EFFECTIVE USE OF THE PRICE DIFFERENTIATION STRATEGY IN PRICE MANAGEMENT

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Efektívne použitie stratégie cenovej diferenciácie v manažmente cien

Abstract: Price differentiation relates to a pricing tactic that gives a company an opportunity to charge different prices for the same product based on the customer segmentation. This statement is based on the following several assumptions: different customer value systems, information and other conditions imbalance, free trade, free movement of people and capital, etc. In this research article, we work with the assumption that in the inside environment of the company there has to be created the process that ensures reliable price management decisions by the proper set-up of price differentiation strategy and its tactics. This research paper aims to identify the relationship between effective implementation of price differentiation strategy and other organizational parameters concerning price management. The Chi-Square Test of the Independence, and the coefficients for determining the association among nominal variables were Cramer's V and the Phi coefficient. Eta coefficient was applied to measure the strength of relationship between the nominal and the interval variables. Results of non-parametric testing indicate that there is statistically significant dependence between the effective use of price differentiation strategy and price management techniques.

Keywords: Price differentiation, price strategy, value, pricing metrics, levels of price differentiation

JEL Classification: L1, M21, M31

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1 Introduction

Price management experts endeavour to build an optimal balance between price policy, price control and price communication. Price policy based on strategic goals of the company with an effective price control system ensures preventing revenue leakages in pricing as well as in selling process. The first point in price management, which has to be considered, is price strategy. Pricing strategies directly or indirectly influence customer decisions through the applied pricing tactics. While the buying decision-making process creates attitude towards products, this selection process leads to the customer decision about the future purchase, based on comparison between other available substitutes. Customer's subconscious creates a perception of product quality that refers to the price. However, values together with customer value system build an integral unit. In this sense, values are as particular positive or negative targets of customer preferences. They refer to the concrete socio-economic conditions of customer life and are shown as regulators of their behaviour. We can consider that customer value system represents their implicit or explicit concept of the value wishes, which affects expected form of his future behaviour and targets. Based on this information, we are able to conclude that customer values and value system influence customer consumption behaviour, which leads to the quantity required.

2 Literature Review

Knowledge of the consumer life cycle behaviour makes sense depending on changing conditions that vary through the human life cycle above all caused by the changes in the level of entropy. Each consumer during his life represents different roles that affect his customer behavior.

Consumer behaviour is directly affected by the role that he or she plays in the period of consumption. Therefore, consumption of particular consumer changes with the change of his role. It has to be said that this change has not any influence on consumer's personality. Consumer personality depends on his psychological characteristics, which are displayed as visible reactions on outside subjects. Consumer personality plays a significant role in the selection of product or service trademark.

The presented value must be consistent with the pricing strategy (Hinterhuber, 2018). Exactly price differentiation strategy provides several alternatives to communicate price and value towards the customers. Companies use communication as a channel to identify and differentiate customers that add additional valuable revenues to make higher profits. Companies that decide on the applied price policies to differentiate their customers concluded that is impossible to provide all their clients the same level of services without negative impact on their earnings. Applied differentiation results in the target oriented marketing. Except the customer differentiation, one part of price communication refers to a company's ability to communicate proper value to the consumer. The company with the efficient value communication of its products and services has pre-requisites to adopt value-based pricing.

Value-based pricing is based on the statement that the company is able to communicate differentiated advantage to customers if they decide to consume its products and services. From this point of view, price differentiation is a source of reliable and successfully applied competitive price strategy based on the differentiation from the competitive substitutes (Nagel and Holden, 2006). Despite these significant positives, company will earn success from the differentiation only if the costs of differentiation are less than additional profit gained from the differentiation process (Kotler, 2003).

The process of creating perceived product value does not work identically for each customer like on request. For one group of customers, price may be the dominant indicator of quality, then sensitive pricing can be used to determine market position. For another group of customers price is a relative indicator of quality, then price can be used to modify the perceived product value, created previously. Different groups of customers attribute different value (utility) to product; this can be used to optimize revenue through price differentiation.

On the aggregate level, the standard welfare theorems leave no room for price discrimination. These aseptic theorems simply ignore the different elements of product differentiation (spatial and temporal elements, quality or taste differences, uncertainty, perishability) that make price discrimination possible and profitable (Philips, 2005).

In general, price differentiation refers to the practice of a seller charging different price to different customers, either for the same product or for slightly different version of the same good (Phillips, 2005). The main goal of price differentiation is to increase profitability of a company, revenue optimization

and unit sales maximization (Brien, 2014). Price differentiation can flexibly adapt to changing offline market conditions also in online markets. Moreover, differentiation allows consumer demands to be reconciled temporally, thus enabling the necessary resources and capacities to be optimized (Meier and Stormer, 2009). The profitability of price discrimination varies with the point at which consumers are segmented (Shor and Oliver, 2006).

