# Application of the Price Discrimination in Marketing

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### Summary:

The issue of price discrimination is widely discussed in microeconomic theory and antitrust legislation in the study of the behavior of monopolistic firms. In this article price discrimination is considered from a marketing perspective. This paper holds the view that price discrimination can be successfully practiced not only by monopolistic companies but by companies that have accepted the marketing approach of management. It upholds the idea that third-tier price discrimination, whether alone or jointly with second-tier price discrimination, has its place in company marketing management. Price discrimination from first degree is regarded as inapplicable in marketing because it runs counter to its basic principles. Market segmentation has been proposed based on the criterion of the perceived product value as well as on the determination of different prices for a given product offered to different consumer segments.

**Keywords:** price discrimination, value based segmentation, algorithm for market segmentation based on consumer value

JEL: L11, L12, M31, M39

he present article aims to show that the price discrimination of third degree can be successfully used marketing-oriented companies by to increase their revenues. In this regard, this article reveals the nature of price discrimination, it summarizes the results of the most significant studies devoted to price discrimination and presents the three degrees of price discrimination. Furthermore it justifies the view that third-degree price discrimination, whether alone or jointly with second-degree price discrimination, can be used in company marketing management. The perceived value of the product to the customer is highlighted as an important criterion for segmenting the market, using price discrimination of third degree. What is more, an algorithm for market segmentation, based on the perceived value of the product by customers.

# 1. Essence and degrees of price discrimination

Price discrimination is explained for the first time by Pigou (1920). Price discrimination means a company to set different prices for a product for different users when differences in the price are not

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based on cost differences. As a general rule, the product offered at different prices is the same, but there may be slight differences (for example: different cover page for a book available at different places, different location of the seats in the theater, different seat location in a plane or train and etc.). Moreover, in such cases, production costs are either the same or slightly different, but the degree of the difference is not as great as the difference in the price.

Pigou (1920) identifies three degrees of price discrimination. Price discrimination of first degree occurs when the seller company negotiates with every buyer the maximum price what he is willing to pay for the product under the threat that sale of any quantity of the product could be denied. By placing the buyer in front of the "all or nothing" choice, the selling company forces him to pay the maximum price and thus the company can assign the entire consumer surplus. Price discrimination of second degree occurs when the selling company negotiates and sells the products at more than two prices, both higher than the possible single price. It has been observed in the cases when the seller may divide market demand into relatively large blocks of product units which are not necessarily of the same size, and fix different prices for certain buyer or buyers, though uniform ones within the unit. Thus it is possible for the vendor company to be assigned a greater portion of the consumer surplus. Price discrimination of third degree occurs when the vendor company divides the demand into two or more groups of buyers and sets different prices for the

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different groups, but equal within the same group. This is the most common form of price discrimination.

The studies of Spence (1977) and Maskin and Riley (1984) are really interesting in this field. The authors argue that first- or thirddegree of price discrimination is applied when the characteristics of the clients are universally known, while second-degree price discrimination is applied when the characteristics of the clients are private information (known only by the client). In their opinion, nonlinear prices should be used in order to create incentives for clients so that they reveal their characteristics. An example of price discrimination from second degree is selling two products in a package at a price lower than if they are sold separately.

*Carroll and Coates (1999)* address the issue of price discrimination in terms of the profit that a company can make if it applies price discrimination from first, second and third degree. They concluded that it is impossible to determine in a straightforward way whether the company will "capture" the largest portion of consumer surplus, if it is uses two-part tariff rather than price discrimination of third degree.

In order to reveal the three degrees of price discrimination, Hubbard et al. (2009), McTaggart et al. (2010), Perloff (2009), Swann and McEachern (2003) and Taylor and Frost (2006), use a mix of linear and non-linear pricing, but in most of the cases make no attempt to link the three. An integrated approach to the study of the three degrees of price discrimination is offered by Marsden and Hugh (2011).

Another significant study focused on price discrimination is the one carried out by *Stole (2007)*. He examined price discrimination in the context of competitive markets, distinguishing between direct and indirect price discrimination. *Direct price discrimination* is based on visible customer characteristics (for example, age, gender, social status, etc.). *Indirect price discrimination* applies where there are no user-visible features and the company offers price quotes available for all buyers, with a view to facilitate their choice of the best price (for example coupons, quantity discounts, sales of bundled products, etc.).

