who price discriminate perfectly the marginal revenue curve is exactly the same as the demand curve. The marginal revenue curve is now no longer relevant to the organisation's output decision, since each consumer is charged exactly what he or she is willing to pay for each unit.

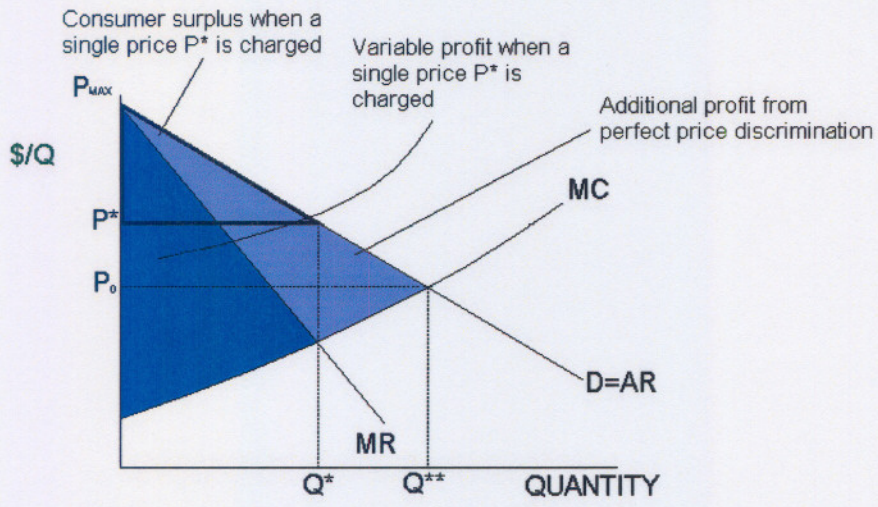


FIGURE 2.3: Perfect price discriminating monopolist (Pindyck & Rubinfeld, 1995).

Since the organisation's cost structure is not affected by price discrimination, the cost of each product is given by the organisation's marginal cost curve. Therefore, the profit from producing and also of selling each of the incremental units is now the difference between marginal cost and demand. Looking at Figure 2.3 the organisation can increase its profit by expanding production as long as demand exceeds marginal cost, and will do so until it produces a total output Q**. At Q** the demand is equal to marginal cost. Producing more will result in less profit.

If the monopolist had been forced to charge a single price for all of the units, then the organisation's variable profit will be the area between the marginal cost and marginal revenue curves **(Pindyck & Rubinfeld, 1995)** and there will also be consumer surplus (Figure 2.3) **(Frank, 1997).** In the case of perfect price discrimination the profit expands to the area between the demand curve and marginal cost curve.

The first factor to be determined is what profit an organisation will earn when it charges only a single price P*. To determine this, one needs to add the profit on each incremental unit produced and sold up to the total quantity Q*. Incremental profit in this case is the marginal revenue less the marginal cost for each unit. In Figure 2.3 this marginal cost is the lowest and the marginal revenue the highest for each unit **(Pindyck & Rubinfeld, 1995).**

- **Firms that can employ first-degree price discrimination have the following characteristics:**

    - There is generally a positive consumer surplus under the non-discriminating monopolist, but there is none under the perfect discriminator. There is pressure on the non-discriminator not to set the price too high, because the same price must be charged to all the buyers. If the price is set at the level at which the least elastic demanders are willing to pay, he will lose the patronage of all the others. The least elastic demanders will end up paying a price below that of respective reservation prices.
    - The perfect discriminator produces a higher level of output. The reason for this is that the producer does not need to be concerned with the effect of price cut on the revenue from output production thus far. A higher price can be maintained for those who are willing to pay, and the prices can be cut for the people who will not otherwise buy.

Perfect price discrimination is a never-attained theoretical limit. The seller only imperfectly knows details of an individual demand. Thus, the aim for the organisation is to appropriate the entire consumer surplus **(Rodda, 2001)**.

- **Reasons why perfect first-degree price discrimination is almost never possible in practice:**

Firstly, it is usually impractical to charge each customer a different price (unless there are only a few customers). Secondly, organisations usually do not know the reservation price of each customer (the maximum amount a customer is willing to pay for a service or product). The organisation can ask how much each customer is willing to pay, and will probably receive an honest answer. It is in the interest of the customers to claim that they will pay very little, because then they will be charged a low price **(Pindyck & Rubinfeld, 1995)**.

2.2.1.2 Imperfect first-degree price discrimination

There are cases where organisations can discriminate imperfectly, charging different prices to customers based on estimates of customers' reservation price (i.e. medical profession). It happens frequently when professionals (organisations) know their clients reasonably well. The client's willingness to pay can be assessed and the fee set accordingly.

Then there are the customers who like to shop around, having a good chance to receive discount (looking at it from a salesperson's point of view, a small profit is better than no sale and no profit), but there is no or very little discount offered to those customers who are in a hurry **(Pindyck & Rubinfeld, 1995)**.

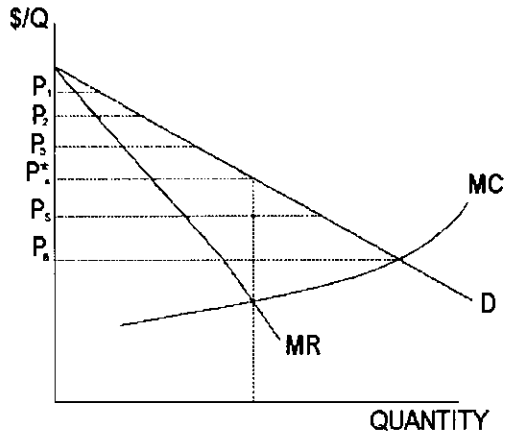


FIGURE 2.4: Imperfect first-degree price discrimination (Pindyck & Rubinfeld, 1995)

Figure 2.4 illustrates imperfect first-degree price discrimination. If only a single price was charged, it would be P_4. In this case there would have been fewer customers. Instead of this, six different prices were charged, where the organisations earn a higher profit and some of the customers may also benefit from it. In the above Figure, P_6 is the lowest price and is just above the point where marginal cost intersects the demand curve, making those customers who are not willing to pay a price of P_4 or more, better off in this situation (these customers are now in the market, and may be enjoying at least some consumer surplus).

If price discrimination brings enough new customers into the market, consumers' welfare can increase, so that both consumers and producers are better off **(Pindyck & Rubinfeld, 1995)**.

2.2.1.3 A problem with first-degree price discrimination

The problem is that the high-willingness-to-pay person can pretend to be a low-willingness-to-pay person. The seller may have no effective way to tell them apart. One way to get around this problem is to offer two different prices. One package will be targeted toward the low-demand person, the other package toward the high-demand person **(Varian, 1996)**.

Second-degree price discrimination is similar to first-degree price discrimination, which will be explained next, in the sense that both try to extract consumer surplus from each other.

2.2.2 Second-degree price discrimination

Second-degree price discrimination, also known as multipart pricing, involves charging different prices for different quantities **(Rodda, 2001)** or charging individuals different prices according to quantity purchased **(Anon, 2003b)**. This type of price discrimination can be found when there are many buyers within each market, and buyers differ in the number of units of goods they purchase **(Miller & Meiners, 1986)**.

Figure 2.5 illustrates how second-degree price discrimination functions.

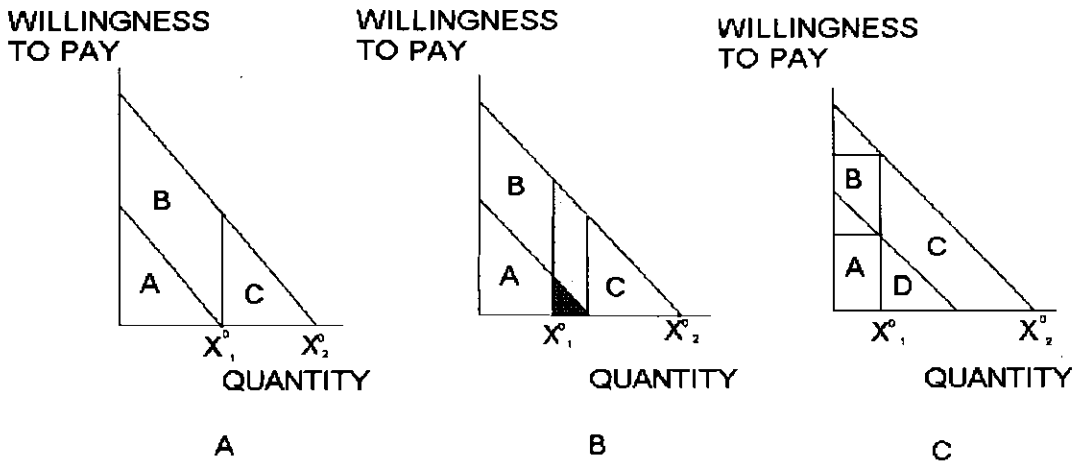


FIGURE 2.5: Second-degree price discrimination (Gravelle & Rees, 1992)

The above curves illustrate the demand curves of two consumers; the producers have zero marginal cost by assumption. Panel C illustrates the profit maximising solution. Panel A illustrates the self-selection problem, and Panel B shows what happens if the monopolist reduces the output targeted for consumers.

In Panel A the monopolist would like to offer $X_1°$ at price A, and offer $X_2°$ at the price A+B+C. It captures all surpluses for the monopolist and generates most possible profit. The high-demand consumer would be better off choosing quantity $X_1°$ and paying price A, leaving him or her with a surplus area equal to area B, which is better than the zero surplus if $X_2°$ was chosen. The monopolist can alternatively also offer $X_2°$ at a price of A+C. The high-demand consumer will find it optimal to choose $X_2°$ and to receive a gross surplus A+B+C.

Furthermore, the monopolist can also do the following to increase profit: The monopolist offers, instead of $X_1°$ at price A to the low-demand consumer, a price slightly less than A. This will reduce the profit of the monopolist on person 1 by the small black triangle, which is illustrated in Figure 2.5b. Since person 1's package is now less attractive to person 2, the monopolist can now charge person 2 $X_2°$. By reducing $X_1°$, the monopolist makes area A a little bit smaller (the black triangle), but it makes C bigger (triangle plus grey area). The net result will then be an increase in the monopolist's profit **(Gravelle & Rees, 1992)**.

The monopolist will want to reduce the amount offered to person 1 up to the point where profit lost on person 1 (due to further reduction in output) just equals profit gained on person 2. As illustrated in Figure 2.5c, the marginal benefit and cost of quantity reduction just balance at this point.

Person 2 chooses $X_2°$ and is charged A+B+C, ending up with a surplus of B. Person 1 chooses $X_1°$ and is charged 1, ending up with a zero surplus.

The monopolist in practice often encourages this self-selection not by adjusting the quantity of the goods, but rather by adjusting the quality of goods. For example:

There are normally two kinds of airline tickets offered by US airlines. One kind involves several restrictions, for example that the traveller must buy the ticket 14 days in advance and must stay over a Saturday night. The other fare has no restrictions. Business travellers find these unrestricted fares attractive, since their travel plans may change suddenly. With the presence of these restrictions the ticket is less attractive to business travellers (travellers with high willingness to pay), but the restrictions are still acceptable to tourists. Each type of traveller selects the fare class intended for him or her and the airline makes substantially more profit than they would have selling each at a flat price **(Gravelle & Rees, 1992)**.

2.2.2.1 Differences between first-degree and second-degree price discrimination

Second-degree price discrimination is similar to first-degree price discrimination in the sense that it extracts the consumer surplus from each buyer. The two principal differences are:

- The limited number of rate categories tends to limit the amount of consumer surplus that can be captured under second-degree schemes.
- Under second-degree schemes the same rate structure is available to every consumer; thus no attempt will be made to tailor charges to elasticity differences among buyers.

Second-degree schemes capture only a part of the triangle, as shown in Figure 2.7, where first-degree schemes capture the whole consumer surplus **(Frank, 1997)**.

2.2.3 Third-degree price discrimination

In this form of price discrimination consumers are divided into two or more groups, and for each group there is a different elasticity of demand **(Rodda, 2001 & Marchand, *et al.*, 2000)**, with prices charged according to the group's average demand function **(Anon, 2003b)**. Third-degree price discrimination is

airline fares" and so on. The sellers do not need to separate the total market into identifiable markets for the price discrimination to be profitable **(Marchand *et al.*, 2000)**.

Some characteristics are used to divide consumers into distinct groups. Senior citizens and students, for example, are usually willing to pay less for many goods than the rest of the population (because of their lower income). In these instances identity can be readily established (via driver's licence or ID). Likewise, to separate business travellers from vacationers (companies are usually willing to pay much higher fares), the airlines can put restrictions on the special low-fare tickets by requiring advance purchase.

If third-degree price discrimination is feasible, how should the organisation decide what price to charge each group of consumers? It can be considered as follows. The total output should be divided between consumer groups so that the marginal revenue for each group is equal **(Anon, 2002)**, otherwise the organisation would not be maximising profit. This is illustrated in Figure 2.6. According to **Miller & Meiners (1986)** in the separation condition for price discrimination the organisation must be able to separate markets, both in terms of preventing sales between markets and in terms of identifying persons or units of output that falls within a certain part of the market.

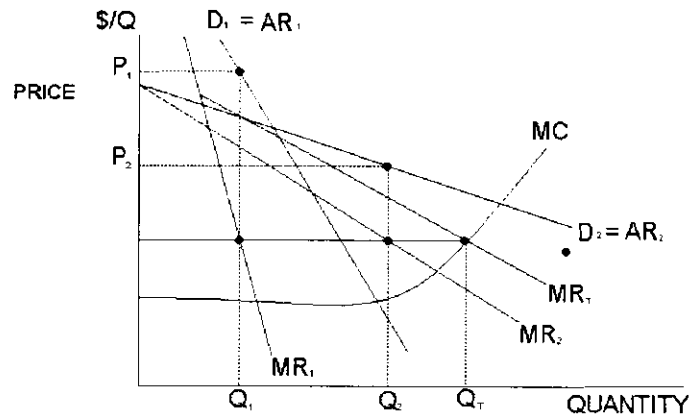


FIGURE 2.6: Third-degree price discrimination (Miller & Meiners, 1986)

In Figure 2.6 consumers are divided into two groups, each group with separate demand curves. The optimal quantities and prices are such that the marginal revenue from each group is equal at the same marginal cost. Group 1 is charged P_1, (demand curve D_1) and group 2 is charged the lower price P_2 (with a more elastic demand curve D_2), with the marginal cost depending on the total quantity produced Q_T.