Achieving such goals as higher profit, better utilization of resources, building a long-term customer relationship or gaining a market share, can be realized by intelligent price differentiation.

The implementation of price differentiation strategies is based on two key conditions:

- separability of the markets,
- prevention of arbitrage.

"Price discrimination is feasible as long as all prospective buyers can access any price level." (Hinz, Hann and Spann, 2011; Chae, 2003).

The limit of a more price differentiation is reached, when the transaction costs for the pricing scheme become too high, when the costs of avoiding arbitrage exceed the advantage of a more refined tariff system (Knieps, 2014). Price differentiation can be based on different criteria, such as customer segments, time, quantity, or range of service (Meier and Stormer, 2009). The most applied is product versioning.

Product differentiation refers to selling the same or slightly modified product for distinct prices to all customers. It is often used when the group-based price differentiation is not feasible and the company sells a portfolio of products competing in a variety of different market segments (Farres, 2012). When the company comes to the selected market with the differentiated product or service, there does not need to be a limit or cap of the price level for making decision about the final price purchase. This level is used as a comparative base to apply reliable marketing, pricing as well as others strategies linked to the purchase. It must also be ready to build pricing capabilities (Johansson et al., 2012; Johansson et al., 2015). According to Wolk et al. (2010), it seems that price differentiation mostly occurs among big companies with market power that can separate markets. Also there is an asymmetric effect of strategic customer behaviour on quality-differentiated firms (Liu and Zhang, 2013).

In this case the company adopts price strategy based on product versioning in order to develop a product with several differences. Price differentiation means besides cost differences (Cai et al., 2019), demand aspects also have to be taken into account a product quality for pricing (Kugler and Verhoogen, 2012; Motta, 1993; Corstjens and Lal, 2000). Furthermore, an increase in quality difference within firms increases the optimal prices (Yuxiang and Tai-Liang, 2020). The main condition must be observed, namely that the seller should be able to explain the differences in price. For example, a modified product can be of lower or higher quality (Choudhary et al., 2005). Then the company can win new customers with low willingness to pay (Raza, 2015). Quality becomes the differentiation criterion that allows each company set up a price relatively independently from competitive companies (Wauthy, 1996). Company can apply it depending on the relationship between price and quality nine different strategies based upon market and customer segmentation. Possible strategies mentioned in the text above are processed in the table below.

Table 1: Nine strategies based on product quality and price

		Price		
		Low	*Medium*	*High*
Quality	*High*	1) Premium strategy	2) High-value strategy	3) Super-value strategy
	Medium	4) Overcharging strategy	5) Medium-value strategy	6) Good-value strategy
	Low	7) Rip-off strategy	8) False economy strategy	9) Economy strategy

Source: Kotler, 2003

Strategies 1, 5 and 9 can be applied to the same market segment. Strategy differentiation follows different consumer groups (segments). Existence of these strategies depends on the existence of three groups of consumers: those who prefer quality, those who prefer price and those who balance between quality and price. Strategies 2, 3 and 6 are those from which it is possible to attack companies that are on the diagonal link. These strategies stress better purchase conditions for customers. Strategies 4, 7 and 8 are not reliable for the fair behaving companies.

3 Research Methodology

Pricing strategies directly or indirectly influence customer decisions through the applied pricing tactics. In this research article, we work with the assumption that there has to be created in the inside environment of the company the process that ensures reliable price management decisions by the proper set-up of the price differentiation strategy and its tactics. The reason why we focus on this very topic is that there are insufficient scientific studies addressing the topic of price strategy and price management tactics in companies. Therefore, the aim of our research study is to identify the association between effective use of price differentiation strategy and price management parameters in Slovak companies. The statistical sample (N = 250 respondents) is comprised of managers operating in tactical and top management. The sample was created in PSPP by random selection. The researchers ensured the measurement objectivity by using data collection tools in electronic form to prevent influencing the research subject. The participants were instructed in writing by one researcher. The observation survey was conducted using a questionnaire on the decision-making in price management. The data obtained through the questionnaire method are of nominal and cardinal variables. Thus, the type of the variable also made the selection of statistical methods conditional.

Two-dimensional inductive statistics methods were used to test the dependence of the nominal variables by a non-parametric test – The Chi-Square Test of Independence, and the coefficients for determining the dependence of the individual variables for the nominal data were Cramer's V and the Phi coefficient. The Cohen scale was used to interpret the value of coefficients (Cohen, 1988; Hanák, 2016) was used. The data were analyzed in PSPP statistical software. Hypotheses were tested at a significance level of $p \leq 0.05$; while maintaining the primary rule of the Chi-Square Test of Independence, where the theoretical frequencies did not fall below a value of 5 in 80%, and for other values $X > 1$ applied. Null and alternative hypotheses were tested, which we present in individual results.

