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## **CUSTOMER DIFFERENTIATION SYSTEM: COMPATIBILITY OF VALUE CREATION AND COST MANAGEMENT**

**Abstract.** The novelty of the research and its scientific value are defined by theoretical and practical results, which proved the usefulness of the application of customer differentiation system in practice, i.e. showed that the application of the decision making methodology makes it possible to efficiently design management decision structures, conforming to the conditions of the changing environment and to evaluate their impact on maximizing utility rate, which integrate the company's profitability and customer satisfaction rate.

All this serves as a background for advance rejection of ineffective customer managing solutions, selecting long-term relationships between company and customer. Based on the accumulated research results, the paper states that the new customer differentiation system derived ensures the quality of management decisions as well as positive results of a company. It particularly reflects customer satisfaction and company's profitability rates. The paper took the first step in the implementation of customer differentiation systems and in making an empirical examination of cost management and value creation perspective integration in a management system. It is probable that the received and disseminated theoretical and practical results will become a starting point for the further researches.

### **1. Introduction**

As in most countries, the decision making process in Lithuanian companies has been subject to substantial changes, which have challenged the structure of the organization and led to strong competition and environment changes. Loyal and profitable customers cannot be considered a guarantee for

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long-term success. Management consultants and researchers agree that companies should be more customer-focused, should make different decisions to different customers. It means that companies should develop integrated perspective of cost management and customer value creation. Management changes increase the urge of knowledge and information. Naturally, the necessity of creating new management systems comes to the surface. This seems to be a difficult task. The researchers of management (Bitner, Hubbert, Zeithalm, Faranda 1997; Griffiths, Elson, Amos 2001; et al.), management accounting (Kaplan 1997; Storbacka 1997; Fickert 1998; Nielsen, Bukh, Mols 2000; McNair, Polutnik, Silvi 2001; et al.) and marketing (Kotler 1994; Caeson, Gilmore, Maclaran 1998; Dibb 2001; et al.) have studied this. However, most of these studies provide us with qualitative tools only. An exception is studies related to product cost planning (such as target costing, kaizen costing or value analysis). Accordingly, the scientific problem explored in the paper is formulated as follows: a lack of knowledge enabling integration of cost management and value creation perspective in management decision-making.

The aim of the present paper is to show and to prove the efficiency of customer differentiation methodology, which could ensure cost management and value creation compatibility in management decision-making processes.

## **2. The search of compatibility: customer differentiation system**

The new conditions for business survival are connected, on the one hand, with the ability to satisfy customers' needs – with an offer (goods' quality in relation to prices) that is better than that of the competitors (Zeithaml et al., 1990; Caru, Cugini 1999, et al.). On the other hand, the conditions for survival are related to the readiness of customers to pay a price for the goods that is higher than their production cost. Both these conditions require integral consideration of the value perspective for the customer and business profitability.

Referring to the first condition of survival (value creation to customer), goods often are an aggregation of intangible attributes, which can be assembled in various ways as a function of the utility desired by individual customer. The formulation of the goods structure of the offer must result from considering the principal benefits being sought by customers. The main problem is to recognize the importance of different goods attributes

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<sup>1</sup> Goods are naturally everything which is in the market and could meet customer's requirements and expectation.

(attendant services, products, etc.) for individual customers and to make offer for specific demand customer or customer clusters.

As to the second condition of survival (cost management), the definition of price that should be fair by customer and at the same time profitable for the company (Kotler 1994; Gattorna, Walters 1996; Turney 1996, et al.). It should be estimated that value is the amount customers are ready to pay for all the attributes the company supplies them with.

