



VALUE STREAM MANAGEMENT WITHIN OPERATIONS SYSTEM OF THE COMPANY

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Abstract

The purpose of the study is to show interconnection between customer satisfaction and shareholder value, understand the mechanism of value creation management. In the study the theoretical frame of value creation process was used. The methodical approach was based on assessment of such indicators as Operation Value, Economic Value and Social Value, which form integrated indicator of Value Stream Effectiveness. The model of Value Stream Management consists of value positioning, diagnostic, assessment, regulation, development and organizational support subsystems. Set of its instruments creates an opportunity for effective execution of their tasks which lead to accomplishing the aim of value-oriented management – to form and improve operations system parameters that secure value creating for customer and producer. The results of examining at the confectionary companies approved that value stream management facilitate continual improvement of the value stream and development of operations system of a company.

Keywords: value, operations system, value chain, flow.

Introduction

Theoretical developments and practical experience of recent years show that for companies focusing only on increasing the scale of market activity does not guarantee them a leadership position and strategic success. Building sustainable competitive advantage is possible only through transformation business philosophy of the company based on the Concept of Value Creation that is the key to harmonization of all participants' interests in economic relations. The purpose of the study is to show interconnection between customer satisfaction and shareholder value, understand the mechanism of Value Creation Management.

The current stage of economic development approves that the new economic environment requires proactive behavior, flexibility and innovative solutions of modern enterprises. Due to the changes observed in recent years in the market continuum a new business philosophy appeared, which is grounded on value orientation of all market participants (see Figure 1).

The first question that appeared in our research was what the value is and how its definition has changed through years. In the beginning of value theory formation schools of economic thought from mercantilist to neoclassical have discussed the origins of value and its role in economic transactions. The marginalists focused on the behavioral aspects of value that referred to demand. On the contrary classical economists' have defined value as cost of production that referred to supply.

The next phase of value theory development was connected with growing the role of values in economic transactions. In recent years various theories of value were developed: - "Scale of values" (Rokeach, 1979), "The concept of value chain" (Porter, 1980), "The concept of the chain "means-result"" (Reynolds, & Gutman, 1988), "The theory of consumption values" (Sheth, Newman, & Gross, 1991), "The concept of multistage analysis of values" (Valette-Florence, & Pellemans, 1994), "The concept of Lean Production" (Womack, 2000) and others (Anderson, 1996; Henderson & Larco, 1999; Rother & Harris, 2001).

If the company creates value, its customers show loyalty that leads to increased benefits for producer. When customers get expected or even unexpected value (additional service, interesting package, etc.), they feel satisfied. Customer satisfaction effects firm's financial results. This idea is not new. Thomas S. Gruca, and Lopo L. Rego (2005) show the chain of effects that link customer satisfaction to shareholder value by establishing the link between satisfaction and future cash flow.

Srivastava, Shervani, and Fahey (1998) note that market-based assets such as customer relationships create value for customers and thus result in improved market-place performance and increased shareholder value. Fornell (2002) suggests that satisfied customers can be viewed as economic assets that yield future cash flows.

Method

2.1. Participants

The survey includes data of 5 Ukrainian confectionary companies. Taking into account that customers of these companies are not only Ukrainians, we also analyse the companies' activities in other countries, how they create value for consumers of different segments and how this helps them to create value for shareholders. So, except these 5 main confectionary companies, we also worked with quantitative and qualitative data of suppliers and distributors in confectionary industry.

2.2. Procedure

In this study we examined technological process within companies and their interrelations with other parts of value chain (suppliers, distributors and customers) of confectionary industry. We analysed financial, economic data and social responsibility indicators of confectionary companies for 5 years (2006 to 2011). The methodical approach was based on assessment of such indicators as Operation Value, Economic Value and Social Value, which form integrated indicator of Value Stream Effectiveness.