Researchers have ensured the objectivity of measurement using data collected through the on-line form of the secondary sources, which represent the financial statements, annual corporate reports and analysis of external entities. All variables represented interval or nominal data.

4 Results and Discussion

Price differentiation is primarily associated with charging different prices for the same product to different groups of customers (Cai et al., 2019; Trifonov, Grichin and Kovaleva, 2014; Hupperich et al., 2018). Ultimately, it is about providing discounts. Table 2 shows what techniques companies use to implement the price differentiation strategy. The variable *Pricing methods refers* to approach to setting prices (cost-based pricing, competency-based pricing, value-based pricing).

The non-parametric Chi Square Test of Independence was used to test the dependence of price management parameters (technique and metrics used) and the effective use of price differentiation strategy. The Cramer's V and the Phi coefficients measure the strength of relationship between the nominal variables. The following hypotheses were tested:

H0 = there is no association between the price management parameters (*Pricing methods, Segment discounts, Volume Discounts, Season discounts, Discount for selected customers, Monetary Expression of Benefits, Current vs. target price, Segmentation, Cost-based pricing*) and the effective use of price differentiation strategy.

H1 = there is association between the price management parameters (*Pricing methods, Segment discounts, Volume Discounts, Season discounts, Discount for selected customers, Monetary Expression of Benefits, Current vs. target price, Segmentation, Cost-based pricing*) and the effective use of price differentiation strategy. The summary results are shown in Table 2.

As it turned out, the impact of the effective use of price management parameters on the effective use of price differentiation strategy is significant. Based on the results, we have accepted the H1 hypothesis at a significance level of $p \leq .05$, because of a strong statistically evidence of dependence among the effective use of price differentiation strategy and the *Pricing methods* (p-value = .042, df = 5). Despite the strong relationship between researched variables, there is a weak dependence (V = .22).

Similar results were obtained in relation between the variable *Season Discounts* and the effective use of price differentiation strategy, with strong statistically significance (p-value = .02, df = 2, V = .23).

Table 2: Summary results table for association between Price differentiation and other nominal variables [Phi, Cramer's V, p-value]

Variables	Value Pearson Chi-Square Statistic Likelihood Ratio	df	Asymp. Sig. (2-tailed)	Statistic PhiCramer's V
Pricingmethods	11.52	5	.042	.22
	10.84	5	.055	.22
Segment discounts	7.13	2	.028	.17
	6.88		.032	.17
Volume discounts	8.29	2	.016	.18
	8.63		.013	.18
Season discounts	12.41	2	.002	.23
	11.05		.004	.23
Discount for selected customers	7.02	2	.030	.17
	7.31		.026	.17
Segmentation	10.13	1	.001	.20
	9.23		.002	.20
Cost-based pricing	8.12	1	.004	.18
	6.90		.009	.18
Monetary expression of benefits	7.80	2	.020	.18
	7.29		.026	.18
Current vs. target price	8.27	3	.041	.18
	7.42			.18
No. of Valid Cases				**245**

Source: own processing

The H1 hypothesis about *Segment discounts* is also accepted at a significance level of p ≤ .05, with strong evidence of association among the researched variables (p-value = .028, df = 2). The dependence was confirmed by strength of V = .17 between *Segment discounts* and effective use of price differentiation strategy.

The next hypothesis H0 about *Volume Discounts* is rejected and an alternative hypothesis H1 is accepted at a significance level of p ≤ .05, because there is a strong evidence of association among the researched variables (p-value =

.016, df = 2). The dependence between the variable *Volume Discounts* and effective use of price differentiation strategy was confirmed by strength (V = .18).

We have rejected null hypothesis H0 at the significance level of p <.05, and have accepted alternative hypothesis H1. There is a statistically significant dependence between the effective use of price differentiation strategy and Segmentation (p = .001, df = 1), but its intensity is weak (V = .20).

Hypothesis H1about *Discount for selected customers*" was also accepted at a significance level of p ≤ .05, with strong evidence of association among the researched variables (p-value = .03, df = 2). The dependence was confirmed by strength of V = .17 between *Discount for selected customers* and effective use of price differentiation strategy.

The H1 hypothesis about *Cost-based pricing* is also accepted at a significance level of p ≤ .05, with strong evidence of association among the researched variables (p-value = .004, df = 1). The dependence was confirmed by strength of V = .18 between *Cost-based pricing* and effective use of price differentiation strategy.