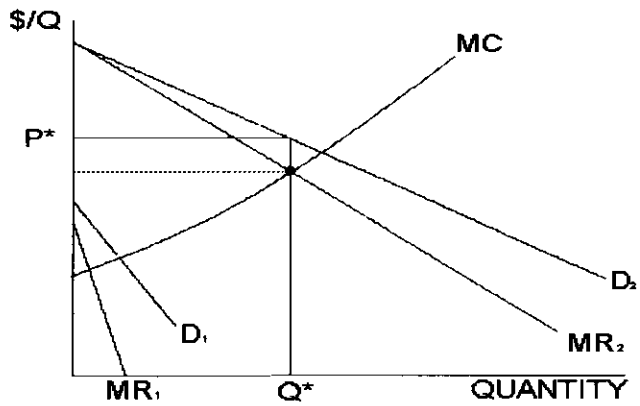
If there are two groups of customers, for instance, and the revenue for the first group (MR_1) exceeds marginal revenue for the second group (MR_2), the organisation could clearly do better by shifting the output from the second to the first group. This will be done by raising the price for the second group and lowering the price for the first group. Whatever the two prices, it must be such that marginal revenue is equal for the different groups **(Pindyck & Rubinfeld, 1995)**.

A second possibility is to ensure that marginal revenue for each of the groups of consumers is equal to the marginal cost of production. If this was not the case, the organisation could increase its profit by lowering or raising total output. If the marginal revenue for each group of consumers was the same and that marginal revenue exceeds marginal cost of production, the organisation could make a greater profit by reducing its total output **(Anon, 2002)**.

According to Figure 2.6, looking at this algebraically

P_1 – the price charged to the first group of consumers
P_2 – the price charged to the second group of consumers
$C(Q_T)$ – total cost of producing output $Q_T = Q_1 + Q_2$
The total profits is given by - $\pi = P_1Q_1 + P_2Q_2 - C(Q_T)$

In this figure the demand curve D_1 (first group of consumers) is less elastic than the curve for the second group, with the price charged to the first group being higher. The total quantity produced can be found ($Q_T = Q_1 + Q_2$) by summing the marginal curves MR_2 and MR_1 horizontally (yields dashed curve MR) and by finding its intersection with marginal cost curve. Since MC must equal MR_2 and MR_1, a horizontal line can be drawn leftwards from this intersection to find quantities Q_2 and Q_1. Thus, it may not always be worthwhile for the organisation to try to sell to more than one group of consumers **(Mansfield, 1996; Pindyck & Rubinfeld, 1995)**.



MR = Marginal Revenue
MC = Marginal Cost
D = Demand

This leads to the following explanations:
MR1 = Marginal Revenue in Sub-market 1
MR2= Marginal Revenue in sub-market 2

FIGURE 2.7: No sales to smaller markets (Pindyck & Rubinfeld, 1995)

Pindyck & Rubinfeld (1995) explains why it is not always worthwhile to sell to more than one group of consumers if marginal cost is rising, even if third-degree price discrimination is reasonable (see Figure 2.7). If the first group of consumers were not willing to pay much for the goods (with demand D_1), it would be unprofitable to sell to those groups, because the price would have to be too low to compensate for the resulting increase in the marginal cost.

Looking at Figure 2.7, the marginal cost for the other groups of consumers is rising steeply and the demand is small. The increased cost of producing and selling to this group may outweigh the increase in revenue, with the

organisation better off selling only to larger groups of consumers or charging a single price P*. This is because the additional cost for serving the smaller market would outweigh the additional revenue **(Pindyck & Rubinfeld, 1995)**. Suppose the monopolist can divide the market for this output into two sub-groups, between which arbitrage can be prevented at zero cost. Furthermore, one can assume that the cost of supplying is identical to the two sub-markets in a way that price difference between the sub-markets will arise from discrimination. In this case the monopolist knows the demand curves for each group. Q_2 and Q_1 are the quantities sold to the second and first groups respectively, with the total output $q = q_1 + q_2$.

Take q_0, for instance, and consider the division between the two sub-markets in such a way to maximise profit. Since total production cost is given (q_0), the profit (from division of this between the two markets) maximises if revenue maximises. Revenue is only maximised if q_2 and q_1 are chosen in such a way that the marginal revenues in each sub-market are equal.

The total output level may be determined in the following manner: if MR_1 ($=MR_2$) differed from marginal cost, it would be possible to vary output (in a way to increase total profit) by increasing output ($MR_1>MR_2$). For a maximum profit, the conditions of $MC=MR_1=MR_2$, with a price elasticity e_2 and e_1 should exist.

Here follows the basic relation that applies in this case:

$$MC = P_1 (1+1/e_1) = P_2 (1+1/e_2)$$

With the second equality:

$$\frac{P_1}{P_2} = \frac{1+1/e_2}{1+1/e_1}$$

If $e_1 = e_2$, then P_1/P_2 will be equal to 1, and there will be no discrimination. Discrimination will only occur as long as elasticities are unequal at the profit

maximising point. If $e_1 < e_2$ then $P_1<P_2$ and conversely. The monopolist will always set a higher price in the market with lower elasticity of demand, when a maximum profit is concluded.

2.2.3.1 When is third-degree price discrimination feasible?

It is feasible when it is impossible, or at least impractical, for the buyers to trade among themselves.

For example, if students from another country could trade with those in the United States, it will not be possible to sell a book for $50 in New York and for $12 in Calcutta. The entrepreneurial student will buy these books abroad and sell them to American students for $49 or cut the price even more. To buy at a low price from one source and then selling it at differential prices is called arbitrage. Arbitrage is not always practical. The student discounts enable theatre operators to segment its markets. It is not possible for one person to see a movie at a high price, and then sell the experience to someone else at a lower price. On the other hand, it is possible or practical for doctors and lawyers to charge different prices on the basis of differences in price elasticity of demand **(Frank, 1997)**.

2.3 WHEN IS PRICE DISCRIMINATION REQUIRED?

Price discrimination is sometimes necessary for an industry to continue existing.

Demand curves for two different classes of buyers of the product in question have been drawn. The two curves are labelled D_1D_1 and D_2D_2. Demand curve D_2D_2 is relatively more price-elastic than D_1D_1, because it cuts the vertical axis closer to the origin [Price elastic: "The demand for a product if its price elasticity of demand exceeds 1"] **(Mansfield, 1996)**.

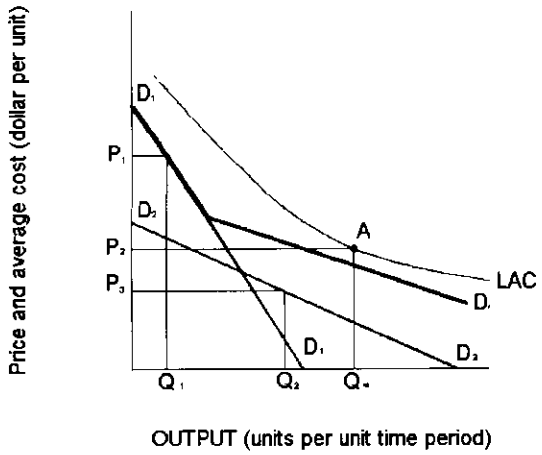


FIGURE 2.8: Demand curves for two different buyers of the demand curve (Miller & Meiners, 1986)

These two demand curves will now be summed up horizontally, in order to derive the total or market demand curve that a monopolist will face in this industry. This curve is the heavily shaded line, D_1D_T. It coincides with the demand curve D_1D_1 until the price at which D_2D_2 begins. The long run average cost curve (LAC) is everywhere above the market demand curve D_1D_T.

If they charge a single price in this market, there will be no single price that will allow the monopolist to cover long-run average cost. Thus, the industry will not be able exist.

If considering the possibility of third-degree price discrimination, the two different classes of demanders' profit-maximising prices are P_1 and P_2. Profit-maximising quantity sold to a class 1 demander is Q_1 and to a class 2 demander Q_2. The total quantity that a price-discriminating monopolist will provide is Q_m ($Q_1 + Q_2$), equal to long-run average cost at rate of output Q_m or point A. The weighted average price:

$$P_3 = \frac{Q_1P_1 + Q_2P_2}{Q_m}$$

If the long-run average cost curve is above the market demand curve D_1D_T (everywhere above), the organisation cannot exist without price discrimination. If the monopolist is allowed to charge P_2 to those with more elastic demand and P_1 to those with less elastic demand the average price P_3 will just equal the long-run average cost at point A. The industry can and will then exist **(Miller & Meiners, 1986)**.

2.4 STEPS FOR DIFFERENTIAL PRICING

An organisation must take the following five steps to achieve differential pricing policies:

2.4.1 Select a target market

It must already have been selected when the product is positioned.

2.4.2 Divide the target market into smaller customer segments

It is essential to develop a service strategy by choosing an optimal level and mix of service for different customer sets **(Yelkur & Herbig, 1997)**. The target market is segmented into smaller customer groups, based on the characteristics of the usage situation and on the attributes of users. The "usage situation" gives a guideline to the hotel management to segment his or her customers. The customer's perception of the service varies, depending on the situation. Thus, segmentation requires an understanding of the when, what, how, where and why of demand. The usual market segment and service segments differ in a significant way. Customer services, for one thing, tend to be narrower. The narrower the segments, the more homogeneous the segments tend to be, making it easier to estimate the demand of consumers.

Ways to identify consumers and their separated demands

- Long-term relationships such as car dealers, insurance agents, jewellers, furriers, appliance repairmen, doctors, tailors etc;
- Sex;
- Age;

- Type of job;
- Family status;
- Method of payment (e.g. cash or internet payment).
- Place of residence; and
- Other commonly bought items **(Anon, 1999)**.

2.4.3 Estimate the demand for each customer

This can be done by a method suggesting that there are many customers in the target market, each with different characteristics (indicating the customer's type).

2.4.4 Determine reservation price (which indicates willingness to pay) for each segment

The reservation price is the maximum amount a customer is willing to pay for a service or product **(Gultinan, 1987)**. It indicates the customer's willingness to pay and is the underlying benchmark for setting different prices for different customer segments. Classifying customers by the value they place on the service often creates a rough idea of the price that they are willing to pay and the cost of satisfying them. The following formula can be used to calculate a customer's reservation price, namely:

$R_p + f(V,N)$

Where:

R_p = reservation price

V = value of service to the consumer; and

N = number of organisations offering a similar service (**SEE APPENDIX 1**) **(Yelkur & Herbig, 1997)**.

2.4.5 Determine prices for each segment

The above steps are illustrated for the hotel industry in the **APPENDIX 1**

2.5 EFFECTS OF PRICE DISCRIMINATION

The specific effect depends on the type of price discrimination practised by the organisation. This depends on what the organisation can learn or know about the buyer's price elasticity. It is possible for an organisation to engage in this practice, regardless of the type of price discrimination.

Price discrimination has several effects, namely:

- Effects on distribution and efficiency;
- Social effects;
- Effects on economic welfare;
- Effects on the efficiency of an economic system; and
- Effects on the seller (producer) and buyer (consumer).

2.5.1 Effects on distribution and efficiency

It is possible for an organisation practising first-degree price discrimination to expand output to the point where price equals marginal cost. Price discrimination will improve efficiency when an organisation has full and perfect information about consumer demand. But the added efficiency comes at a cost, namely the cost of transferring all the gains from trade consumers to the organisation.

Second-degree price discrimination distributional and efficiency effects depend on:

- Whether increased output and losses incurred from introducing different marginal valuation across consumers;
- The shapes of demand and cost curves; and
- What type of second-degree price discrimination is possible **(Carroll & Coates, 2001)**.

2.5.2 Social effects

Price discrimination will have, depending upon the circumstances of each case, varying social effects.

Firstly, it enables an organisation to eliminate all competition and may result in the obstruction of structural or technological advance or in a reduction of long-run output. Secondly, it enables a business to achieve economics of plant utilisation or scale and tend to have an opposite effect. The same will also happen when it leads to the break-up of a cartel situation characterised by price inflexibility. Thirdly, it may have different income distribution effects, which may cost an income-shift favouring either a large number of poorer people or a small number of well-to-do individuals. The problem of price discrimination is an intricate one; it hardly permits a simple solution **(Anon, 2002)**.

2.5.3 Effects on economic welfare

The effect of price discrimination on economic welfare begins by assuming that the monopolist can price discriminate perfectly. In the case of perfect price discrimination the monopolist knows the exact willingness to pay, and in every transaction the monopolist gets the entire surplus. Figure 2.9 shows the consumer and producer surplus with and without price discrimination.

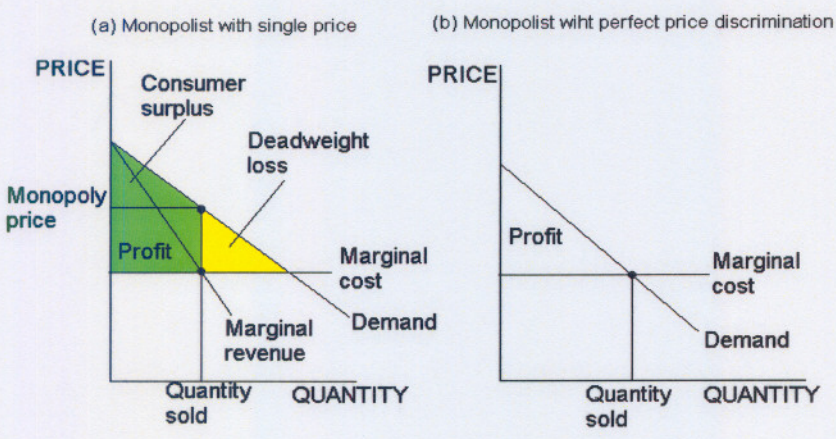


FIGURE 2.9: Welfare with and without price discrimination (Mankiw, 2001)

In Panel A of Figure 2.9 there is a monopolist who charges the same price to all the customers, with the total surplus equal to the sum of producer surplus and consumer surplus. The monopoly causes a deadweight loss, because the potential customers who value the goods at more than marginal cost do not buy at this high price.

Panel B, on the other hand, shows where a monopolist price discriminates perfectly. The customer buying the goods is a customer who values the goods at more than marginal cost (charged for his willingness to pay), there is no deadweight loss and the entire surplus goes to the monopoly producer in the form of profit. The total surplus here equals the organisation's profit, because consumer surplus equals zero. Thus, comparing the above two panels, it can be seen that perfect price discrimination raises total surplus, raises profit and lowers consumer surplus **(Mankiw, 2001)**.