Field study findings

According to the essence, historical preconditions and origination of category "value" in the context of social and philosophic, individuality and economic approaches our definition of "value" is follow: it is the category that combines expectable and not expectable characteristics of goods and services which are desirable for customer, and benefits and parameters that lead to effectiveness and sustainable development of producer. These benefits arise from a positive shaping of the satisfied customer's future behavior.

Taking into account the approach, proposed by Porter (1980), who explained the value creation process on the basis of value chain, we developed this chain model. In accordance with our view, the value chain model can be considered as a hierarchical structure of such elements: links, systems, flows, processes, operations. This approach to the value chain structuration permits to determine place, role and tasks of each individual company in the chain for providing the best conditions in process of creating value for consumer, producer and other shareholders by appropriate management system. According to our model of value chain, the main links are: Supplier, Producer, Distributor and Customer. Each link also has its structure, which includes appropriate systems, flows, processes (Galushko, 2008).

Within value chain the most important role in value creation process is carried by the link "Producer", which is any organization that turns inputs (e.g., raw materials) into outputs (products, services). That's why it is so vital to develop appropriate management system of value stream within the company. On the other hand value creation process is carried by operations system. We conceptualize the operations system interactions as consisting of two flows, the flow of materials, information, human resources, equipment, etc., and the flow of goods and services that are result of appropriate inputs transformation. Generally, the model of Value Stream Management consists of such subsystems as Value Positioning, Diagnostic, Assessment, Regulation, Development and Organizational support. Set of instruments of each subsystem creates an opportunity for effective execution of their tasks which lead to accomplishing the aim of value-oriented management – to form and improve operations system parameters that secure value creating for customer and producer (see Figure 2).

Each subsystem helps to organize the process of value creation successfully. The main tasks of these subsystems are: 1) Value Positioning: determination of consumers' and producers' value preferences; 2) Diagnostic: establishing and improving the indicators of quality, cost and duration of value stream processes; 3) Assessment: identifying factors that limit the ability to create value for customers and producer; 4) Regulation: development and implementation of measures to address the "weaknesses" of value stream based on a comprehensive assessment; 5) Development and Organizational Support: formation of organizational prerequisites for implementation of Value Stream Management.

The aim of value-oriented management is the development and continuous improvement of operations system parameters that allows to create desired values for the customer and producer. The object of the management is operations system and its value stream. The subjects of the management are the heads of departments and individual employees, who share authority and responsibility for value creating process.

If the company wants to satisfy customers' needs it should has an appropriate production system. That's why the first step of Value Stream Management relates to ensuring that the operations system has parameters, which are important for creating value for customers. For this purpose we developed matrixes for companies of different industries. The example of such matrix for confectionary company is shown in Figure 3.

Each class has range of characteristics that show the way of customer's and producer's values harmonization. This matrix shows whether the company is able to satisfy value expectations of its clients or it needs some improvements of operations system to be implemented.

The next step of Value Stream Management is provided for estimating constraints of existing production capacity and seeking value stream bottlenecks. For this purpose we developed Value Stream Map that is used for analyzing and designing flows within operations system.

In accordance to our idea of the structure of Value Stream Map it consists of two main parts. The first part is value flow imaging and the second part includes value creation processes and time characteristics of these processes. Value creation processes are divided depending on key object which could be personnel or people (marked as "P"), equipment ("E") and Material ("M").

The procedure of Map forming includes the following steps:

1. Division of value creation processes in accordance with group of products.
2. Processes imaging based on technological specification.
3. Identification of value creation process type depending on personnel, equipment and material.
4. Calculation of time characteristics of value creation processes.
5. Analysis of the processes, their time characteristics and identification of constraints and possible improvements.
6. Assessment of quality indicators of value creation flow.
7. Forming of a map of future value stream.

Scheme of value stream is the sequence and interaction of value creation operations. The aim of value stream analysis is identification of manufacturing process constraints and operations that do not add value. For this purpose we suggest to exercise time-study. The results of this procedure should be filled in an appropriate column of the Value Stream Map in accordance with the type of the process (Galushko, 2010).