The next hypothesis H1 about *Monetary expression of benefits* was accepted at a significance level of p ≤ .05, because of the strong evidence of association among the researched variables (p-value = .020, df = 2). The dependence between the variable *Monetary expression of benefits* and effective use of price differentiation strategy was confirmed by strength (V = .18).

Finally, we monitored the dependence between the use of price differentiation strategy and *real vs. goal price*, where the strong evidence of association was confirmed (p-value = .041, df = 3). However, the strength of the dependence is weak V = .18.

The non-parametric Chi Square Test of Independence was used to test the dependence of price management parameters (techniques and metrics used) and the effective use of price differentiation strategy. The Eta coefficient measures the strength of relationship between the nominal and the interval variables. Eta squared (η^2) is a squared measure of association defined as the ratio of variance in an outcome variable explained by a predictor variable, after controlling for other predictors (Adams and Conway, 2014; Shaldehi, 2013) and is used as an index of the proportion of variance attributed to one or more effects (Salkind, 2010; Field, 2010).

The following hypotheses were tested:

H0 = there is not dependence between the cardinal variables (No. of Key pricing technique and No. of pricing metrics) and the effective use of price differentiation strategy.

H1 = there is dependence between the cardinal variables (No. of Key pricing technique and No. of pricing metrics) and the effective use of price differentiation strategy.

The summary results are shown in Table 3.

Table 3: Summary results table for association between Price differentiation and other cardinal variables [p-value; ETA; η^2]

Variables	Value Pearson Chi-Square Statistic Likelihood Ratio	df	Asymp. Sig. (2-tailed)	Statistic ETA,η^2
No. of pricing metrics	22.17 18.87	11 11	.023	.19 .036
No. of Key pricing technique	38.57 35.87	21 21	.011	.11 .012
N of Valid Cases	**245**			

Source: own processing

We accept the hypothesis H1 at the significance level $p \leq .05$, because of strong statistically significant dependence on the No. of Key pricing technique and the effective use of price differentiation strategy ($p_{\text{Key pricing technique}} = .011$). The variable price differentiation strategy explains a very low proportion of variability in the number of Key pricing technique ($\eta^2 = 1.2$ %; ETA = .11). We also accepted the hypothesis H1 at the level of significance $p \leq .05$ about the dependency of price differentiation strategy and the number of pricing metrics, because of the strong statistically significant dependence between both variables (No. of pricing metrics and the effective use of price differentiation strategy)($p_{\text{No. of pricing metrics}} = .023$). Therefore, the effective use of price differentiation strategy can explain only a small proportion of variability

in the No. of pricing metrics ($\eta^2 = 3.6$ %; ETA = .19). Outcomes of our analysis prove multiple dependency of an applied price differentiation strategy and the amount of pricing metrics and techniques used. Companies with applied price differentiation strategy obviously use pricing techniques focused on price discounts and other forms of benefits that help increase efficiency level of applied price differentiation strategy. We have also confirmed that companies focused on the efficiency in applying pricing techniques process as part of price differentiation strategy, actively evaluate all impacts of applied pricing decisions. All above specified and described findings contribute to ensuring the efficiency in the price differentiation strategy application process.

5 Conclusion

There are many ways, how a company can increase and ensure its revenue. We have focused in this scientific article on the price differentiation strategy to prove its importance for the strategic decisions about the future profitability and efficiency. From this point of view, we strongly emphasize the importance of the price differentiation strategy for the correct set-up of the process of the company revenue optimization.

In this research article, we work with the assumption that it is has to be create in the inside environment of the company, process that ensures reliable price management decisions by the proper set up of price differentiation strategy and its tactics. Clearly defined and proper implemented price strategy gives the company explicit manual to the use of the right price techniques of the price management. And it is also a tool for building and setting up an inside company evaluation system of the impacts, which results from the company price decisions.

The price strategy can be implemented through the product versioning-based differentiation, time-based differentiation, group-based differentiation, couponing and self-selection-based differentiation, and regional-based differentiation. All of the discussed tools differ in terms of feasibility and difficulty across customer segments. We mention that the price differentiation strategy can be also used as a competitive tool.

Results of non-parametric testing indicate that there is statistically significant dependence among the effective use of price differentiation strategy and the

number of key pricing technique as well as number of pricing metrics. Our results also reveal that companies with effective price differentiation strategy can more effectively apply price controlling metrics and techniques.

Our research outcome has confirmed that the companies with applied price differentiation strategy obviously use pricing techniques focused on price discounts and other forms of benefits that help increase efficiency level of applied price differentiation strategy. We have also confirmed that companies focused on efficiency apply pricing techniques process as   part of price differentiation strategy and actively evaluate all impacts of applied pricing decisions. All specified and described findings contribute to ensure the efficiency in the price differentiation strategy apply process.

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