Price discrimination in reality is not perfect; customers do not walk into the store with their willingness to pay displayed everywhere. Instead organisations price discriminate by dividing customers into groups: weekday versus weekend shoppers, young versus old and American versus Australians and so on. This is a form of market segmentation.

How does imperfect price discrimination then affect welfare?

It can raise, lower or leave unchanged total surplus in a market. A certain conclusion about price discrimination is that it raises the monopoly power; otherwise the organisation will choose to charge all customers the same price **(Mankiw, 2001)**.

2.5.4 Effects on the efficiency of economic system

In assessing the consequences of price discrimination from the point of view of the public interest, the economist can best consider its effect on the efficiency of the economic system in terms of income distribution, want-satisfaction in a given technological setting, and dynamic and technological progress.

In the case where the economic system decreases price discrimination and the want-satisfaction, the expansion of desirable services commodities are prevented. It can increase the want-satisfaction if, in the longer term, it brings an expansion of output of desirable services or commodities.

If discrimination serves to preserve outmoded technologies, production or distribution structures, the public interest will likewise suffer. The want-satisfaction will increase if it encourages change in such circumstances. The income-distribution effect depends on value interest or judgement. It can be assumed that discrimination with no or little prejudice to efficiency produces a shift of income in favour of the poorer classes in the community. This will generally be welcomed **(Anon, 2002)**.

2.5.5 Effects on the seller (producer) and buyer (consumer)

Who gains and loses in the implementation of price discrimination?

- The seller gains profit and the revenue goes up;
- With the net effect it is not clear whether it is bad or good for the whole society.
- High-price buyers often lose. The seller absorbs much of the consumer surplus. The high-price buyer can benefit too, if the product does not exist otherwise.
- Low-price buyers often gain. If a uniform price were charged the product would not be affordable. A low-price buyer gains, unless discrimination is perfect **(Cabral & Backus, 2001)**.

2.6 LIMITS TO PRICE DISCRIMINATION

Because price discrimination results in selling the same goods for different prices, this equilibrium can only persist to the extent that buyers are prevented from shifting their purchases from the high-price to the lower price market.

In phenomena such as "foreign dumping", companies sell products at a lower price abroad than they do at home (since the domestic demand, presumably,

is less elastic). Thus, market separation may be assured by high transaction cost. But the ability of the monopolist to discriminate among classes of consumers within a given market may be severely constrained. For example, the motion picture distributors may have a monopoly on a particular movie showing and cannot charge very different prices at different local theatres since patrons may be able to choose which theatre to attend **(Nicholson, 1985)**.

Possibilities of price discrimination are limited for at least three reasons:

- Hidden information;
- Arbitrage; and
- Limited commitment power.

The first limitation is hidden information. Hidden information has to do with the fact that the monopolist does not know each customer's willingness to pay. Although the statistical discrimination of customers' characteristics may be fairly well known, it is difficult to identify customers when they walk into a place (store).

The second limitation is arbitrage. An arbitrage transaction tends to be profitable if different prices are charged across customers or across units. If all the customers are charged the same two-part tariff, for example, customers can gain if they buy through an intermediary. This can lead to a saving for participating customers. The possibility of arbitrage erodes price discrimination. It usually does not rule it out altogether, due to transaction cost. Many products can be found where arbitrage is intrinsically difficult to achieve. Therefore, price discrimination flourishes in markets and has many applications.

The third limitation has to do with *the credibility of threats and with limited commitment power*. In the case where a monopolist makes a take-it-or-leave-it offer, the leave-it threat may pose problems. If a customer refuses the initial offer, he or she starts haggling. The monopolist here is tempted and starts to

enter negotiation in order to avoid the loss of a profitable customer **(Wolfstetter, 1999)**.

2.7 CONCLUSION

The aim of this chapter was to analyse the concept of price discrimination and relevant theories. This was done by means of a literature study. Through this it was realised that:

- Different kinds of price discrimination exist, namely first-degree (charging whatever the market will bear), second-degree (quantity discount or versioning) and third-degree price discrimination (separate market and consumer groups).
- Price discrimination is necessary for an industry to survive.
- Five steps must be followed to achieve a differential pricing policy.
- The specific effect of price discrimination depends on the type of price discrimination practised by the organisation. Price discrimination has several effects, namely effects on distribution and efficiency, social effects, effects on economic welfare, effects on the efficiency of an economic system and effects on the seller (producer) and buyer (consumer).
- Possibilities of price discrimination are limited for at least three reasons, namely hidden information, arbitrage and limited commitment power.

After analysing price discrimination the following general conclusions may be made:

Price discrimination between markets is fairly common and occurs when an organisation charges different groups different prices for an identical service or product. This becomes possible as soon as a monopoly exists and is only feasible when it is impossible or at least impractical for the

buyers to trade among themselves. Price discrimination is very often determined by the features of the product.

For an organisation to accomplish price discrimination there must be some way of keeping speculators from buying the service or products at a low price and than simply reselling them at a high price. The organisation must have some market power. The buyers in various markets must have different elasticity of demand and must be able to distinguish between markets at a reasonable cost. It is clear from the above discussions that implementing price discrimination is advantageous, and that it mainly increases profit. Furthermore, price discrimination also has several other effects. In each case the specific effect depends on the type of price discrimination an organisation practices.

In this chapter the concept and relevant theories were analysed. In chapter 3 international case studies will be analysed, with reference to the literature in chapter 2.

CHAPTER

3

CASE STUDIES OF PRICE DISCRIMINATION

3.1 INTRODUCTION

It is often debated whether the tourism industry, in the sense of a distinct group of enterprises such as the automobile, steel or electronic industries, truly exists. There is considerable doubt as to what exactly constitutes the tourism industry as a distinct sector: which activities or purchasing acts are to be included in this sector and what are the boundaries (**Weiermair & Maser, 1996**). According to **Gee *et al.* (1989)** the tourism industry itself is more commonly identified with the production-based enterprises and the manufacturing enterprises. On the other hand, the tourism industry is not a single industry, but it is rather a collection of businesses selling travel-related services **(Saayman, 2002)**, with an impact on a wide range of industries **(Theobald, 1994)**.

However, according to **Law (1993)** there is some merit in retaining the simple idea of demand and supply and that the consumer and product which is the basis on which an industry is defined and therefore can be classified as an industry. **Knowles (1994)** supports this concept of an industry by arguing that the tourism

industry consists of numerous sub-sectors. Therefore, tourism can be seen as an industry, which is similar to other industries like agriculture and mining, depending on the continued availability of those resources upon which it is based. In other words, tourism is a resource-based industry, one that sells products and services to both locals and non-locals **(Strydom, 1993 & Saayman, 1996a)**. Hence, price discrimination also has impacts on both, depending on what form of price discrimination is implemented.

The impact of price discrimination relative to consumers is ambiguous **(Leslie, 2002)**. It is said to exist when the same sellers sell the same product at different prices to different customers. Complications can, however, arise when trying to extend this definition beyond the case of identical products and as a result of different definitions being proposed **(Clerides, 2000)**.

Generally price discrimination is lawful, particularly if it results from the seller's attempt to meet competitor prices or services or reflect the different costs of dealing with different buyers. It is used in virtually every organisation and exists in every industry. In order for organisations to practise price discrimination, it needs to separate the groups of consumers' different demand elasticity. Only if the difference in demand elasticity is significant can price discrimination between different consumers be successful. Organisations making use of price discrimination allow an increase in its revenue above what may be obtained from uniform pricing **(Leslie, 2002)**.

The previous chapter analysed the concept of price discrimination and relevant theories. It covered the different types of price discrimination, when price discrimination is required, steps for differential pricing, effects of price discrimination and limitation to price discrimination. It is, however, the purpose of this chapter to analyse international case studies to determine the effect of price discrimination on tourism demand. These case studies will focus on nature-based tourism, recreation-based tourism and travelling method. In order to

achieve the above-mentioned goal, the case studies would be divided into the following sections:

- Background;
- Variable included;
- Model applied; and
- Findings.

3.2 CASE STUDY 1: THE CASE OF COSTA RICA (nature-based tourism)

3.2.1 Background

In the last 15 years Costa Rica has experienced a large increase in international tourism. It is mostly due to Costa Rica's system of national parks (approximately 24% of national territory) and the vast array of different types of land and marine ecosystems. According to a survey of the local tourism board, 71% of all holiday visitors to Costa Rica visit at least one national park.

According to **Bermùdez (as quoted by Alpizar, 2002)** the increase in tourism activities in Costa Rica does not cause any increase in the government's budget, despite the importance of nationally protected areas. The budget has, on the contrary, together with international support, steadily decreased. The government decided to recover the cost of managing the parks for recreation and started in 1994 to price discriminate, based on foreigners versus locals. Since then there has been several changes in the price for foreign visitors **(Bermùdez, 1996)**.

3.2.2 Variables included

This study extends to literature on optimal pricing of recreation in protected areas, by introducing price discrimination between groups of visitors. The same goods are sold here to two types of consumers, namely national and foreign

visitors. Different prices are charged for each group by introducing a distributional dimension that is particularly relevant for national park agencies receiving visitors from different origins **(Alpizar, 2002)**.

3.2.3 Model applied

In the case of Costa Rica it can be assumed that there exists a local park agency that is in charge of the managing system of the protected areas, treating all the parks as a single composite good **(Alpizar, 2002)** (the price is the same for all the parks). SANParks introduced a similar system in 2003, to deal with a similar problem as Costa Rica.

It can also be assumed that the marginal cost of recreation is constant and that all the costs of recreation regarded by the park authority are fixed. Although recreational visitors not only enjoy the trails they hike on but also some of the public services provided by the natural environment, it is still unfair to charge visitors the full cost of managing and creating the protected area for recreational and conservation purposes **(Beal, 1996; Dixon & Sherman, 1991; Anas, 1988)**.

In addition to the prices that the park agency asks the visitors when visiting the park, the visitors also face congestion costs, which is treated as external cost for a large number of visitors. This cost is an important factor as it is an important determinant of recreation **(Fisher & Krutilla, 1972)**, with the nature-based tourism as the only source of income for the population living in the areas surrounding the park.

If the consumer surplus of foreign and national visitors has the same weight, the usual marginal cost pricing for both groups will be $\alpha=1$. The closer α is to zero, the larger the required deviation from marginal-cost pricing rule will be. This is the ultimate result in a simple monopoly-pricing rule for foreign visitors. It is possible to recover more than the variable cost and to potentially make a profit.

The rest of the solution is divided into two cases to provide interpretable and interesting results **(Alpizar, 2002)**.

CASE 1: Both groups' consumer surplus is weighted equally, i.e. $\alpha=1$

CASE 2: The foreign visitors' consumer surplus is assigned a weight of zero, i.e. $\alpha=0$.

CASE 1: $\alpha=1$

Third-degree price discrimination is exercised by the park agency based on nationality, but an equal weight is still assigned to the consumer surplus of both groups.

In the market with a relatively lower elasticity the relative price margin is relatively higher. Nationals in general have a higher availability of substitutes, lower income and time for recreation. The price elasticity for foreign visitors, on the other hand, is higher and their relative price margin will be lower. Price discrimination in this case allows the park agency to minimise welfare cost by taking into account the price sensitivity of both groups (relative to total visitation).

To correct a distortion imposed by the cost recovery condition, for example, the aim is to raise revenues while minimising the impact on visitation. The above-mentioned goal can be achieved by increasing the price charged to the group with the lowest price sensitivity (to provide enough visits from the group to raise the required revenues). To correct negative marginal extent effects of visitation, visitation should be decreased by the pricing rule in such a manner that the profits are reduced as little as possible **(Alpizar, 2002)**. This can be achieved by an increase in price that is charged to the group with the highest relative price sensitivity. National visitors are expected to have a higher sensitivity to price than foreign visitors.

CASE 2:α=0

In Case 2, the park authority assigned a weight of zero to the consumer surplus of foreign visitors and maximised only national welfare.

When the revenues from the foreign market more than cover the variable cost plus all the fixed costs in that market, these revenues will subsidise the price charged to national visitors. When the revenue does not fully cover the fixed cost, then the prices charged to nationals will have to cover all the remaining fixed costs as its own variable cost included. This arises from the fact that prices to foreigners are the profit maximising cost; any deviation from the above will result in a less fixed cost. If the government increases the revenue constraint (prices were previously at optimal levels), it will result in a higher entrance fee for nationals and will not affect the foreign visitors. Profits obtained from charging foreign visitors the "monopoly price" allow the public park agency to move closer to national visitors' first best marginal cost pricing.

Thus, the prices to nationals will definitely be lower by exercising price discrimination than in the case of uniform average price and will hereby increase national welfare and visitation. A negative net marginal effect will call for an increase in price and vice versa. If the fixed costs are very large a negative marginal effect will call for a decrease in price and vice versa. In the case where the fixed cost are not large the optimal pricing rule will reflect the sign of the nett marginal effect in such a way that the negative nett marginal external effect will cause an increase in the baseline price **(Alpizar, 2002)**.

- **The application of price discrimination to international tourism in Costa Rican**

The application to international tourism in Costa Rica is an empirical application of the theoretical model presented above. The objective is to determine the optimal prices for national and foreign visitors to the protected areas of Costa Rica. The main input in this case was the estimation of foreign visitors' demand

for recreation day visitors as the function of entrance fee, with the estimation of the fixed and marginal cost also required.

Costa Rica is one of the few areas where entrance fees has changed several times, which provided enough information to estimate the demand for protected areas. But in the case of Costa Rica, the travel cost method as a function of visitation cost was used instead to estimate the demand for the recreation side. The vacation planning decision was divided into two, studying the demand for day visits, given that tourists choose Costa Rica as a vacation destination **(Riera, 2000)**. Although the entrance fee had changed, it did not affect the visitors' decision to visit Costa Rica. Thus, this fee actually represented a relatively small share of the total vacation budget **(Alpizar, 2002)**.

3.2.4 Findings

This case study suggested that a theoretical foundation for optimal pricing of the system of protected areas has been used for recreation, by emphasising the possibility of third-degree price discrimination based on a visitor's nationality. Price discrimination allows for a possible external effect from changes in visitation and for a more optimal adjustment to the distortion created by a cost recovery requirement.

The analysis that has been done indicates that the practice of price discrimination can achieve a more optimal pricing policy and successfully raise revenue. If local authorities aimed at maximising only local welfare from recreational activities the empirical application of the model would have indicated that they could raise the price for foreign visitors, all depending on the approximate estimate of marginal cost. If there is any increase in revenue from foreign visitors under the proposed optimal price, it will most likely cover the fixed cost of recreation. Furthermore, the strong increase in price might have a negative impact on the surrounding areas, and the inclusion of some external effects might have an impact on the estimated optimal prices.