# 2. Prerequisites for implementing price discrimination

In order to implement price discrimination several conditions need to be met: first, the demand curve of the company product should have a negative slope; second, there should be at least two equal groups of clients with regard to which the price elasticity of demand is different; third, the manufacturer should be able to distinguish readily and without incurring extra costs between the different groups of users, and fourth, the company should be able to prevent buyers who buy at a low price to resell the product to other buyers who are willing to pay a higher price for it (Yotova, 2009). The latter requirement is covered by the products consumed by the customers at the time of purchase, so these products cannot possibly be resold. Therefore the policy of price discrimination can easily be applied to items such as electricity, gas, water and services medical, transport, cultural and others.

The anti-trust legislation prohibits price discrimination when it is applied by companies with a monopoly or dominant position, or in case there are two or more companies in a dominant position, which may prevent, restrict or distort competition and affect the consumers' interests. In Bulgaria a company is considered to hold a dominant position, if its market share exceeds 35 percent.

There is no clear evidence that price discrimination is a "something bad". This seems logical considering that price discrimination has different aspects and each case of price discrimination should be assessed according to its specificity. For example, the medical doctors in countries without a developed national healthcare system apply price discrimination which is based on the solvency of the various population groups. They argue they can thus provide healthcare and services to poorer families and individuals. The introduction of uniform prices would render such services inaccessible for the majority of the population, and every attempt for administrative intervention (for example by fixing the maximum price), would break the balance between demand and supply of such services and will accordingly bring negative consequences for the overall market.

The assessment of whether price discrimination is profitable or not for the consumers can be made only after a detailed analysis of each case. The existence of users willing to pay a higher price for a specific product under certain circumstances, which is not connected with

direct coercion on the part of the seller, allows the other users to pay a lower price for the same product, without brining losses to the producer. Everything depends on the reasonable estimation of the balance of the interests of producers and consumers *(Yotova, 2009)*.

In real life price discrimination is applied easier when the company is a monopolist, because it controls the whole supply of a certain product. Moreover, such a pricing strategy is used by many other companies, which charge different prices for their customers, depending on the volume of orders, on location and other factors. (*Rakarova, 1996*).

This article holds the view that price discrimination of second and third degree can be used in company marketing management in case it does not restrict competition in the specific market. These two levels of price discrimination can be used both separately or in combination, though the third-degree discrimination is most applicable. When the market is segmented within the individual segments, quantity discounts could be made. We believe that the price discrimination of first degree has no relevance in marketing, because placing the buyer in front of the "all or nothing" choice runs counter to the basic principle of marketing for maximum satisfaction of customer needs and necessities.

The motive behind implementing price discrimination in marketing is companies' attempts to increase the total revenues and accordingly profits.

In order to clarify how price discrimination affects company revenues, we can consider

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a specific case.

Table 1 presents data on students' and non-students' propensity to spend money on cinema tickets.

Table 1. Maximal tendency for paying for students and nonstudents

	Students	Nonstudents
Maximal price (BGN)	5	10
Number	200	300

Source: The example is adapted on Sha, Oz, How to price – A Guide to Pricing Techniques and Yield Management, Cambridge University Press, 2008, p. 6

In this example we assume that all consumers will buy one ticket for a specific movie. As shown in Table 1, students would not pay more than 5 BGN for a ticket and the rest would not pay more than 10 BGN.

First option: Determine a common price for all users

In case you set a price of 10 BGN for all users, then the film-show will be attended only by nonstudents. Alternatively, if you set a price of 5 BGN for all consumers - a ticket will be bought by students and nonstudents alike. By ignoring the costs, in case of setting a higher price the movie theater would generate revenues of 3,000 BGN (10 BGN\* 300 = 3000 BGN) and in case of the lower price - 2500 BGN (5BGN\* (200 + 300) = 2,500 BGN). Hence the cinema will make more profit, if it sells tickets only to nonstudents.

Second option: Determine a different prices for the two categories

If the cinema management advertises a 5 BGN discount on the ticket for students requiring that students present a valid student card, then tickets will be sold to the two categories of customers and the overall

income will stand at 4,000 BGN (10BGN \* 300 + 5 BGN \* 200 = 4000 BGN), which goes beyond the maximum income (3,000 BGN) which can possibly be generated in case that the price of 10 BGN per ticket is applied for all users.