After analyzing the results of time-study, time parameters should be divided in two groups: production processes that include basic processes and support processes, and breaks. So long as we distinguish these duration parameters between people (personnel), equipment and material, it makes possible to ascertain the cause of inefficient time usage.

The survey included five confectionary companies. The results of value mapping for one of these companies is above (see Figure 4). According to the estimated parameters we proposed to improve production process by decreasing duration of support processes and breaks. It appeared as possible actions because we found out that employees spent a lot of time for waiting the raw materials. This problem appeared because the warehouse received information about raw materials need with delay. Additional breaks existed because some employees spend extra time for smoking and unnecessary communications.

Based on the results of our analysis the management of this confectionary company realized organizational measures directed at elimination of production process defects and improvement of labor discipline.

For estimating the current parameters of operations system and results of improvements we developed four-stage procedure (Table 1), which includes indicators of different levels of operations system: from individual production division to the whole company. These indicators are the following:

1. Operations Value Indicator (OVI) which is used for assessment of manufacturing efficiency within separate technological lines and the company as a whole.
2. Economic Value Indicator (EVI) is the criteria of operations system capacity to generate value not only for customers, but for shareholders.
3. Social Value Indicator (SVI) is a measure of social responsibility and social activity of the company. It shows whether the company generates or not social values for customers, employees and shareholders. This indicator is also important because it makes possible to understand the influence of the firm on environment and its relationships with society.

The complex index of these indicators describes Value Flow Efficiency (VFE) of value-oriented operations system. It shows how efficient the company is in 3 dimensions: production process, financial activity and social responsibility. It is possible to use this indicator for market valuations of different companies of the same industry or sector.

Regulation as one of the subsystems in the model of Value Stream Management includes actions for arranging exposed constraints that hamper the operations system. Due to using proposed factor model of value indicators operations managers get a decision-making instrument that helps to generate and implement the best alternative for value-oriented operations system.

Value improvement procedures include actions that lead to operations system development and business success increase. In our survey we examined the association between value improvement and company efficiency. The results show that there is a positive association between these parameters and prove that interests of customer, producer and other shareholders are inextricably linked.

In order to create balanced model of value stream management it becomes vitally important to explain the need and teach how to work the employees. Responsible, well-trained employees who are passionate about value creation provide exceptional results for business. The long-term success of the company depends on its capacity to attract, retain and develop employees able to ensure its growth on value basis. For ensuring success of value management implementation it is necessary to follow such principals as harmonization of customer, producer and other stakeholders values; cut-through partnership; continuous development; social responsibility of the business.

Future research directions

To estimate the Model of Value Stream Management we used data of 5 Ukrainian confectionary companies. The results of calculations for one of confectionary company (Open Joint-Stock Company "Poltavakonditer") for 3-year period (2007 to 2009) we present in Figure 5.

The first calculation (estimation of current operations system parameters) was made in 2007. In 2008 the company implemented our propositions touched on improvements of value stream and operations system parameters. These resulted in all indicators increase in 2009. The decrease in 2008 was connected with coincidence of world financial

crises and necessity of value stream changes. But, on the other hand, these measures contributed to useful increase of value and economic indicators of the company.

A central argument of this study is that customer satisfaction influences firm's benefits. In accordance with results of our calculations, we can see that after implementation of operations system improvements related to value flow, the company increased its operations and financial results significantly. But the most important changes were connected with consumers' behavior. After value flow improvements it has become possible to increase quality of products and services. As a result, the percentage of market share increased in 5% and customers showed better loyalty because their expectations, needs and desires were met.

The last step of Value Stream Management included measures connected with forming the organizational culture based on the principles of value-oriented functioning. For this reason we organized several work-shops for employees and managers of the company and developed new procedures and appropriate documents.

The instruments and model that we proposed were implemented in practice of some Ukrainian companies. These companies were able to increase their performance indicators and create conditions for further improvements. But we still should continue our study to make this model adaptable to companies of other industries. Another important area for further research is the impact of the quality of a company's relationships with its partners (suppliers and distributors) and customers. Taking into account social aspect of value, there is need for more research on this topic.