Finally, the assumption on which the park agency treats all the parks as a single commodity was a limitation of the theoretical analysis, and might be fairly realistic for small countries with several areas that are close substitutes **(Alpizar, 2002)**.

3.3 CASE STUDY 2: BROADWAY THEATRE (recreation-based tourism)

3.3.1 Background

Broadway theatre refers to all the musicals and plays performed in theatres in the Times Square region of Manhattan, New York. The show producer rents the theatre from the owner and determines the show's prices. In contrast with most performances, the objective of Broadway theatres is to maximise profit. In this case the prices of the tickets are not subjected to any specific regulation and the majority are sold over the phone **(Leslie, 2002)**.

This case study focuses on the Broadway play Seven Guitars, which provides a good example of discriminatory pricing. The theatre has a maximum seating capacity of 947, and a total of 140 782 people saw the Broadway production. The show was sold out for 12 of the 199 performances, with an average attendance of 75% of capacity (707 people per performance). In this case study the primary source of data is the box office report of the Broadway play, where price and quantity sold could be observed **(Leslie, 2002)**.

3.3.2 Variables included

There are two ticket price categories, namely full-price tickets and discount-price tickets.

- **Full-price tickets**

These tickets are for a specific area of seating: the mezzanine, orchestra, balcony, rare-mezzanine, boxes and standing room. It is available to all potential

consumers, sold via telephone and differentiated by the average quality of seating.

Variation in full-price ticket categories

- **Price variation**

The orchestra ticket price is higher than the price of a balcony ticket, because the seat quality in the orchestra is higher.

- **Time-series variation**

The prices vary across performances, because pre-determined peak-load pricing performances are priced differently for different times of the week, for example, orchestra tickets on a Saturday evening are priced higher than ones for a Sunday matinee. It is decided prior to the first performance by the producer and does not change for the duration of the show **(Leslie, 2002)**.

- **Discount tickets**

The buyers of these tickets are seated in the high quality region of the theatre, generally not the best seats within the region. These discount tickets are available under various conditions; some are only available to individuals who happen to come across one in a restaurant or another chosen location, while others may have received a coupon in the mail.

Discount-price ticket categories:

Two types of discounts can be distinguished, namely booth and coupon.

- **Coupon**

The coupon includes all discount categories that are restricted to individuals who are members of a specific group or organisation. It is interpreted as a form of third-degree price discrimination.

- **Time-series variation**

This is partly driven by time-of-week peak load pricing, with the day-of-week dummies explaining relatively little of the variation in the coupon price.

- **Coupon price variation**

Coupon price variation is mainly the result of organisations trying different ways of offering targeted discounts. The directed mail coupons are for instance used in early performances, while the two-for-one ticket will not be introduced until mid-way through the run of the show.

- **Booth ticket category**

This discount is available to all potential consumers, but the consumer will have to wait in line at a discount booth. The booth tickets are sold in terms of price variation at a 50% discount, on the top full-price **(Leslie, 2002)**.

3.3.3 Model applied

- **Behavioural model**

Consumers have different ticket options for seeing a play. For specific seat qualities or views there are various tickets and also various discounts. Three qualities of differentiated full-price ticket options exist. The three regions are labelled as low quality, medium quality and high quality. Individuals prefer high quality seats, but differ in their willingness to pay for the higher quality. However, not all of the seats in the high quality region of a theatre provide equivalent seat quality; there appears to be a fairly significant variation in quality, which plays an important role in a consumer's decision making. For medium and low quality categories the assumption of equal seat qualities within each region is a good approximation, where each quality region has capacity constraint **(Leslie, 2002)**.

The marginal utility of consumers from seat quality depends on their level of income, and subsequently low-income individuals choose low quality seats while

high-income individuals choose high quality seats. Furthermore, consumers also have the choice to go to a discount booth, where high quality seat tickets can be purchased after all individuals have had the opportunity to purchase a full-price ticket seat.

A different price for different seat qualities is a good example of second-degree price discrimination, and different prices for individuals with coupons is an example of third-degree price discrimination. It is assumed that consumers can choose from the ticket options for a single performance **(Leslie, 2002)**.

- **Empirical Results**

In the behavioural model all the tickets are substitutes for one another, implying positive cross-price elasticity. A negative cross-price elasticity may occur because the capacity constraints cause some consumers to select their second or lower ranked alternatives. For example, the increase in price of the low-price tickets causes some individuals to no longer purchase a low quality ticket. The ticket is made available to another individual who may have only purchased a medium quality ticket because no low quality tickets were available previously. In any event, the lower quality ticket sales appear to be less sensitive to income, while high quality sales are highly sensitive to income. In the following section the counterfactual experiments and welfare comparison will be examined **(Leslie, 2002)**.

- **Counterfactual experiments and welfare analysis**

The experiment involves the re-optimising of prices under different restrictions, such as examining the effect on consumer welfare and uniform pricing. The following experiments will differ in the extent of price flexibility that is allowed from having all prices equal and constant across all performances and categories to allow all prices to vary in every performance. The outcomes from the various experiments are compared with a benchmark. Two benchmark cases are considered here.

- **CASE A**

Case A uses empirical prices, providing the prediction of consumer behaviour, which yields a measurement of the total net utility for all performances. Table 3.1 indicates the measure of total utility 3.59. The predicted total income is $3.27 million, and the predicted average attendance 906.9. The prices shown are the average (across performances) prices in each of the categories **(Leslie, 2002)**.

Table 3.1: Results of counterfactual experiments

EXPERIMENT	INCOME ($ MILLION)	UTILITY	AVERAGE ATTENDANCE
Actual	4.6951	NA	661.56
Case A	6.2698	3.5859	906.86
Case B	7.8965	3.5775	864.11
No-Booth-A	6.7301	3.5837	873.01
No-Booth-B	8.3495	3.5925	873.73
Booth not 50%	8.4516	3.5900	850.30
Non-sticky	5.0194	3.5800	887.37

Notes:

The shown prices are the average prices across all performances. For some experiments, the prices do not change from performance to performance; for others they do.

- **CASE B**

Case B is based on predicted optimal prices. These prices are determined based on restrictions intended to resemble the actual decision-making of the organisation. The assumption here is that the organisation is constrained to ask the same price menu for all performances, making this a reasonable approximation for a benchmark scenario, since the actual pricing policy of the organisation does not change over time. To be able to match the actual

behaviour of the organisation, an assumption can be made that the booth ticket price is 50% of the full-price high quality ticket price.

The predicted prices under Case B provide a good degree of confidence that the model here is well specified to perform the following counterfactuals. The counterfactuals concern alternative assumptions as to how much flexibility an organisation has in determining price menu.

- **Uniform**

The organisation in this experiment is restricted to sell all tickets of all performances at a single price; there are in particular no coupons and booth sales. Since it involves the re-optimising of prices, attendance drops by 6.3% and utility rises by a trivial amount. Apparently the improvement in utility for people who were paying higher prices before marginally outweighs a loss for all those people who either switch to the outside alternative or pay more.

However, the income here is higher (0.6%). Uniform pricing leads to a higher income than discriminatory pricing, because of the booth ticket category. With the booth ticket category a good number of consumers may substitute away from buying a full price ticket towards a booth discount ticket. The above may be harmful to an organisation's profit, especially if the booth discount is restricted to equal 50%. The next three experiments examine this issue more closely.

- **No-booth A**

This experiment uses empirical prices, with the only modification being that no booth tickets will be sold. In this case attendance decreases by 3.7% and income rises by 7.3%, where the difference in utility is negligible. Thus, selling tickets at the booth is harmful due to a negative effect on demand for full-price tickets **(Leslie, 2002)**.

- **No-booth B**

No-booth B means that no tickets were sold via a discount booth. The organisation in this case re-optimises prices of the remaining categories, but the same menu must be applied at every performance. The absence of a booth causes the organisation to lower the prices of the expensive tickets, which has a positive effect on attendance. A useful comparison is with Case B: income rises by 5.7% and attendance rises by just over 1%. On the basis of these two experiments it is concluded that 50% of discount booth tickets are more damaging than beneficial to an organisation's profits.

- **Booth-not-50%**

The organisation optimally chooses all the ticket prices, including the booth ticket prices. Organisations are not restricted in this case to sell the booth tickets at 50% of the high quality prices, but the restriction remains that the organisation must offer the same menu of prices for all performances. Attendance is now 1.6% lower and income 7% higher than in Case B, in addition with uniform pricing where income is approximately 5% higher. The booth is therefore an optimal mechanism for selling tickets, with consumers also benefiting from the increased price of booth tickets **(Leslie, 2002:22)**.

- **Non-sticky**

The presence of sticky prices is a curious feature of behaviour in the theatre industry. The organisations in this case do not change their pricing policy over time, despite the fluctuating demand. Tickets are sold at 50% of the price of high quality tickets, leading to an increase of only 1.6%. The remaining prices are chosen on a performance-by-performance basis.

3.3.4 Findings

The above study highlights the length to which an organisation will go to in order to sell their product at different prices to different consumers. It is common practice in Broadway Theatre that tickets are sold through TKTS (are tickets sold via the day-of-performance discount booths) booth at a 50% discount. According

to the counterfactual experiment the discount booth ticket category draws some consumers away from buying full-price tickets for the show. This makes it more profitable not to offer any booth tickets with a 50% booth discount at all, because it discourages so many consumers from full-price sales. By reducing the booth discount to 30%, the organisation's profit from price discrimination will be approximately 5% higher than under optimal uniform pricing (based on 30% booth discount), because there is now less substitution away from full price sales **(Leslie, 2002)**.

3.4 CASE STUDY 3: AIRLINES – the effect of market concentration (travelling)

3.4.1 Background

Price discrimination occurs mostly where the volume of travel is large and the population is dispersed (with a mixture of tourist and business travellers). It is usually thought of as a way to extract as much consumer surplus as possible from each group **(Stavins, 1996)** and will only be successful if the difference in demand elasticity is significant between the different consumers.

Organisations in a perfectly competitive market have no market power to discriminate by price. If these markets become more competitive, does price discrimination decrease or increase? With more airlines in the market price discrimination can either decrease or increase. On the one hand, carriers may be forced to charge their marginal cost, still retaining high mark-ups on their business or captive consumers. On the other hand, markets can become more competitive, leading to lower price discrimination. Therefore, airlines may have a market power in some segments but not in others, possibly leading to higher price discrimination on more competitive routes.

Airline price discrimination can be divided in two categories. The first involves restricting the number of discounted seats on each flight and offering consumers

a combination of fares or a range of packages with restrictions attached to the tickets. The second type is known as second-degree price discrimination or self-selection price discrimination. Consumers here choose their preferred version of the product based on their willingness to pay for the specific attributes of the product or services (e.g., time, convenience and flexibility). The first type involves that carriers limit the supply of the cheaper products or services by using a rationing device.

In this case study carriers and cost-based effects are separated from the discriminatory effect of price in order to test whether market concentration affects price discrimination. Ticket restriction and individual airline tickets prices **(Stavins, 1996)** are also used to measure price discrimination against the effect of ticket restrictions on airfares **(Stavins, 1996; Borenstein & Rose, 1994)**.

3.4.2 Variables included

Air transportation markets allow for price discrimination. Airlines differentiate among themselves by offering slots in flight schedules. The airlines here need to separate groups of consumers with different demand elasticities. It can be done by attaching various restrictions to cheaper tickets, making it unattractive to consumers with low price elasticity of demand and high valuation on convenience or time. In the case of tickets there is also a choice between various price restriction packages, high-price-no-restrictions combinations and low-price-high-inconvenience. The consumer's choice depends on his consumer's elasticity of demand with respect to time, convenience or money **(Stavins, 1996)**.

There are four different restrictions that could be attached to each fare: the number of days in advance, a cancellation penalty, whether or not a Saturday night stay over is required and diverse other conditions. These restrictions are highly correlated. Following **Dana (1998) and Gale & Holmes (1993)**, the number of days of advance purchase requirement and the Saturday night stay over requirement were used as proxies for price discrimination.

3.4.3 Model applied

The model is a reduced-form regression of airfare on ticket restrictions, the carrier's market share, market concentration on the route, and other road and ticket specific factors. There are two different equations estimated here: the first equation has no restriction-concentration interaction and the second equation allows for separate effects of restriction-concentration interaction on airfares.

$$\begin{aligned} \ln P_{ijk} = {} & \beta_0 + \beta_1 + \beta R_{ijk} + \beta_2 HHI_i + \beta_3 S_{ij} + \beta_4 DIST_i \\ & + \beta_5 DISTSQ_i + \beta_6 AVGPOP_i + \beta_7 AVGINC_i \\ & + \beta_8 TEMP_i + \beta_9 HUB_{ij} + \beta_{10} SLOTS_i \\ & + \beta_{11} ONEWAY_{ijk} + \beta_{12} DIRECT_{ij} + \beta_{13} FIRST_{ijk} \\ & + \beta_{14} DAYS_{ijk} + \varepsilon_{ijk} \end{aligned} \quad (1)$$

where

P is the round-trip airfare;

R is a ticket restriction (a Saturday night stay over requirement or an advance-purchase requirement);

HHI is the Herfindahl index based on the number of each carrier's direct flights on the route;

S is the carrier's market share based on the number of direct flights;

DIST is the distance between the two end points

DISTSQ is the distance squared;

AVGPOP is the average population

AVGINC is the average per capita income in the two metropolitan areas;

TEMP is the absolute difference in mean January temperatures between the origin and destination;

HUB is a dummy variable equal to 1 if the carrier has a hub in the origin or destination;

SLOTS is a dummy variable equal to 1 if the number of take-off and landing slots at either airport is regulated;

ONEWAY is a dummy variable equal to 1 for one-way tickets;
DIRECT is a dummy variable equal to 1 for direct flights;
FIRST is a dummy variable equal to 1 for first-class tickets;
DAYS indicates the number of days prior to departure that the fare was last offered;
subscript i denotes route;
subscript j denotes a carrier;
subscript k denotes a particular ticket for the carrier on the route.