From the above-presented case the following conclusions could be drawn. First, the definition of an average price for all users does not suggest maximizing the revenue of the company (Varian, 1989). In this case, the average price ranges between 5 and 10 BGN per ticket. Second, setting more than one price will increase company revenues, only in case a requirement and clear criterion is found to ensure that each individual can prove their belonging to a particular market segment. Such a criterion in this example is the possession of a student book against which you can buy a tickets at a lower price. In other words students cannot possibly purchase more than one ticket at the discount price of 5 BGN and then resell them to nonstudents for the prices ranging between 5.01 and 9.99 BGN. Third, the price discount for particular market segment does not presuppose that the company will realize lower revenues. The sale of tickets for students at the lower price of 5 BGN increases the number of the visitors to the show without increasing costs and as a result revenues for the cinema are increased.

Albeit simple, the presented case illustrates the need of market segmentation for pricing purposes and shows that price discrimination of third degree (pricing segments) can be used to raise company revenues. Further on, this article will use segment-based pricing with the meaning of third-degree price discrimination.

In order to have an effective price formation based on segments, it is necessary that certain conditions are met:

- 1. The consumer sensitivity to price varies across different market segments.
- The revenues received as a result of the determination of different prices of the product for different segments exceeds the cost of reaching these segments.
- The company is able to prevent buyers who have purchased the product at a lower price from reselling it to other buyers willing to pay a higher price for the product.
- The company is able to control the supply at different price levels for the different market segments.
- 5. Segment-based pricing does not violate statutory provisions.
- Along with the above-mentioned conditions, we believe that to have a successful segment pricing, the price for various segments should reflect the real differences in the product value as perceived by the customer. To substantiate the reasons for such an argument, we would clarify the need for market segmentation based on product value as perceived by the customer, and the differences between the latter and the other segmentation criteria.

## 3. Value of the product for the customer - important criterion for market segmentation used for pricing purposes

The concept of market segmentation is essential in marketing. Its relevance consists in dividing the heterogeneous

market into relatively homogeneous user groups (segments) that have similar needs and will have a similar response to marketing offers, incentives and programs. Furthermore these groups should be sufficient in number so as to be strategically important for the company. The choice of appropriate segmentation criteria and the objective identification and correct description of the market segments raises the effectiveness of marketing, including the pricing decisions, among others.

In many companies market segmentation focused primarily on customer is characteristics that are not always suitable for making the correct pricing decisions. Hence consumer groups are identified that do not describe adequately the reasons for the differences in purchasing. In other words, consumers are classified in a way that is meaningful for making pricing decisions. Most often these include demographic, geographic, socioeconomic and psychological criteria for B2C (Business-to-Consumer) markets, and organizational criteria such as size of the business buyers, sector affiliation and others for the B2B (Business-to-Business) markets. Several studies show that these criteria are primarily descriptive rather than causal in nature. They are not directly related to consumer behavior and purchase price. As a result information for the reasons for purchase could be obtained occasionally, but such information rarely facilitates pricing decision making, especially with regard to the decisions related to setting different prices to maximize the profits from different market segments.

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As it is seen from the presented example, setting one price for the entire market creates the risks of loss of profits - on the one hand, due to the lower price for some sub-segments, and on the other hand, due to the higher price for other sub-segments, which redirects demand to competitors.

In an attempt to resolve this problem, Haley (1968) introduced in marketing literature, the concept of market segmentation based on benefits, which is applicable to the both consumer and business markets. This concept is based on the assumption that individuals differ in their assessments of the possible specific features of the product to ensure to them the desired benefits. The main advantage of benefit-based segmentation is the causal connection between the demanded benefits and the purchase behavior. Wind (1978) examines the expected benefits as the preferred basis for common understanding of the market and for making decisions about positioning, advertising, distribution and pricing. The proponents of this segmentation criterion argue that the benefits people seek are the main reason for purchase, and benefits are the appropriate basis for market segmentation (Assael, 1995). Kotler (1994) goes even further, by describing the segmentation based on benefits for the customers as a powerful form of segmentation. Today this segmentation criterion has gained popularity in academic journals and in the business field. The main advantage of segmentation based on benefits, as mentioned above, is a causal connection between the expected benefits and purchasing behavior, including the price

that consumers are willing to pay for the product. There are two major approaches to the research of price - an approach of the product's overall utility and the approach based on the usefulness of the different product features. Each approach includes various research techniques (*Jelev, 2002*).

It is important to note that users may search for a particular benefit that the company product may ensure, but if they do not realize the benefit, they would not pay a higher price for the company product. In this regard we consider that not the product usefulness and the sought benefits, but the product value as perceived by the customer is the more relevant segmentation variable for pricing purposes.