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Annexure

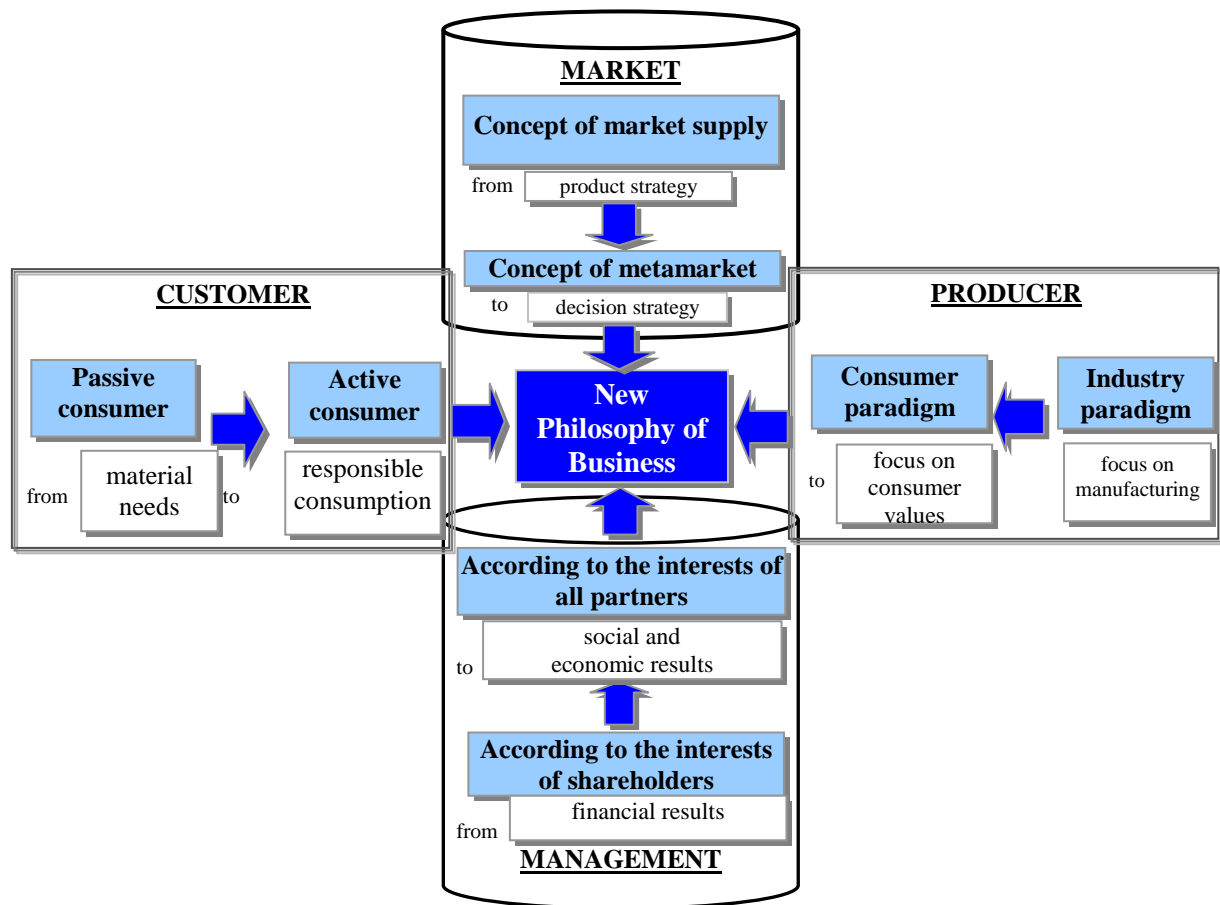


Figure 1. Transformation of emphasis within economic transactions and new philosophy of business formation