Market share is expected to have a positive effect on airfare and a negative effect on ticket restriction. Price discrimination is measured as the partial effect of ticket restriction on price. In equation 2, price discrimination varies with market concentration. Equation 1 assumed price discrimination does not vary with market concentration.

ln

$$P_{ijk}=\alpha_0+R_{ijk}(\gamma_0+\alpha_1 HHI_i)+\alpha_1 HHI_i+\alpha_2 S_{ij}+\alpha_3 DIST_i+\alpha_4 DISTSQ_i+\alpha_5 AVGPOP_i+\alpha_6 AVGINC_i+\alpha_7 TEMP_i+\alpha_8 HUB_{ij}+\alpha_9 SLOTS+\alpha_{10} ONEWAYijk+\alpha_{11} DIRECT_{ij}+\alpha_{12} FIRST_{ijk}+\alpha_{13} DAYS_{ijk}+\nu_{ijk} \quad (2)$$

The variables used in this equitation can be defined as the variable in equitation 1. Based on equation (2), price discrimination is estimated as:

$$\frac{\partial P}{\partial R}=(\gamma_0+\gamma_1 HHI)P \quad (3)$$

Table 3.2: No interaction models

	(1)		(2)	
	Coefficient	**t-statistic***	**Coefficient**	**t-statistic***
Intercept	4 .601	27.26	4 .497	27.42
Saturday night stay over Requirement	-0 .249	- 2.50	-	-
Advance purchase requirement	-	-	-0 .007	- 2.16
HHI	-0 .444	- 2.10	-0 .361	- 1 .71
Market share	0 .326	3 .00	0 .250	2 .29
Distance	0 .001	1 .854	0 .001	1 .811
Distance squared	$-2.78e^{-7}$	-13.91	$-2.73e^{-7}$	-13.65
Average population	0.00008	13.15	0.00008	13.58
Average per capita income	0.00003	4.87	0.00003	5.38
January temperature	0.0002	0.37	0.0006	1.23
Hub dummy	-0.020	-1.40	-0.025	-1.80
Slots dummy	-0.510	-16.42	-0.505	-16.76
One way	0.926	27.66	0.983	41.11
Direct	-0.014	-1.33	-0.015	-1.47
First class	0.433	42.18	0.537	42.87
Number of days prior to departure	-0.0007	-1.43	-0.0006	-1.32
N	5804		5804	
R^2	0.776		0.775	
F	952.76		961.57	

Table 3.2 presents the results with the advance-purchase requirement (Column 2) and the Saturday night stay over requirement (Column 1). The effect of ticket restriction on price (price discrimination) was significant and negative, whether or

not the advance-purchase or Saturday night stay over was used. If a median price is used and a Saturday night stay over requirement is added it will result in a drop of ticket price ($211.17). An increase in advance-purchase requirement by a day resulted in a decrease of ticket price ($6.04). Thus, a ticket with a fourteen-day advance purchase requirement costs less than a similar ticket ($84.56) on the same route. As the date of the ticket offer gets closer to the departure date, cheaper fares disappear, leaving only the more expensive tickets for sale **(Stavins, 2001)**. The coefficient of the number of days prior to departure variable was indeed negative in all specifications.

3.4.4 Findings

In this case study air transportation markets allow for price discrimination and it occurs mostly where the volume of travel is large and the population dispersed, with different airlines offering different slots in flight schedules.

It has also been found that by using the effects of individual ticket restriction on airfare as a measure of price discrimination by air carriers, market concentration decreases by price discrimination. Intuition suggested that price discrimination should increase with market concentration, since organisations in perfectly competitive markets could not price discriminate. Each carrier's unique market position (airport dominance, route schedule) enabled it, even on more competitive routes, to retain market power with respect to its business (inelastic) consumers, but not with respect to the tourist (elastic) consumer. Travellers buying those unrestricted tickets tend to prefer a particular carrier.

Therefore, carriers on competitive routes are able to maintain high mark-ups on their business fares, but they are forced to lower their tourist fares. Thus it has been found that by using the two different types of ticket restrictions to measure price discrimination, more competitive routes have more price discrimination **(Stavins, 1996)**, and furthermore, price discrimination might increase as the

market becomes more competitive **(Gale, 1993; Holmes, 1989; Borenstein, 1985)**.

3.5 CASE STUDY 4: Airlines - local versus business travellers (travelling)

3.5.1 Background

Why is one passenger on an airplane paying $200 for a ticket while the passenger sitting next to him is paying $500 **(Fetzer, 2002)**? To determine the price of an airline ticket has become increasingly complicated. For example, seats on any one of the flights in the United States airline industry can be sold at more than 15 different prices **(Pearson, 2002)**.

3.5.2 Variables included

Most airlines' basic division in pricing policy is between leisure and business travellers. The above-mentioned two groups can be sorted based on the ability to plan ahead and on their travel plans (e.g. willingness to stay over a Saturday night) **(Pearson, 2002)**. The business travellers can also be distinguished from tourists by the days of the week on which they travel **(Fetzer, 2002)**. Thus, the question each organisation is facing here is what price to charge each of the segments.

3.5.3 Model applied

Business travellers are generally willing to pay more for airline tickets than tourists. For example, if there is an increase of approximately 50% in airfare a tourist will be discouraged from flying to Miami for a vacation, but is unlikely to keep a CEO from flying to an important meeting in Dallas. As a result, business travellers can be charged a higher fare than tourists.

For the most part, tourists usually make at least one weekend part of their vacation before flying back, while business travellers fly back and forth during a

work week. Therefore, if a traveller stays over a Saturday night, the airline tickets will be less expensive **(Fetzer, 2002)**. Business travellers, on the other hand, often do not know in advance when travel will be necessary; therefore, those travellers' tickets will be priced much higher than tickets apparently intended for leisure **(Pearson, 2002)**.

Furthermore, airlines realise that travellers who make their plans at the last minute are willing to pay more than those who plan ahead. Therefore, tickets purchased 7 days before the flight are usually cheaper, and even less expensive when they are purchased 21 days before **(Fetzer, 2002)**.

3.5.4 Findings

In the above case study it has been found that most airlines use a basic division in pricing policy is between leisure and business and that the ability to charge different prices depends on the ability and willingness of business versus a leisure consumer to pay. If only one price could be charged, it would probably be a price close to the tourist airfare. However, some airlines may be forced out of business if they were forced to charge one price. Because there would be less competition, this would probably also cause airline fares for everyone to rise **(Fetzer, 2002)**.

It has also been found that those travellers planning at the last minute are willing to pay more than those who plan ahead. Booking in advance will therefore be less expensive, but for business travellers this is impossible, because they do not know advance when they will have to travel. Airline tickets are consequently more expensive for them. Thus, business travellers tend to be less responsive to the price of tickets **(Pearson, 2002)** and are definitely disadvantage by price discrimination while this is not necessarily the case for tourists.

3.6 CASE STUDY 5: A FILM SERIES (recreation-based tourism)

3.6.1 Background

This specific case study is about the operation of a Friday night film series. The information that is available here is based on the demand of students, staff and faculty. For each of these categories, different prices will be asked for the same film series. Therefore, this case study focuses on different options and its effect on price.

3.6.2 Variables included

This case study differentiates between students, staff and faculty.

- **Students**

The students here is the lower income group who is more sensitive to price changes of products and services.

- **Staff and faculty**

Staff and faculty, on the other hand, have a higher income (they usually work full-time) and are therefore less sensitive to the price of products and services, such as the Friday night film series.

3.6.3 Model applied

This model works with two different groups, where each one has a different demand curve. There can be differentiated between these groups by printing the tickets for faculty and students on different colour paper **(Anon, 2003c)**.

If the price for the filmgoers who are less sensitive to ticket prices (those who have a less elastic demand for films) rises and falls for those filmgoers who are sensitive to ticket prices (more elastic demand for films), students will have a more elastic demand. The price for students will be $3.50 per ticket, with the marginal revenue becoming zero at 175 tickets sold. Therefore, the students

should be charged $3.50. The staff and faculty will ,however, have a less elastic demand. The marginal revenue here will become zero at 325 tickets if the ticket is $6.50 per film. Thus, to ensure that the students do not resell their tickets to the staff and faculty at a price less than $6.50, the students' tickets will be a different colour and an ID must be presented.

In this way there will be perfect price discrimination. There will still be a total of 500 tickets sold, bringing in $2 725 for the 500 tickets sold rather than $2 500. Therefore, the nett revenue for the student organisations increases from $300 to $500.

3.6.4 Findings

In this case study it has been found that tickets could be sold to different groups at different prices, with the lower income groups being more sensitive to price and the higher income groups less sensitive to price. Here, the implementing of price discrimination can lead to an increase in ticket sales and an increase in total revenue.

For price discrimination to be practiced at the Friday night film series, there must be differing demands with differing price elasticities of demand, and the seller must be able to separate the two or more markets effectively **(Anon, 2003c)**.

3.7 CONCLUSIONS

The aim of this chapter was to provide insight in the effect of price discrimination on tourism demand. This has been done by means of international case studies.

In the different case studies it has been found that demand and supply, and therefore consumer and product, formed the basis of price discrimination. In the case of a monopoly, the organisation would be able to sell the product at any price and consumers would have to pay. However, if demand did not exist here,

the organisation would not have been able to sell anything at all, in spite of its monopoly. In the case of price discrimination, if demand did not exist, it would have been impossible to price discriminate and it would also have no use. Thus, irrespective of the price difference, without demand nobody would have bought the product.

In this chapter four different case studies have been discussed, each one focussing on different aspects of tourism. The first case study analysed was on Costa Rica nature-based tourism. This case study showed that national visitors have a higher sensitivity to price than foreign visitors. Furthermore, the practice of price discrimination could achieve a more optimal price policy and successfully raise revenue.

The case study, focusing on the Broadway Theatre (recreation-based tourism), which is a good example of discriminatory pricing, it was found that all the tickets were substitutes for one another and that there were various tickets and discounts for specific seat quality. The different prices asked for the different tickets depend on the specific seating area, where the decision of the consumers depended on the level of income. The tickets in this case study were sold through a 50% discount booth. This discount booth ticket category (50% booth discount) had drawn some consumers away from buying full price tickets, making it better and more profitable no to offer this discount booth at all. By reducing the booth discount to 30%, the organisation will profit from price discrimination and less consumers would be discouraged from buying full-price tickets.

The third and fourth case studies focused on airlines (travelling), where price discrimination mostly occurred when the volume of travel was high and the population dispersed. These case studies showed that airlines distinguished themselves by offering different slots in flight schedules, and that the ability to charge different prices depended on business versus consumer ability and

willingness to pay. Furthermore, travellers buying tickets at the last minute paid a higher price than those travellers who planned ahead.

A film series was the fifth case study analysed. In order for a firm to be able to practice price discrimination, there must be a different demand with a different price elasticity of demand, and the seller must be able to separate the two or more markets effectively. In this case study it was found that the lower income groups were more sensitive to the price of a product or service than the high-income groups. Furthermore, it has been found that the implementing of price discrimination could lead to an increase in ticket sales and an increase in total revenue.

After analysing price discrimination the following general conclusions can be made:

Price discrimination can be used in virtually every organisation and exists in every industry. It results from a seller's attempts to meet competitors' prices and services or reflects in the different costs of dealing with different buyers. For an organisation to be able to practice price discrimination the markets must be separated effectively and will only be successful if the difference in demand elasticity was significant between different consumers. The ability to charge different prices will depend on the consumer's ability and willingness to pay. If an organisation should decide to price discriminate, it would lead to a higher profit, a more optimal pricing policy and also to an increase in sales.

Whereas chapter 2 focused on relevant literature, this chapter analysed concrete examples of the phenomenon through case studies. In chapter 4 the data of tourism organisations which practice price discrimination will be analysed and compared with two organisations that do not practice price discrimination.

CHAPTER

4

RESULTS

4.1 INTRODUCTION

The previous chapters analysed the concept of price discrimination and relevant theories. Chapter two covered the different types of price discrimination, circumstances when price discrimination is required, steps for differential pricing, effects of price discrimination and limitations to price discrimination. Chapter three covered international case studies. These case studies focused on nature-based tourism (Costa Rica implemented third-degree price discrimination), recreation-based tourism (the film series implemented third-degree price discrimination). The Broadway Theatre implemented second-degree price discrimination – different prices for different seat qualities and third-degree price discrimination – different prices for individuals with different coupons, while airlines implemented third-degree price discrimination. In this chapter, findings of these international case studies will be compared with three South African case studies found in chapter four.

The aim of this chapter is to analyse the data of a tourism organisation implementing price discrimination, and to compare it with two organisations that do not implement price discrimination. The organisations are Mosetlha Bush Camp (Madikwe Game Reserve) in the North West, Kgalagadi

Transfrontier Park in the Northern Cape and Golden Leopard Resort (Pilanesberg) in the North West. To this end, the framework of this chapter will be organised as follows:

- Data (including the motivation for choosing the specific tourism products for this study, methods to determine price discrimination and the formulas to be used during the course of this chapter, in order to clarify the calculations);
- Tourism organisations (including the background, reasons for implementing price discrimination, negative aspects, visitors, and growth and the effect of price elasticity of each of the organisations respectively; and
- Conclusion.

4.2 THE DATA

The data in this chapter was collated with the help of three tourism organisations, namely Mosetlha Bush Camp and Golden Leopard Resort (Manyane Resort and Bakgatla Resort), both situated in the North West Province, and also Kgalagadi Transfrontier Park in the Northern Cape. The data used was collated through interviews, e-mail interviews, web pages and brochures.

By comparing the data, certain resemblance and differences were found. The resemblance was that all three products were similar in that they were wildlife products. The differences that arose from the data were that Mosetlha Bush Camp applied price discrimination between South Africans, foreigners and tourists from Botswana. Golden Leopard Resort (GLR) did not apply price discrimination: both foreign and South African visitors pay the same price to visit the resort. Kgalagadi Transfrontier Park applied price discrimination based on a conservation fee for foreign and South African visitors. The products also differed in that each product provided different experiences.

The decision to use these specific tourism products was based on the following factors:

- Fourteen tourism products were contacted in order to obtain the necessary information. However, due to the sensitivity and confidential nature of the information, only three tourism products responded positively, namely Mosetlha Bush Camp, Golden Leopard Resort and the Kgalagadi Transfrontier Park.
- All the products were basically the same, in that all three provided accommodation and wildlife products.
- A working relationship had to be established with each of these tourism products in the process of collecting data and updating and following up facts.