Dolan & Simon (1996) examined the perceived value as the maximum price that the customer is willing to pay for the



Fig 1. Pricing by segments

Quantity

Source: Adapted from Ruskin-Brown, I., Practical Pricing For Results, Thorogood Publishing Ltd, 2008, p. 115

# Price (BGN)

product. The perceived value is the one that according to the client should be provided by the product, meaning only the benefits perceived by the consumer. In this context, later on in this study valuebased segmentation will be assumed as the product value as perceived by the customer.

Figure 1 illustrates a situation in which the company has divided the market into four segments. Segment 1 encompasses product users for whom the product has the highest value, and segment 4 - users for whom the product has the lowest value. For each of the four segments the company sets different prices, so it ultimately realizes the highest possible revenue.

In order to be effective in the pricing by segments, it is necessary that all factors influencing the perceived value of the product by the customer are taken into consideration.

The significant differences between value-based segmentation and the other segmentation criteria are essential for pricing for a number of reasons, more specifically:

- Most of the segmentation criteria are in a weak correlation with the different motives of the buyers to pay higher or lower price.
- Market segmentation based on the consumer needs gives information only on the differences that are relevant for consumers, and no information on this how the perception of those needs would affect company revenues and profit. Market segmentation based on value allows the company to set higher prices for certain market segments

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and hence make higher revenues and boost profits.

✓ To implement value-based market segmentation, it is necessary to conduct in-depth interviews with consumers, so as to find out why they see as attractive certain product characteristics, or would single them out as attractive, if they are informed about them. Such knowledge provides the opportunities to develop new products and services and may expose flaws of the strategies based on previous market researches.

In connection with the above stated, we believe that for the purposes of pricing as a basis for market segmentation, the most appropriate is the perceived value of the product, albeit not alone but in combination with other segmentation criteria. Just by using this approach, the marketing specialist will be sure that the consumers from the different sub segments tend to pay the most profitable price for the company that could possibly be defined for a certain product.

# 4. Algorithm for market segmentation based on consumer value

The segmentation, based on value, could be represented as a six-stage algorithm (Figure 2).

Determination of the basic segmentation criteria

As it was mentioned, the purpose of segmentation is dividing the market into the consumer groups which have similar needs and a similar response to the marketing offers, incentives and programs. The main requirements with regard to the selection of the criteria for segmentation are that



Figure 2. Market segmentation, based on consumer value Source: Adapted from Nagle, T., J. Hogan and J. Zale, The Strategy and Tactics of Pricing – A Guide to Growing More Profitable, 5 ed., Pearson, New Jersey, 2011, p. 38-46

they should be specific and constant over a longer period, appropriate, measurable, meaningful, relevant and accessible. (Frank, Massy and Wind 1972, Loudon and Della Bitta 1984, Baker 1988, Kotler 1988). The basic segmentation criteria are selected on the basis of a comprehensive analysis of the overall market.

The input for this basic analysis can be obtained from the existing studies for market segmentation, industry databases and other secondary sources of information. The output information includes consumption patterns, a description of the users' preliminary set of current consumer needs and temporary list of unmet consumer needs. Based on this background information the company can develop an initial segmentation map.

Identification of the different sources of value

For pricing purposes, it is important that the sources of value of the company's product which distinguish it from the products of its main competitors are identified. Marketing specialists can explore the value of the company's product and rival products as a whole, or explore their individual characteristics, which are sources of value for customers.

In-depth interviews can provide insights into how and why consumers choose between the products of competing companies. Additional information about the perceived value of the product for the customers can be obtained from the company's experts, distributors and sales staff. The output information from this step includes building blocks for market segmentation based on the value of the product, including a list with the sources of value, arranged according the degree to which such lists discriminate among consumers (suitable instrument is a statistical cluster analysis of quantitative data), explaining how each source adds value and whether consumers in each segment estimate this value. The list should also include the value that consumers would obtain if the company's product or service offers the satisfaction of unmet needs.

Defining corporate strengths and weaknesses

At this stage the company determines whether it has advantage over its main competitors. What sources of value the company can deliver more efficiently and with lower costs than competitors? What sources of value are limited by resources and business activities? The experience of the company, its investments, the skills of its employees and the overall strategy of the company are among the main factors in choosing the segment. Consideration should be given as well to the competitors' weaknesses and threats from which the

company can benefit.

Creating primary and secondary segments

This step combines what the company has realized so far with regard to the differences in the customer values of the product with the business costs and restrictions involved in servicing consumers.