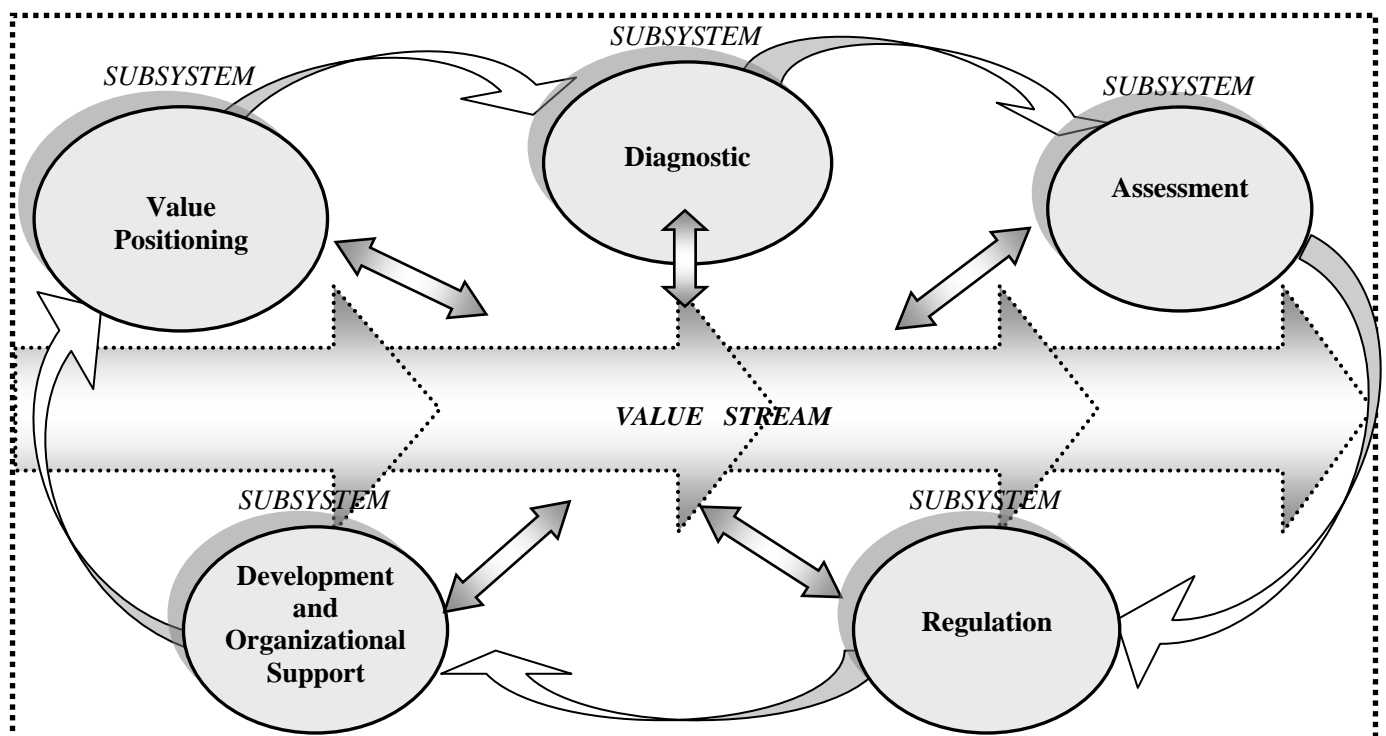


Figure 2. Model of the system of Value Stream Management

		<i>number of clients</i>	
		limited	unlimited
<i>range of goods</i>	wide	2 Segmented	3 Differentiated
	restricted	1 Focused	4 Specialized

Figure 3. The matrix of operations system classes (for confectionary companies)