4.2.1 Methods of determining price discrimination

Based on the international case studies in chapter 3 and the national case studies in chapter 4, the following different methods to determine the effects of price discrimination may be identified (See Table 4.1):

Table 4.1. Methods of determining price discrimination

	METHODS	AIM	TYPE OF PRICE DISCRIMINATION	DATA NEEDED
a)	Economic Model (econometric analysis);	To compute optimal prices for foreign and national visitors (entrance fees and revenues).	Third-degree price discrimination (based on nationality).	The main input into the computation of optimal prices, is the estimation of the demand of foreign visitors for recreation-day-visits as a function of entrance fee. The following data will be required to determine the optimal prices of national and foreign visitors: • Consumer and producer surplus of foreign and national visitors; • Park agencies total cost of recreation; • The external congestion cost; • Spillover effect from visitation; • Demand for recreational day visitors; • Full or generalised price for a day-visit (entrance fee, including congestion cost, which is the external cost for a large number of visitors); • Constant marginal cost of recreation; • Visitation data on the monthly flow of tourists (visits of foreigners to the park system and to the country as a whole); • Variable cost and fixed cost; • Income.

b)	Behavioural Model together with the estimated demand system *(The estimated demand system allows for the calculation of price elasticity for each category of ticket sales)*	To analyse ticket sales.	The model includes both second-degree (different prices for different seat qualities) and third-degree price discrimination (discount mail coupons, which is targeted to consumers with lower willingness to pay).	The following data will be used: • Price (*full-price and discount price tickets)*; • Quantity sold (*number/ proportion of people who attend)*; • Individual income level *(annual family income)* and taste *(income is correlated with people willingness to pay for seat quality)*; • Various tickets for a specific seat quality *(various different ticket options for seeing a play)*; • Number of coupons a organisation send out; • Number of tickets purchased by consumer; and • Revenues of each ticket category.
c)	Restricted and Unrestricted Model *(Price discrimination is measured with the effect of ticket restriction)*	To examine how price discrimination changes with market concentration.	Second-degree price discrimination (consumers choose their version of a product based on their willingness to pay for a specific attributes of the good, e.g. time, convenience and flexibility).	Data required: • Ticket prices; • Ticket restrictions across various roads *(Saturday night stay over requirement and the number of days in advance purchase requirement)*; • The number of direct flights on each road; • The number of days prior to departure the fare was last offered; • Whether the fare was for one-way or round trip ticket; • Whether the flight was direct or include a stop; • Whether the seat was a first-class or a coach cabin; • Fares offered for sale; and

				• Carriers' market share.
d)	Sensitivity to price	To find out if there is a way to sell tickets to each group at different prices.	Third-degree price discrimination (different prices to different people).	The following data will be required: • Income; • Demand curves of each group; • Tickets sold; • Marginal cost; and • Marginal revenue of the organisation.
e)	Regression analysis (Statistical Forecasting Model)	To estimate the value of one variable (dependent variable), when the value of another variable (independent variable) is known **(Anon, 2005a)**.		• Sometimes there are only two variables available to be used: o The first variable, which could be called X: this variable may be regarded as constant, because its values can be chosen at will and can be measured without substantial errors (called independent or controlled variable). o The second variable, variable Y, is a random variable, called the dependent variable (because its values depend on X). • A real model would need more variables and is much more complex.
f)	Price elasticity analysis	To determine the impact of price discrimination.	Third-degree price discrimination (different prices to different people, national and foreigners).	Data required: • Visitor numbers; • Inflation rate; and • Price of product.

According to Table 4.1, there are various different methods to determine the effect of price discrimination in different situations. Most of these methods include third-degree price discrimination: the economic model (econometric analysis), behavioural model (together with the estimated demand), sensitivity to price and the price elasticity analysis. The table also shows the different data required in every case.

However, for the purpose of this chapter, price elasticity of demand will be used to determine the impact of price discrimination on tourism demand. The reasons for using this specific method is to adapt to the circumstances, because of the availability of data and the type of data required.

4.2.2 Calculation of elasticity

In determining the price elasticity of demand the following formulas were used.

- **Inflation rate**

Inflation is about the continued increase in the general price level in the economy, without an increase in the quality of the product or service. The inflation rate may be determined by means of the consumer price index (CPI) **(Saayman, 2000)**, by comparing the latest month's CPI with that of the corresponding month of the previous year **(Van der Merwe *et al*., 1997)**.

For example: $$\frac{\text{CPI for 2000} - \text{CPI for 1999}}{\text{CPI for 1999}} \times 100$$

$$= 99.95\text{-}92.78 / 92.78$$

$$= \underline{\mathbf{7.73}}\%$$

Thus, the inflation rate for 2000 is 7.73.

Table 4.2 reflects the CPI (Consumer Price Index) for 1999 to 2003 and furthermore also the inflations rate for the period 2000 to 2003. The inflation rate for each year in this table was calculated by making use of the formula above the Table.

Table 4.2: The CPI according to SARB (2005a)

YEAR	CPI	INFLATION RATE
1999	92.78	-
2000	99.95	7.73
2001	106.55	6.6
2002	116.48	9.32
2003	124.38	6.78

- **Price elasticity of demand**

The aim of this study is to determine the impact of price discrimination on tourism demand. According to chapter 2, price discrimination is about selling the same product at different prices to different consumers. Therefore, the price elasticity of demand will be used to determine visitors' reaction on price changes and its impact on quantity demand.

The quantity of a product that an individual buys depends on the price of a product or service. The aim of the demand curve is to indicate how the quantity demand will be influenced by price, and price alone. Other factors that could influence the quantity demand, such as income, the price of a product, the price of other products or services and taste, were not used in this study. For this reason the assumption of *ceteris paribus* will be used, which states that only the price change of a product will be investigated, all other factors being equal.

The law of demand states that if the price of goods increases, people buy less of a product, other things being equal. If the price of goods decreases, people buy more of it, other things being equal. Thus, a reversed relationship exists between the change in price and the change in quantity demand. Price elasticity therefore is always negative, with the result that the demand curve has a negative slope.

To calculate the price elasticity of demand, the percentage change in quantity demand needs to be divided by the percentage change in price. The formula to be used for this is:

$$E_d = (Q_2-Q_1)/Q_1) \div (P_2-P_1)/P_1$$

Thus, the concept of price elasticity of demand measures the degree of sensitivity or responsiveness of consumers to a change in price **(Van der Merwe *et al.*, 2004)**.

- **Real change in price**

To calculate the price elasticity of demand, the real change in price will be used instead of the nominal change in price. The real change in price is the nominal change in price minus inflation rate, where inflation is the change in price in general.

Inflation is used when there is an increase in price in general over a broad spectrum. If the price of all the products increase, the absolute price will be used, and if the price of some of the products increases more than the price of others, the relative price will be used instead (as in the case of the national case studies in 4.3.1 and 4.3.2) **(Van der Merwe *et al.*, 2004)**.

4.3 TOURISM ORGANISATIONS

The following three tourism organisations will be analysed for the purpose of this chapter:

- MosetlhaBush Camp;
- Golden Leopard Resort (Manyane and Bakgatla Resort); and
- Kgalagadi Transfrontier Park.

The above case studies will be analysed with reference to the following aspects:

- Background;
- Reasons for implementing price discrimination;
- Negative aspects;
- Visitors and growth; and
- Effect of price elasticity.

4.3.1 Case study 1: Mosetlha Bush Camp

4.3.1.1 Background

This 75 000 hectare game reserve, the fourth largest in South Africa **(Mosetlha Bush Camp, 2003)**, has been in existence for 20 years, and is located in a Malaria-free area of the North West Province. It is approximately three hours' or 340 kilometres' drive by road from the large metropolitan areas of Pretoria and Johannesburg and only 25 kilometres from Gaborone, capital of Botswana **(SEE APPENDIX 2)**. It is an arid region where the mean annual rainfall varies between 520 millimetres south of the reserve to 475 millimetres northeast of the reserve **(Davies, 1997)**. The winter days are mild and winter nights are cold, with the summer days hot and evenings mild **(Anon, 2003d)**.

Madikwe is a low-density tourism facility, which offers several lodges within the reserve. The fully catered accommodation includes Jacki's Safari Lodge, Etali Safari Lodge, Tau Game Lodge, Madikwe River Lodge, Madikwe Bush House, Mosetlha Bush Camp and Mateya Safari Lodge **(North West Parks and Tourism Board, 2004)**. The reserve has is a potential to accommodate a wide variety of animals in a broad spectrum of habitats, because of the rather varied vegetation that occurs. The animal life in the reserve ranges from insects to large game. The large game includes the "Big Five" – elephant, lion, leopard, buffalo and both black and white rhinos. The bird population alone includes over 340 different species **(Mosetlha Bush Camp, 2003)**.

At Madikwe, the visitor will experience a truely African safari adventure and will be taken to the very heart of a pristine environment to witness the interaction of many species, where survival means life but also death, and where nothing can live in isolation. This offers the real savage beauty of an African wilderness **(North West Parks and Tourism Board, 2001)**.

4.3.1.2 Reasons for implementing price discrimination

Reasons why special discount is given to South African residents, but not to overseas guests, are as follows:

- South African taxpayers paid for the development of the game reserve. More than R70 million of South African taxpayers' money was spent in the establishing of the infrastructure (fences, roads) and the introduction of animals, and therefore should derive some advantage from it. The foreign direct investments did not pay anything towards the establishment of the infrastructure, but did make a contribution towards the developing of the suprastructure, although the largest contribution was made by local direct investments **(Lucas, 2003)**. The infrastructure includes a good access road to the natural areas or tourism attractions, sewage removal, effective water and electricity supply, communication, drainage and transport systems. The suprastructure includes the surface facilities that provide a direct service to tourists, for example motels, hotels, shopping centres, restaurants and lodges **(Van der Merwe & Saayman, 2004)**.

- It is expensive to secure an overseas booking. If visitors live in Potchefstroom, for example a booking at the lodge can be dealt with in just a few minutes. In the case of an overseas visitor, phone calls need to be made, faxes and e-mails need to be sent and there are also problems with where the payment was made (deposited at a bank in New York; needed to be transferred) and with who should be responsible for the above-mentioned costs. Thus, a booking for an

overseas customer requires a lot of paperwork, making it more expensive.

- The lodges are reasonably priced, particularly Mosetlha Bush Camp, which is by far the most reasonably priced lodge. Mosetlha offers rates substantially less than the other lodges in the same game reserve; the prices are less than half the price of the other lodges. Furthermore, the camp offers very good value for money and a totally different product and experience, which must be a deciding factor in the final analysis. It is therefore not regarded as unreasonable to charge overseas visitors a higher price than locals.

4.3.1.3 Negative aspects

Overseas visitors complain when all the payments have to be converted into Rand when they pay by credit card. The visitors want to know why they have to pay more than the quoted amount to visit Mosetlha Bush Camp. However, this factor is beyond the control of Mosetlha, as it is a bank policy. When paying by a credit card the payment need to be converted from dollar or pound into Rand in order to finally charge it on the credit card. Thus, complaints were about the conversion of currency, and not on the prices being charged. Furthermore, this complaint is not received very often **(Lucas, 2003)**.

4.3.1.4 Visitors and growth

To determine the visitor numbers and growth to Mosetlha Bush Camp, the maximum tourist carrying capacity and visitor numbers will be investigated.

- **The maximum tourist carrying capacity**

The Bush Camp can accommodate a maximum of 16 guests per night (a 16-bed), in the 9 wooden cabins. This is to ensure the best personal attention to visitors (The term visitors referred back to page 11 in chapter one, where respondents and visitors implies tourists for the purpose of this study) **(Anon, 2003d)**

- **Visitor numbers**

Table 4.3: The distribution of visitor numbers

	BOOKINGS FOR THE YEAR 2002			BOOKINGS FOR THE YEAR 2003		
MONTH	SOUTH AFRICAN	FOREIGN	BOTSWANA	SOUTH AFRICAN	FOREIGN	BOTSWANA
January	44	0	19	56	30	32
February	49	0	25	86	41	23
March	101	0	39	69	24	28
April	68	0	42	90	23	18
May	63	3	60	71	8	19
June	69	0	46	69	10	8
July	119	0	10	114	14	9
August	140	4	18	127	31	41
September	101	7	29	73	14	33
October	77	9	19	81	36	25
November	85	8	28	73	61	7
December	77	6	30	90	36	10
TOTAL	993	37	365	999	328	253

(Fouché, 2004c)

According to Table 4.3, there was an increase of 0,6% in South African visitors, a 44% decrease in Botswana visitors and a 782% increase in foreign visitors for the period 2002 to 2003. The significant increase in foreign visitors may be ascribed to international marketing.

4.3.1.5 Effect of price elasticity

To determine the effect of changes in price and demand at Mosetlha Bush Camp, the following will be studied:

- **Real change in price**

The real change in price will be used, rather than the nominal change in price, because the prices of some products may increase more than those of other products; therefore it is better to calculate and use the average price. The real change in price is the nominal change in price minus inflation rate (see 4.2.2).

Table 4.4: Real change in price

YEAR 2003	NOMINAL CHANGE IN PRICE	INFLATION RATE	REAL CHANGE IN PRICE
South Africans	16%	6.78%	9.22%
International/ Foreign	12%	6.78%	5.22%
Botswana	16%	6.78%	9.22%

The price difference in this case is between South African visitors, foreign visitors and those from Botswana. According to Table 4.4, the real change in price for South Africans is 9.22%, for foreign visitors 5.22% and for the Botswana visitors 9.22%. Here, the percentage change in price for visitors to visit the reserve was compared to the percentage change in price in general.

- **Price elasticity of demand**

The elasticity will be calculated below to determine how visitors react on price changes and how it affects their demand.

Table 4.5: Price elasticity of Demand

YEAR 2003	PERCENTAGE CHANGE IN QUANTITY DEMANDED	PERCENTAGE CHANGE IN PRICE	PRICE ELASTICITY
South Africans	0.006042296	9.22	0.01
International s/ Foreign	7.864864865	5.22	1.51
Botswana	-0.306849315	9.22	-0.03

According to Table 4.5, the South Africans have a positive price elasticity of 0,01 (relative inelastic demand). This means that the increase in price leads to an increase in visitor numbers, which leads to an increase in the total spending by the visitors and in turn to an increase in total income of the bush camp. The reason for this increase in visitor numbers, in spite of the increased price, may be that most visitors to the park are high-income individuals. The high-income visitors do not mind if the price increases; they do not mind to pay more and will still want to visit the bush camp. Because the price increase has no effect on them and because they will pay anything to visit the camp, these visitors are less sensitive to price changes.