Both of these conditions require integral consideration of the value perspective for the customer and business profitability, which is impossible to achieve without a relevant measurement system. There are some important reasons, which block up the realizing of an integral approach (compatibility of value creation and cost management) in conventional information systems (such as marketing or cost management information system). They are:

- Traditional strategic thinking in companies;
- Lack of functional integration between marketing and management accounting departments (Storbacka 1997; Caru, Cugini 1999);
- The same concepts tend to mean different things to the people in sales and marketing departments and to the management accountants, in other words discrepancy between the notions (Storbacka 1997; Blattberg, Getz, Thomas 2001);
- Unclearness of activity cost, especially cost of customer servicing activities (Reicheld, Sasser 1990; Fickert 1998);
- Existing tools could not easily identify how to integrate measurements and interpretations of company phenomena in a double perspective of market effectiveness and internal efficiency (Simons 2000).

They show that bringing together customer value creation and cost management perspectives calls for the development of measuring techniques which allow the language of two disciplines to be a unified and integrated vision of objectives (internal efficiency and market effectiveness). A customer is a value creation object in management, and also a basis of a company's cost formation in management accounting. That is why customer differentiation analysing customer requirements and value was chosen as a means to solve the compatibility problem of two different perspectives.

### **3. Development of customer differentiation system and methodology of management decision-making**

Trying to liquidate the discussed reasons the measurement systems should give information about activity, which does not only consume resources, but also creates value for customers. The customer differentiation systems were formulated within the frame of the following aspects:

- The priority object of reference for correlation of value generated and costs is *customer*, but not products or services;
- This correlation cannot occur in itself, but it has to be coherent with the company's *activity*, which is the link between costs and value created to a customer.

The first aspect of customer differentiation was important because the customer generally correlates the goods with the performance from which he obtains benefit (Heskett et al. 1997; Zeithaml, Bitner 1996). It does not make sense to strengthen an offer if the customer does not perceive the improvement as significant. Where customers pay the same price but use the service purchased to different extents, there is an effective subsidizing of those who have a more intense enjoyment of the service by those who use less. In this way entry opportunities are created for new competitors who can segment the market more effectively. The variability of the final offer system requires a calculation of cost of individual elements of the goods, which can be aggregate in different offers in relation to preferences expressed by customer or clusters of customers.

Regarding the second aspect of system creation, the actual value for the customer is generated by individual activities which a company carries out in designing, producing, selling and distributing its goods (products and services) (Heskett et al. 1994, 1997). That is why a company must understand the dynamics of its cost structure and factors, which determine it. Trying to get to the point companies must define business processes as a set of interrelated activities and analyse activity chains.

Customer differentiation system enables approaches of company (cost management) and customer (meet the requirements) in respect of goods to be integrated. Based on customer differentiation system, decisions on the structure of goods are determined by these conditions:

- Selected structure of goods should be conditioned by the lower growth of customer costs  $\Delta C_v \rightarrow \min$ ;
- Selected structure of goods should be conditioned by the top perceived customer value growth  $\Delta Y_{vg} \rightarrow \max$ .

In the light of formulated conditions, the methodology of decision-making consists of five stages. In order to illustrate the stages, a reference to a Lithuanian pharmaceutical company case was used. The company has 124 customers. All customers were divided into 3 clusters by their attributes, which define customers to company. The stages are:

**1. The identification of the goods structure** (A-alternative of goods structure). Table I shows the results of company's offered and customer required goods structures. Relevance of the alternative goods structures offered by the Company to customer needs is marked  $\eta_c$ :

$$\eta_\varepsilon = \begin{cases} 1, & \text{if } \tilde{x}_{\varepsilon d} = x'_{\varepsilon d} \\ 0. & \end{cases} \quad (1)$$

where

$\eta_\varepsilon$  – simulated variable, which shows the presence or absence of customer required goods attribute level in company's alternative,

$\tilde{x}_{\varepsilon d}$  – goods attribute level required by customer,

$x'_{\varepsilon d}$  – goods attribute level offered by company.