Primary segmentation is based on the most important criteria for differentiating between the customers.

Secondary segmentation divides the primary segments of the subgroups according to the second most important criteria; the third-tier segmentation separates the secondary segments according to the third most important criteria, etc. In practice, the depth of successful segmentation does not depend on the number of defined segments, but on the critical sources of value. The minor differences between the sub segments have less influence on the company pricing policy.

Primary segments should take into account the company's opportunities and weaknesses and consumer needs. Primary segmentation is essential because it provides the main differences between customers. Secondary or subsequent segmentations use as segmentation criteria the different sources of value or the perceived value of the product as a whole.

The use of the product value perceived by the customer as a criterion for the formation of sub segments is important for pricing purposes. The market segmentation by value that the company product has made for consumers, allows the company to focus on those product characteristics that are essential for the customers belonging Application of the Price Discrimination in Marketing

to the respective segment, in order to convince them to pay a higher price for the product. By understanding how the value for the customer varies across segments, companies can develop strategies in order to bring the price in line with the perceived value of the product to the customer and thus boost profits.

Making detailed descriptions of the segments

Although the segments are formed on the basis of certain criteria, a detailed description of each segment should be made to raise the awareness among sales staff and the marketing professionals in the field of communication of the kind of consumers which each segment represents.

Development of metrics and requirements by segment

At this stage of the algorithm it is important to determine whether the segmentation would be successful in effect by developing of metrics to measure the value in the marketing segments and introduce requirements that encourage consumers to accept the pricing policies for their segments.

Themetrics (indicators, measurements, units) are the basis for tracking the value that the consumers would obtain and how they would pay for that value. For example, car hiring services, distance and the time of use is used as an indicator, so customers should pay according to the mileage in kilometers, and for the time of renting the car. In some cases discounts are offered for renting a car for a week or month.

The requirements involve the policies, regulations, programs and structures which customers are obliged to follow in order to



Fig. 3. Different prices for different segments Source: Adapted from Ruskin-Brown, I., Practical Pricing For Results, Thorogood Publishing Ltd, 2008, p. 116

take advantage of discounts and rewards. For example, such possible requirements pertain to minimum quantity, period of membership, purchase of a package service and etc. Some restrictions may prompt consumers to pay a higher price, regardless of delivery costs.

The purpose of setting requirements and imposing restrictions for certain market segments is to expand and increase the possible revenue from the higher prices set for the market segments that are less sensitive to changes in price levels. This increase should offset the decrease in revenues from lower prices, developed for the consumer segments who are price-sensitive.

# 5. Forms of price formation based on segments

Depending on the specifics of each segment, companies can use various forms of price segmentation by focusing on selected sources of value. The most recent forms used in price segmentation are those: based on certain characteristics/features of the consumer; based on the shape of the product; based on the place where the product is offered; based on the time of purchase and other forms. The forms of price formation are not mutually exclusive. On the contrary, they should be combined in a pricing strategy, whenever possible.

Figure 3 illustrates the determination of

different prices for a beverage according to the value it brings to customers, irrespective of time and under different circumstances. As seen from the figure, the product price ranging from 0.80 BGN/ literto3.10 BGN/ liter.

The most popular Western publishers often sell the first editions of books at a higher price while the next ones at a lower price (mixed pricing strategy). In both cases there are users who are willing to pay a higher price for faster delivery. This requires that companies should take into account all components of the product value as perceived by the customer in order to segment the market on the basis of the product value and develop and launch a flexible pricing policy for each selected segment.

## 6. Conclusion

Price discrimination can be used not only by the companies that are monopolists but also by other marketing-oriented companies in case price discrimination does not restrict competition in the specific market. We hold the view that only price discrimination of second and third degree have an application in marketing, given that the buyer is faced with the "all or nothing" choice, typical of first-degree price discrimination, is contrary to the basic principle in marketing for maximum satisfaction of consumer needs and necessities.

The most important results of the present study are:

 It summarizes the results of the most significant studies, devoted to the price discrimination; Application of the Price Discrimination in Marketing

- It analyzes the topic for the price discrimination from perspective of the microeconomic theory, anti-trust law and marketing;
- It justifies the view that the price discrimination of third degree, either alone or jointly with second-degree price discrimination, can be used in company marketing management in order to increase company revenues and profits;
- It highlights the product value as perceived by the customer as an important criteria for market segmentation based on price discrimination of the third degree;
- It presents an algorithm for market segmentation based on the product value as perceived by the customer.

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