Botswana visitors' price elasticity of demand for 2003 is relative inelastic (-0.03), (the price elasticity is smaller than minus one). Here the coefficient has the values of between 0 and 1. The percentage change in quantity demand is smaller than the percentage change in price. The price to visit the park increased, leading to a decrease in visitor numbers, but there was still an increase in total spending by the visitors, which caused an increase in the total income for the camp.

2003's price elasticity for foreign visitors was 1,51 (relative elastic demand, positive price elasticity) as in the case of that of the South Africans, but in this case the positive figure was bigger. In the case of foreign visitors, the price increase lead to an increase in visitor numbers (which otherwise would have decreased with the increase in price), which led to an increase in total spending by visitors and also to an increase in total income. The reason for this positive effect, which should have been expected to be negative, may be that the foreign visitors to Mosetlha Bush Camp have increased because more marketing was done overseas. It shows that the assumption of all things being equal clearly does not hold in this case.

4.3.2 Case study 2: Golden Leopard Resort

The Golden Leopard Resort owns the Manyane and Bakgatla Resorts within Pilanesberg National Park **(Southern African Places CC, 1, 2005)**. The case study therefore will have two categories, namely Case study 2a, which will

focus on Manyane Resort and Case study 2b, which will focus on Bakgatla Resort.

4.3.2.1 Case study 2a: Manyane Resort

- **Background**

Manyane Resort is nestled at the gateway to Pilanesberg National Park, apporximately 21km from Sun City, 65km from Rustenberg, 2.5km from Mogwase, 17km from Bakgatla and 15km from Pilanesberg Airport, in an unspoilt natural surrounding **(SEE APPENDIX 2)**.

The resort consists of 55 African thatched style chalets, with the option of Dinner, Bed and Breakfast or Bed and Breakfast. The chalets are luxurious, with a lounge, en-suite bathroom, air-conditioning, a private patio and braai area. It also offers a caravan camping area with electrified and non-electrified sites, and superior ablution facilities. All these aspects make Manyane Resort a organisation's favourite.

Activities offered at the resort include an outdoor chess set, two swimming pools, trampoline, mini-golf, superb conference facilities, an on-site aviary, self-guided walking trails, 4X4 tracks and self guided or conducted game drives where guests can view the "Big Five" **(Golden Leopard Resorts, 2005a)**.

- **Visitors and growth**

To determine the visitor numbers and growth, the maximum tourist carrying capacity and visitor numbers, will be analysed.

- **The maximum tourist carrying capacity**

Table 4.6: Maximum tourist carrying capacity

TYPE	HOW MANY AVAILABLE	MAXIMUM PER SITE	VISITORS PER NIGHT
Chalet – 2 Bed	15	2	30
Chalet – 4 Bed	30	4	120
Chalet – 6 Bed	10	6	60
			210
Caravan site	95	6	570
Camping no electricity	20	6	120
Camping with electricity	75	6	450
Safari Tents	21	4	84
			1224
Tourist carrying capacity			1434

(Motadatshindi, 2005)

Table 4.6 shows that Manyane Resort can accommodate a maximum of 1434 visitors per night in the chalets and caravan and camping sites.

- **Visitor numbers**

Table 4.7: Visitor numbers per month

MONTH	2002	2003	2004
January	9281	15079	10390
February	7336	7139	7238
March	13816	11228	8785
April	9471	13778	13294
May	6693	8543	4891
June	8540	8879	4815
July	10347	10388	9103
August	13212	11356	10068
September	13935	14850	11978
October	9086	12200	9673
November	10047	17176	8403
December	18512	13820	20416
TOTAL	130276	144436	119054

(Motadatshindi, 2005)

According to Table 4.7, there is an increase of 10.78% in visitor numbers for the year 2003, and a decrease of 17.57% for the year 2004.

4.3.2.2 Case study 2b: Bakgatla Resort

- **Background**

Bakgatla Resort lies at the foot of the Garamoga Hills, in a serene, peaceful bush environment **(SEE APPENDIX 2)**. The Resort consists of 55 unique colonial style chalets, with the option of D/B&B or B&B. There are also caravanning and camping with electrified and non-electrified sites available, coupled with superior ablution facilities.

Bakgatla offers a visitor a peaceful surrounding, relaxation and much more for the outdoor enthusiast, such as walking trails, an Olympic size salt water

swimming pool, surrounded by rolling lawns and an outdoor chess **(Golden Leopard Resorts, 2005b)**, bird watching, superb conference facilities, self-guided or conducted game drives and an exciting excursion in and around Pilanesberg National Park **(Golden Leopard Resorts, 2005a)**.

- **Visitors and growth**

To determine the visitor numbers and growth for Bakgatla Resort, the maximum tourist carrying capacity and visitor numbers need to be determined.

  - **The maximum tourist carrying capacity**

Table 4.8 shows that Bakgatla Resort can accommodate a maximum of 1495 visitors per night, 295 visitors in the chalets, and 1220 visitors in the caravan and camping sites.

Table 4.8: Maximum tourist carrying capacity

TYPE	HOW MANY AVAILABLE	MAXIMUM PER SITE	VISITORS PER NIGHT
Chalet – 5 Bed	55	5	275
			275
Caravan site	100	6	600
Camping no electricity	60	6	360
Camping with electricity	40	6	240
Safari Tents	5	4	20
			122
Tourists			1495

(Motadatshindi, 2005)

- **Visitor numbers**

Table 4.9 below shows that there was an increase of 14 % in visitor numbers between the year 2002 and 2003, and a decrease of 10.79 % in visitor numbers between 2003 and 2004.

Table 4.9: Visitor numbers per month

MONTH	2002	2003	2004
January	6821	7855	7506
February	5350	6891	5177
March	10887	8294	5792
April	6489	10807	11258
May	3468	5452	3335
June	5505	6340	3089
July	5890	6394	10295
August	8270	7869	8897
September	8393	10539	8449
October	6669	8595	6682
November	6986	6166	5931
December	13775	15688	14658
TOTAL	**88503**	**100893**	**91069**

(Motadatshindi, 2005)

4.3.2.3 The effect of price elasticity

To determine the effect of price and demand changes for Manyane and Bakgatla Resort, real change in price and price elasticity of demand may be used.

- **Real change in price**

Table 4.10 indicates that the real change in price for 2001 is 1.4%; for 2002 (-1.32%) and 1.22 % for 2003. Thus, for the year 2002 there was actually a decrease in price, after a comparison was made to the tourism price increase in general.

Table 4.10: Real change in price

YEAR	NOMINAL CHANGE IN PRICE	INFLATION RATE	REAL CHANGE IN PRICE
2001	8%	6.6%	1.4%
2002	8%	9.32%	-1.32%
2003	8%	6.78%	1.22%

- **Price elasticity of demand**

Table 4.11 shows that the price elasticity of demand for 2003 is negative for both Manyane and Bakgatla Resort. It has an inelastic demand, a value between 0 and 1. The percentage change in quantity demand is smaller than the percentage change in price. Price in this case increases, with quantity demand (the visitors to the park) decreasing and total spending at the resort increasing, leading to an increase in the total income of the resort. Thus, the price increase leads to less people visiting the resort.

Table 4.11: Price elasticity of demand

YEAR 2003	PERCENTAGE CHANGE IN QUANTITY DEMANDED	PERCENTAGE CHANGE IN PRICE	PRICE ELASTICITY
Manyane Resort	0.108692914	-1.924242424	-0.06
Bakgatla Resort	0.139995254	-1.924242424	-0.07

4.3.3 Case study 3: Kgalagadi Transfrontier Park

4.3.3.1 Background

The Kgalagadi Transfrontier Park is approximately 904 km from Johannesburg and 250 km from Upington in the far Northern Cape **(SEE APPENDIX 2)**. It is in an arid region, where temperatures in summer days may exceed 40°C. The winter days are sunny, with night temperatures often below zero and an annual rainfall of 200 mm **(SANParks, 2003)**. Kgalagadi Transfrontier Park is a semi-dessert savannah area.

It has six different camps varying in size, cost and facilities. The three traditional rest camps are situated on the South African side of the Park, offering fuel and basic shopping facilities. On this land there are nomadic antelope herds such as gemsbok, eland, red hartebeest, blue wildebeest and springbok. Carnivores are well represented and include leopard, lion, spotted and brown hyenas, cheetah, black backed jackal and a number of smaller species. A total of 215 bird species have been recorded, with a rich complement of raptors included that range in size from the pygmy falcon to the leopard face vulture **(Saayman, 2003)**.

4.3.3.2 Reasons for implementing price discrimination

- The original reason for implementing differential pricing at the park was the result of the Transfrontier Park agreement. Botswana applies differential pricing throughout the park, including on accommodation; therefore there could not be a situation where people enter one side of the border for cheaper than on the other side.

- Secondly, differential pricing is applied at all South African National Parks. The Kgalagadi Transfronier Park has applied it since its inception as a once-off entrance fee coupled with vehicle fees for the duration of a visitor's stay. Thus, no equitable contribution is made towards the use of the park. The use of the park is not only reflected in the use of facilities such as road networks, picnic sites, trails, viewing

hides, ablution blocks, water supply for humans and waterholes for game, but also in the enjoyment of cultural and natural wonders in each park, which is conserved at a great expense. All these facilities carry substantial cost to maintain and also to install. The longer a person stays in the park, the more utility will be gained from the stay. Applying a daily fee is a recognised practice for parking lots, sports grounds, cinemas and theatres and is applied in parks and game reserves all around the world. The WildCard was introduced as part of the above process. The guests at the park can be rewarded for their loyalty by becoming a WildCard member. Acquiring such a membership will qualify a member for the waiving of the conservation fee and for other available benefits.

- Thirdly, it is also common practice in many countries to offer local residents certain concessions, because they already provide an incremental support through tax paying. South Africa, however, is virtually the last country in Africa to take this route; many of our African neighbours already apply differential pricing on activities and accommodation. Price differentiation is also applied in countries like the USA, India and several European destinations, among others.

The South African National Parks (SANParks) therefore simultaneously launched an innovative loyalty card system (WildCard) and introduced a new daily conservation fee for all of the parks, in order to provide added value for all visitors and to meet important conservation objectives **(Fouché, 2004b)**.

4.3.3.3 Negative aspects

It was expected that there would be a reaction for the daily conservation fee by South African patrons, as the state subsidy meant that only once-off entrance fees were required, as the subsidy accounted for about 90% of the park's budget. However, if this percentage is considerably less (±16%), other avenues have to be explored to ensure a functional viability. Because of this

a 3-tiered system with local rates, standard fees and SADC (Southern African Development Community) rates were created.

The cabinet, however, has recently passed an application to use only the single conservation fee and wild card loyalty system and to dissolve the 3-tier system. Although the original WildCard is only available to SADC citizens and to South African residents and citizens, an international WildCard has been introduced to cater for long staying international guests, particular those who camp **(Fouché, 2004b).**

4.3.3.4 Visitors and growth

To determine the growth in visitor numbers, the maximum tourist carrying capacity and visitor numbers need to be determined.

- **Maximum tourist carrying capacity**

The total beds available can be divided between the different camps as follows:

Table 4.12: Total beds available

MATA MATA	**8 Units, 29 beds, 20 camping sites (max 120)**
NOSSOB	**18 Units, 51 beds, 20 camping sites (max 120)**
TWEE RIVIEREN	**31 Units, 118 beds, 30 camping spots (max 180)**
KALAHARI TENT CAMP	**15 Units, 37 beds**

According to Table 4.12, there are 255 beds in total available in Kgalagadit Transfrontier Park on the South African side, with 70 camping and caravan sites. A maximum of six persons can be accommodated per camping spot **(Fouché, 2004a)**.

- **Visitor numbers**

According to the table below (Table 4.13), there was an increase of 3.58% in visitor numbers for the year 2002, and a decrease of 1.48% for the year 2003.

Table 4.13: Visitor numbers

MONTH	2001	2002	2003
January	1273	1424	1235
February	864	834	850
March	1238	1772	1780
April	2678	2641	2408
May	2258	2073	2372
June	2314	2260	2086
July	3347	3126	3628
August	2608	2848	2554
September	2854	3501	3505
October	2298	2145	1850
November	1278	1175	1184
December	1444	1531	1502
TOTAL	24454	25330	24954

(Fouché, 2004a)

4.3.3.5 The effect of price elasticity

The effect of price and demand changes can be determined by means of real change in price and price elasticity of demand.

- **Real change in price**

The real change in price will be used rather than the nominal change in price. The reason can be that the increase in some of the products was bigger than the increase in other products and therefore average price will be used. The real change in price, as explained above (4.2.2), is the nominal change in price minus inflation rate.

Table 4.14: Real change in price

YEAR	NOMINAL CHANGE IN PRICE	INFLATION RATE	REAL CHANGE IN PRICE
2001	8%	6.6%	1.4%
2002	8%	9.32%	-1.2%
2003	8%	6.78%	1.22%

Table 4.14 shows that the nominal change in price for accommodation is universal. The real change in price is 1.4% for 2001, -1.32% for 2002 and 1.22% for 2003. The real change in price, is the actual change price to visit the park. Therefore, the actual change in price for 2001 and 2002 was still positive, although there was a smaller increase. There was actually a decrease in price for 2002..

- **Price elasticity of demand**

Elasticity of demand will be calculated to measure by how much the quantity demand will change with the above change in price.

Table 4.15: Price elasticity of Demand

YEAR	PERCENTAGE CHANGE IN QUANTITY DEMANDED	PERCENTAGE CHANGE IN PRICE	PRICE ELASTICITY
2002	0.033960569	-1.942857143	-0.2
2003	-0.332320082	-1.924242424	0.17

According to Table 4.15, the price elasticity of demand for 2002 is (-0,2), thus an inelastic demand (a negative price elasticity). This means that the percentage change in the quantity demand is bigger than the percentage change in price. In this case the number of visitors to the park decreases, resulting in a decrease in spending by the visitors and in turn to a decrease in Kgalagadi Transfrontier Park's income.

The price elasticity for 2003, on the other hand, is 0,17 (relatively inelastic), which is positive price elasticity. This positive effect may be ascribed to the annual increase in income of the visitors to the park from 2002 to 2003. In 2002, 68% of the visitors to the park received an income of up to R250 000 and in 2003, 53% of the visitors received an income of between R250 000 and R500 000 plus, with only 32% of the visitors in 2002 receiving an income of between R250 000 and R500 000 plus. Thus, most visitors to the park were from high-income groups and did not mind paying more: they were thus relatively unresponsive to price changes. Because of the increase in income, more visitors visited the Kgalagadi in this time period. The assumption of all things being equal therefore clearly does not hold in this case.