Table 1

Illustration of possible goods alternatives  
(research of customer and company approach)

Attribute $\varepsilon$	Goods attributes					
	$\varepsilon = 1$	$\varepsilon = 2$	$\varepsilon = 3$	$\varepsilon = 4$	$\varepsilon = 5$	$\varepsilon = 6$
Number of attribute $\varepsilon$ level ( $L_\varepsilon$ )	$L_1 = 3$	$L_2 = 3$	$L_3 = 2$	$L_4 = 2$	$L_5 = 3$	$L_6 = 2$
Company's offered alternative ( $A'$ )	$x'_{11}$	$x'_{21}$	$x'_{31}$	$x'_{42}$	$x'_{52}$	$x'_{61}$
Customer desirable alternative ( $\tilde{A}$ )	$\tilde{x}_{12}$	$\tilde{x}_{21}$	$\tilde{x}_{31}$	$\tilde{x}_{42}$	$\tilde{x}_{53}$	$\tilde{x}_{61}$
In conformity with customer needs $\eta_\varepsilon$	0	1	1	1	0	1

The Lithuanian company research results show that in the third cluster of customers (the best customers) there were maximum 2 variances of customer required goods structure, but in the first cluster of customers (the worst customers) there were 5 variances of structure.

**2. The formation of alternatives for customer.** The quantity of the possible goods alternatives depends on quantity of attributes levels, which are not relevant to customer requirements (if  $\eta_\varepsilon = 0$ ). Evaluation of alternatives shows changes of cost (2) and customer perceived value (3) (see Table II).

$$\Delta C_{vq} = C_{vq} - C_{vq_0} \quad (2)$$

where

$\Delta C_{vq}$  – changes of customer  $v$  serving cost (customer cost) after attribute level changing,

$C_{vq}$  –  $v$  customer cost, which occurred after attribute level changing,

$C_{vq_0}$  – customer  $v$  cost, which occurred in primary (offered by company) structure of goods.

$$\Delta Y_q^v = Y_q^v - Y_{q_0}^v = \sum_{\varepsilon}^E (\tilde{x}_{\varepsilon}^a(q) - \tilde{x}_{\varepsilon}^a(q_0)) \quad (3)$$

where

- $\Delta Y_q^v$  – changes of customer  $v$  perceived value after attribute level changing,
- $Y_q^v$  – customer evaluation of  $q$  alternative, when  $q = (\overline{1}, \overline{Q})$ ,
- $\varepsilon$  – concerted attribute,  $\varepsilon = (\overline{1}, \overline{E})$ ,
- $\tilde{x}_{\varepsilon}^a$  – utility of attribute level of alternative,
- $q_0$  – offered by company goods structure.

Table 2

Illustration of goods structure evaluation in cost and value aspects

The heap of goods alternatives	Formulation of alternative	Description of alternative	Changes of costs ( $\Delta C_v$ ), Lt	Changes of value ( $\Delta Y_q^v$ ), point
$A_1 = A'$	$(x'_{11}, \tilde{x}_{21}, \tilde{x}_{31}, \tilde{x}_{42}, x'_{52}, \tilde{x}_{61})$	Without changes	0	0
$A_2$	$(\tilde{x}_{12}, \tilde{x}_{21}, \tilde{x}_{31}, \tilde{x}_{42}, x'_{52}, \tilde{x}_{61})$	Exchangeable: $\tilde{x}_{12}$	+16 104,51	+0,17
$A_3$	$(x'_{11}, \tilde{x}_{21}, \tilde{x}_{31}, \tilde{x}_{42}, \tilde{x}_{52}, \tilde{x}_{61})$	Exchangeable: $\tilde{x}_{53}$	+6 134,76	+1,26
$A_4 = \tilde{A}$	$(\tilde{x}_{12}, \tilde{x}_{21}, \tilde{x}_{31}, \tilde{x}_{42}, \tilde{x}_{52}, \tilde{x}_{61})$	Exchangeable: $\tilde{x}_{12}, \tilde{x}_{53}$	+22 239,27	+1,43

**3. Determination of company's purpose priorities.** Customer differentiation system is used as a tool for two different purposes or their compatibility. Utilisation of the system should estimate integral result. Priorities of purpose should be fixed.  $PRI_1$  shows a priority of cost minimization,  $PRI_2$  shows a priority of maximizing the efforts for meeting customer requirements. Sum of priorities is equal 1. If one priority is nonessential, then it is equal 0.