Flow of caramel candies production

Period	Feb. 2010
Process line	MP089-B54
Product group	caramel candies

Scheme of Value Stream	№	Impulse / Process	Duration, min.	Type of process			Processes that should be improved
				People (P)	Equipment (E)	Material (M)	
Beginning							
1	Impulse 1	Receiving a task, technical documentation	3	PSL	EDP	MDP	
	1	Preparation of process line	10	PSL	ESL	MDP	
2	2	Transportation of raw materials	17	PDP	EDP	MT	x
	3	Putting raw materials in the bunkers of process line	12	PA	ESL	MA	
3	4	Preparing of caramel mass	26	PB	EB	MB	x
	5	Forming and cooling caramel	16	PB	EB	MB	
4	6	Quality control	25	PA	EDP	MDP	x
	Impulse 2	Getting results of quality control	6	PDP	EDP	MDP	
5	7	Wrapping and packaging of caramel	14	PB	EB	MB	
	8	Transporting of finished goods to the warehouse	23	PDP	EDP	MT	x
6	Impulse 3	Transmission of supporting documentation	2	PSL	EDP	MDP	
		Total	154				
	Duration parameters						
	Time parameters of processes			People (P)	Equipment (E)	Material (M)	Notes
	Operation / usage / processing, min. including:			108	78	108	
	basic processes, min.			56	56	56	
	support processes, min.			52	22	52	
	Breaks, min.			46	76	46	
Completion							

Figure 4. Value Stream Map for process line of caramel candies production (based on data of Open Joint-Stock Company "Poltavakonditer", confectionary industry)

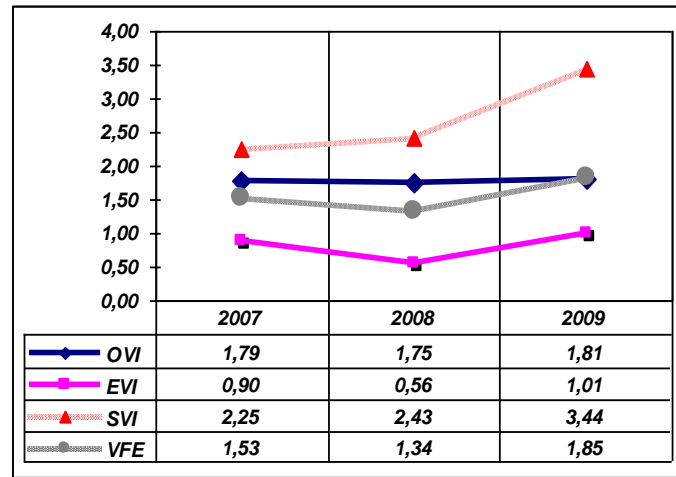


Figure 5. Value indicators (OVI, EVI, SVI, and VFE) for “Poltavaconditer” (2007 to 2009)

Table 1

Stages of efficiency evaluation of value-oriented operations system ¹

Stage	The formula
I Determination of Operations Value Indicator (OVI)	$OVI = OVI_K^{llp} = \sqrt[m]{\prod(OVI_{U_j}^{llp})},$ $\text{where } OVI_{U_j}^{llp} = \sum_{i=1}^n (\beta_i \times OVI_{T/I}^{lp}),$ $OVI_{T/I}^{lp} = \frac{MIT^{lp}}{T_{oc}}$
II Determination of Economic Value Indicator (EVI)	$EVI = \frac{ROA}{WACC},$ $\text{where } ROA = TOA \times OROS,$ $WACC = CCM + CEC$
III Determination of Social Value Indicator (SVI)	$SVI = SV_p + SV_c + SV_{es}, \text{ or } SVI = \sum_{i=1}^n SV_i$ $\text{where } SV_i = \sum_{j=1}^m SV_{ij}$
IV Determination of Value Flow Efficiency (VFE)	$VFE = \sqrt[3]{OVI \times EVI \times SVI}$

Footnote¹ The abbreviations in Table 1: MIT^{lp} - marginal profit (for the first level of the operations system); T_{oc} – time of operations system work;

OROS - Operations Return on Sale;

TOA - Turnover of Assets;

CCM - Cost of Credit Mass;

CEC - Cost of Equity Capital;

 SV_p, SV_c, SV_{es} – Social Value for “Personnel”, “Customers”, “Society / Ecology”.