4.4 CONCLUSION

The aim of this chapter was to analyse the data of tourism organisations which practice price discrimination. The analysed data of a tourism organisation practicing price differentiation (Mosetlha Bush Camp in Madikwe Game Reserve) was compared to organisations which did not practice price differentiation (Pilanesberg National Park – Golden Leopard Resort: Manyane and Bakgatla Resort and Kgalagadi Transfrontier Park). The following results have been found:

Although the price to visit Mosetlha Bush Camp increased, more visitors visited the camp in total. From 2002 to 2003 there were a positive increase in South African visitor numbers to the camp (although there was an increase in price), which indicates that South Africans are not sensitive to price changes. If the price should increase, they would still visit the park, possible because the visitors to the park are high-income individuals (visitors from the upper class) who do not mind to pay more. Therefore the price increase would not affect visitor numbers or decrease it. The foreign visitors' also show positive price elasticity, but bigger than in the case of the South Africans (an elasticity bigger than one). This means that the foreign visitors were more sensitive to

price changes. If the price for them should increase, a decrease in visitor numbers might result.

Both Manyane and Bakgatla Resort (Golden Leopard Resort) had negative price elasticity (inelastic demand, with the coefficient a value between 0 and 1), meaning that the visitor numbers decreased with the increase of the price, resulting in less people visiting the park. The visitors in this case were relatively unresponsive to price changes. If the resort decided to ask different prices for foreign and South African visitors it would not have any effect on the visitor numbers and the visitors would still visit the resort.

Visitors to the Kgalagadi Transfrontier Park for 2002 had an inelastic demand, and the visitors to the park decreased with the increase in price. For the period 2002 to 2003 there exists an inelastic demand, and even with the increase in price, there was still more visitors visiting the park. This could be described to the increase in visitors' annual income for this specific period. The coefficient for both years are between 0 and 1. Thus if different prices should be asked it would not have any effect on the visitor numbers: the visitors would still visit the park as usual and would not be sensitive to price changes.

This leads to the question of whether price discrimination is good for a organisation or not. Price discrimination is not bad for Mosetlha Bush Camp, but if there should be a bigger price difference between South Africans and foreign visitors and if the prices for the foreign visitors should increase, it could result in less visitors (visitors from overseas), because of foreign visitors' sensitivity to price changes.

Kgalagadi Transfrontier Park and Golden Leopard Resort (Pilanesberg National Park) would not necessarily be worse off if they do not price discriminate. A decision to price discriminate and to increase the price would not have any effect on the demand and would not be disadvantageous, because there is an inelastic demand (relatively inelastic price). With an inelastic demand the visitors are relatively unresponsive to price changes.

These visitors therefore are not sensitive to price changes and the increase in price will not affect them: they will still visit the resort or national park.

The purpose of chapter three was to analyse international case studies, to determine the effect of price discrimination on tourism demand. These case studies focused on nature-based tourism (providing accommodation and wildlife products), recreation-based tourism and travelling. The national case studies in chapter four focused only on nature-based tourism (providing accommodation and wildlife products). In most of the international case studies, third-degree price discrimination was applied, and second-degree price discrimination was applied in only two cases. Third-degree price discrimination was based on nationality and on business and leisure travellers, whereas second-degree price discrimination was based on quantity and quality and on willingness to pay for a specific product or service (such as time, convenience and flexibility). All the national case studies included third-degree price discrimination. In these cases, price discrimination was based on national and foreign visitors.

The following results emerged from the international and national case studies.

- National visitors have a higher sensitivity to price than foreign visitors *(international case studies)*.
- Foreigners have a higher sensitivity than national visitors *(national case studies)*.
- Lower income groups are more sensitive to the price of a product than higher income groups *(international and national case studies.*
- Price discrimination can raise revenue and can also increase sales (total spending) *(international and national case studies)*.
- With price discrimination a more optimal pricing policy can be achieved and it can allow for a possible external effect from changes in visitation *(international case studies)*.
- It may result in fewer people visiting *(national case studies)*.

- Those visitors who are sensitive to price changes have an elastic demand (increase in price can lead to less visitors) and those visitors who are not sensitive to price changes have an inelastic demand (increase in price will have no effect on demand) *(national case studies)*.

The aim of this study was achieved through first concentrating on the literature, then discussing international case studies, and finally analysing national case studies. The conclusions and recommendations of this research will be presented in chapter 5.

CHAPTER

5

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The aim of this study was to determine the impact of price discrimination on tourism demand. The main findings indicated that price discrimination can have a positive impact on tourism demand (resulting in more visitors) and that it can also be applied successfully in virtually any organisation or industry, for example:

- Electric utilities (frequently segment their markets by end uses, such as lightning and heating);
- Movie theatres and golf courses (vary charges on basis of time and age);
- Railroads;
- International trade;
- Hotels;
- Car rental organisations;
- Restaurants;
- Resorts;
- Dry cleanings;
- Hair salons;

- Drugstores;
- Night clubs;
- Supermarkets;
- Some taxi companies; and
- Financial aids.

The findings also stressed that the main reason for implementing price discrimination is to increase profit, and that price discrimination does not always have a negative effect, although the term *"discrimination"* has a negative connotation. Price discrimination in fact (in most cases) has a positive effect, as it successfully raises revenue and increases sales.

In order to achieve the goal of this study, as mentioned above, the following objectives guided this dissertation:

- To analyse the concept of price discrimination and relevant theories.
- To analyse examples by means of international case studies to determine the effect of price discrimination.
- To analyse national case studies on price discrimination
- To draw conclusions and make recommendations on price discrimination and its implementation.

These objectives were realised as follows:

In chapter one, the overview of the research was discussed. In the introduction the problem was formulated, and other objectives were determined. Basic concepts and research methods were also clarified and explained.

Chapter two focused on analysing the concept of price discrimination and relevant theories as well as addressing the following:

- Different kinds of price discrimination;

- When price discrimination is required;
- Steps for differential pricing;
- Effects of price discrimination; and
- Limits to price discrimination.

In chapter three, international case studies were analysed to determine the effect of price discrimination on tourism demand. The case studies focused on nature-based tourism, recreation-based tourism and travelling (airlines).

Chapter four analysed national case studies and the data of a tourism organisation which practices price discrimination on accommodation **(Mosetlha Bush Camp)**, as opposed to two organisations that do not practice price discrimination on accommodation **(Golden Leopard Resort and Kgalagadi Transfrontier Park)**.

The aim of chapter 5 is to draw conclusions and make recommendations about price discrimination and the implementing thereof.

5.2 CONCLUSIONS

The following conclusions regarding the research can be made:

- Conclusions with regard to price discrimination from the literature study and international case studies.
- Conclusions with regard to data of national tourism organisations which practice price discrimination.

5.2.1 Conclusions with regard to price discrimination from the literature study and international case studies

The following are regarded as the main conclusions with respect to objectives 1 and 2 (cf. 1.3.2):

- Price discrimination is defined to be present if the same goods are sold to different customers at different prices.
- The main aim of price discrimination is to ensure a desirable profit situation in the long run and to eliminate or limit competition.
- Price discrimination can be used in virtually every organisation and can exist in every industry.
- The ability to charge different prices depends on the business versus consumers' ability and willingness to pay.

- The following five steps must be taken to achieve differential pricing:
  - Step 1 – Select a target market.
  - Step 2 – Divide the market into smaller customer segments.
  - Step 3 – Estimate the demand for each customer.
  - Step 4 – Determine the reservation price (which indicates willingness to pay) for each segment.
  - Step 5 – Determine prices for each segment.

- Three different kinds of price discrimination exist, namely first-degree, second-degree and third-degree price discrimination.
  - First-degree price discrimination
    - First-degree price discrimination is charging whatever the market can afford.
    - The ability to use this type of price discrimination rests on the consumer's willingness to pay.

- First-degree price discrimination is a limiting case and can only occur where an organisation has smaller target or niche markets and where it is possible to guess the maximum price each buyer is willing to accept.

- Second-degree price discrimination
  - Second-degree price discrimination involves charging different prices for different quantities or charging individuals different prices according to quantities purchased.
  - It occurs where there are many buyers within a market, and also where buyers purchase different numbers of units.
  - Two international case studies analysed second-degree price discrimination, namely in Broadway Theatre (different prices for different seat qualities) and airlines.

- Third-degree price discrimination
  - In the case of third-degree price discrimination consumers are divided into two or more groups and for each group there is different elasticity of demand.
  - Three international case studies investigated third-degree price discrimination, in Costa Rica, Broadway Theatre (discount mail coupons, which are targeted at consumers with a lower willingness to pay) and a film series.

- There are various different methods exist to determine the effect of price discrimination in different situations:
  - Economic models (econometric analysis);
  - Behavioural models, together with the estimated demand system;
  - Restricted and unrestricted model;
  - Sensitivity to price;
  - Regression analysis (statistical forecasting model); and

- Price elasticity analysis.

- Price discrimination was based on:
  - Nationality (national and foreigners);
  - Business and leisure travellers;
  - Quantity and quality; and
  - Willingness to pay for a specific product or service (e.g. time, convenience and flexibility).

- Price discrimination holds certain advantages and disadvantages for an organisation:

  - The advantages include that price discrimination:
    - Can increase total surplus, allowing a company or organisation to increase total revenue from sales.
    - Can increase profit or revenue.
    - Can improve efficiency.
    - Enables a company or organisation to eliminate all the competition.
    - Can achieve a more optimal pricing policy.
    - Can raise monopoly power (otherwise the company or organisation will choose to charge all customers the same price).
    - Brings new customers into the market, which can lead to an increase in sales.
    - Can increase consumer welfare.
    - Can yield additional profit.
    - Can lead to more production.
    - Can raise economic welfare (shows higher producer surplus rather than higher consumer surplus).
    - Can expand output.

- Is a way to extract as much consumer surplus as possible.
- Can allow a company or organisation to minimise welfare cost (taking into account price sensitivity of both groups, relative to total visitation).

- The disadvantages include:
  - The strong increase in price may have a negative impact on the surrounding areas.
  - Perfect price discrimination can lower consumer surplus.
  - The public's interest will suffer if price discrimination serves to preserve outmoded technology, production or distribution structures.
  - Market concentration decreases by means of price discrimination.

- The possibility to price discriminate is limited for at least three reasons:
  - *Hidden information*

  A monopolist does not know all the customers' willingness to pay.

  - *Arbitrage*

  When it is possible to buy a product or service at a low price and to resell it at a high price.

  - *Limited commitment power*

  The case where a monopolist makes a take-it-or-leave it offers; the "leave it" threat may pose problems if profitable customers are lost.

5.2.2 Conclusions with regard to the data of national tourism organisations implementing price discrimination

In achieving objective 3 (cf. 1.3.2), it was primarily found that:

- There may be distinguished between an elastic and an inelastic demand.
  - **Inelastic demand** *(the percentage change in quantity demand is smaller than the percentage change in price)* means that the increase in price leads to a decrease in visitor numbers, which leads to an increase in total spending by visitors and in turn to an increase in total income.
  - **Elastic demand** *(the percentage change in quantity demand is bigger than the percentage change in price)* means that the increase in price leads to an increase in visitor numbers, which leads to an increase in total spending by visitors and in turn to an increase in total income.
- Visitors sensitive to price changes have an elastic demand. The increase in price results in less visitors (a decrease in visitor numbers).
- Those visitors not sensitive to price changes have an inelastic demand. The increase in price will have no effect on demand; the visitors will be relatively unresponsive to price changes.
- Lower income groups are more sensitive to the price of a product than the higher income groups.
- Reasons why a price increase will not affect visitor numbers (visitor numbers increase although price increase) include:
  - There was an increase in visitors' annual income; and
  - The visitors are high-income individuals (visitors from the upper class).

5.3 RECOMMENDATIONS

Recommendations regarding price discrimination, as well as recommendations for future research can be made:

5.3.1 Recommendations regarding price discrimination

The following recommendations can be made to ensure the efficiency of price discrimination:

- More research on this topic needs to be done.
- In implementing price discrimination the following guidelines can be followed:
    - Understand price discrimination and the existence of the three different kinds of price discrimination.
    - Understand the conditions for price discrimination.
    - Understand the consequences of price discrimination.
    - Understand the various different methods to determine the effect of price discrimination.
    - Understand and know the steps for differential pricing.
    - Know the customers and market and how to segment it (break it up in distinct segments).
    - Understand demand, because price should reflect demand.
    - Keep in mind that people will often pay more for things that exactly meet their needs.
    - Keep in mind that income and willingness to pay play an important role in the decision to purchase.
    - Even though price discrimination is feasible, it is important to remember that it might not always be to the advance of the seller, since it can lead to intense competition.

- In order for an organisation to apply price discrimination successfully, the following conditions should be adhered to:
    - The organisation must have some way of keeping speculators from buying a service or product at a low price and reselling it at a high price.

- The organisation must have some market power.
- The organisation must have different price elasticity of demand for different buyers.
- It must be possible to distinguish at a reasonable cost.
- The markets must be separated effectively.
- The ability to charge different prices will depend on the consumers' income (ability) and willingness to pay.

5.3.2 Recommendations regarding further research

The following research is proposed:

- To determine the implications of different types of price discrimination on price elasticity.
- To determine the impact of price discrimination on South Africa's competitiveness as an international tourist destination.
- To determine the impact of price discrimination in different service industries.
- To identify the most suitable conditions for price discrimination to have the greatest positive impact.

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APPENDIX 1

According to **Yelkur & Herbig (1997)** the differential pricing for the hotel industry is based on:

1 **Target market**

Travellers

2 **Customer segments**

Vacationers, Business travellers and Transit passengers

2 **Demand estimation**

Market data and occupancy rates from historical records

3 **Reservation prices**

- *Vacationers*: expected to have the higher reservation price among the three customers segments because he/she is looking for maximum "enjoyment" and "relaxation", therefore is willing to pay a higher price for these values.
- *Business traveller*: reservation price is expected to be lower than that of the vacationer. The value he/she looks for is "convenient location" and generally has scheduled to stay but does not want to spend time commuting and would be willing to pay a higher price for this value.
- *Transit passenger*: these passengers probably have the lowest reservation price among the three segments. He/she basically looks for "a few hours' rest" before getting back on the road towards the final destination.

4 Price discrimination

Based on the specific location of the hotel, the customer segment can be identified. For example, if it were a tourist spot, the majority of customers would obviously be vacationers. Thus, though there is no change in marginal cost, different prices can be charged depending on the type of customer segment being served.

APPENDIX 2

Map 1: South Africa Map (SA-Venues, 2006)