**4. Ranking of alternatives and their selection according to defined priorities.** Figure 1 shows illustration of alternative ranking and its selection according to a given situation, which is determined by the importance of priorities (meeting customer requirements or business profits).

Deviation of different priorities rank is defined as follows:

$$\Delta RA_q = RA_q(\Delta C_v) - RA_q(\Delta Y_q^v) \quad (4)$$

where

- $\Delta RA_q$  – deviation of alternative  $q$  according to priorities (cost or value),
- $v$  – customer,  $v = (\overline{1}, \overline{V})$ ,

1. Priorities being equal:

Condition of selection priority ( $PRI_1 = PRI_2$ )					
Rank	RA	1	2	3	4
Ranking by cost		Min		Max	
Alternatives ranking by costs	$PRI_1$	A <sub>1</sub>	A <sub>3</sub>	A <sub>2</sub>	A <sub>4</sub>
Ranking by customer value		Max		Min	
Alternatives ranking by customer value	$PRI_2$	A <sub>4</sub>	A <sub>3</sub>	A <sub>2</sub>	A <sub>1</sub>

2. Priority of customer values being more important:

Condition of selection priority ( $PRI_1 < PRI_2$ )					
Rank	RA	1	2	3	4
Ranking by cost		Min		Max	
Alternatives ranking by costs	$PRI_1$	A <sub>1</sub>	A <sub>3</sub>	A <sub>2</sub>	A <sub>4</sub>
Ranking by customer value		Max		Min	
Alternatives ranking by customer value	$PRI_2$	A <sub>4</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>1</sub>

3. Priority of customer values being more important:

Condition of selection priority ( $PRI_1 > PRI_2$ )					
Rank	RA	1	2	3	4
Ranking by cost		Min		Max	
Alternatives ranking by costs	$PRI_1$	A <sub>2</sub>	A <sub>1</sub>	A <sub>3</sub>	A <sub>4</sub>
Ranking by customer value		Max		Min	
Alternatives ranking by customer value	$PRI_2$	A <sub>4</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>1</sub>

Fig. 1. Illustration of the process for selecting alternatives

Selection of the alternative is based on these conditions:

- Minimum deviation of different priority ranks,
- Rank of selected alternative should be minimal according to a defined priority.

**5. Economic estimating of the selected alternative.** The purpose function ensures optimal selection of alternative according to the priorities. Integral rate evaluates the purpose achievement:

$$T_q = (prt_v)^{PRI_1} \cdot (vpt_v)^{PRI_2} \quad (5)$$

where

$T_q$  – utility of alternative  $q$  selection,

$prt$  – company's profit achievement level, defined as proportion of planned and achieved profit,

$vpt$  – customer requirements meeting level,

$PRI_1$  – priority of cost minimization,

$PRI_2$  – priority of customer requirements meeting maximization,

$v$  – customer,  $v = (\bar{I}, \bar{V})$ .

When the selected alternative of goods is optimal, the integral rate gets the biggest value  $T_q = \max(T_q)$ .

Table 3 presents summarized results of this research. Four situations of decision making in the Lithuanian company were analysed:

- The first situation – all decisions are made without customer differentiation,
- The second situation – different decisions are made for different clusters according to the internal (cost management) perspective,

Table 3

Results of research according to a selected decision-making situation

Results	Basic state	1 situation	2 situation	3 situation	4 situation
Planned profit, thousand $Lt$	5 257,03	5 439,69	5 514,63	5 479,55	5 595,86
Planned costs of customer servicing, thousand $Lt$	971,94	789,27	714,34	526,91	633,11
Profitability rate	0,2182	0,2257	0,2289	0,2263	0,232
Structure of customer (cluster $z = 3$ )					
$V_3$	29	30	33	33	34
$V_2$	53	71	61	53	50
$V_1$	42	23	30	38	40
Level of customer requirement meeting		0,5	0,667	1,0	0,722



- The third situation – different decisions are made for different clusters according to the external (customer value creation) perspective,
- The fourth situation – different decisions are made for different clusters according to the integrated perspective (cost management and value creation).

The research results show that the Lithuanian company has a potential to achieve its profitability (8,47%) and meet its customer requirements (22,2%). It means that it proves the effectiveness of customer differentiation system as a compatibility tool of cost management and value creation in alternative management decisions making.

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### SYSTEM RÓŻNICOWANIA KLIENTÓW: KOMPATYBILNOŚĆ KREOWANIA WARTOŚCI I ZARZĄDZANIA KOSZTAMI

(Streszczenie)

Wartość przeprowadzonego badania polega na uzyskaniu teoretycznych i praktycznych wyników, potwierdzających użyteczność systemu różnicowania klientów w praktyce. Wyniki badań wykazały, że stosowanie metodologii decyzyjnej pozwala na ustalenie właściwej struktury założeń decyzyjnych, odpowiadającej zmienności otoczenia oraz na ocenę ich wpływu na maksymalizację korzyści, integrującą stopę zysku przedsiębiorstwa i stopień zaspokojenia potrzeb klienta.

Wszystko to służy jako podstawa do odrzucenia nieefektywnych rozwiązań i wyboru wariantu, zapewniającego korzystne długookresowe relacje firma–klient. Na podstawie przeprowadzonych badań stwierdzamy, że opracowany przez nas system różnicowania klientów zapewnia wysoką jakość decyzji oraz pozytywne wyniki przedsiębiorstwa. Artykuł ten to pierwszy krok w kierunku wprowadzenia systemu różnicowania klientów oraz empirycznej weryfikacji efektywności stosowania zintegrowanego podejścia w zarządzaniu. Można przypuszczać z dużym prawdopodobieństwem, że uzyskane na podstawie przeprowadzonych badań teoretyczne i praktyczne wyniki będą stanowić punkt wyjścia do dalszych prac w tym zakresie.

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### VARTOTOJŲ DIFERENCIACIJOS SISTEMA: VERTĖS KŪRIMO IR KAŠTŲ VALDYMO SUDERINAMUMAS

(Santrauka)

Aplinkos pokyčiai sąlygoja įmonių valdymo permainas ir kartu padidino žinių bei informacijos reikmę. Ypač svarbi tapo informacija, įgalinanti naujomis verslo sąlygomis priimti valdymo sprendimus, kuriais siekiama ne tik geriau nei konkurentai tenkinti vartotojų poreikius, bet taip pat laikytis ekonomiškumo principų. Straipsnio tikslas – atskleisti vartotojų diferenciacijos sistemos reikšmę ir poveikį kaštų valdymo ir vertės kūrimo procesų suderinamumui.

Mokslinėje visuomenėje aktyviai diskutuojama apie įmonės kaštų valdymo ir vertės, kuriamos vartotojams, suderinamumo būtinybę kaip vieną iš svarbiausių ir sunkiausiai pasiekiamų verslo valdymo uždavinių. Pažangios mokslinės studijos siūlo įvairiausias priemones kaštų valdymo ir vertės, kuriamos vartotojams, procesų derinimui atlikti. Šių priemonių pagrindinis trūkumas yra vadovavimasis tik įmonės viduje užsibrėžta vertės kūrimo vartotojams perspektyva, darant prielaidą, jog įmonės perspektyva atitiks vartotojų požiūrį. Todėl straipsnyje yra aptariama vartotojų diferenciacijos sistema ir jos sudarymo principai, kurie remiasi vartotojų pasitenkinimo ir įmonės kaštų santykio svarbos pripažinimu, šio ryšio išreiškimu apskaitos matais bei šios informacijos veiksmingumo valdymo sprendimų priėmimo procesui užtikrinimu.