

VALUE STREAM MAPPING IN THE PROCESS OF KNOWLEDGE EXCHANGE WHILE MAINTAINING DATA SECURITY IN A MANUFACTURING COMPANY

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Justyna Żywiołek¹ – *orcid id: 0000-0003-0407-0826*

¹ Czestochowa University of Technology, Faculty of Management, **Poland**

Abstract: The article presents methods of mapping data, information and knowledge value stream in order to identify the flow of key processes and to return knowledge exchange in the examined company. One large production company was audited. The amount of incoming to the company and processing information is so large that it must implement methods to improve their flow. Problems with knowledge exchange associated with high rotation contributed to analyzing the problem.

Keywords: data stream mapping methods, data management, data analysis, information

1. INTRODUCTION

The modern economy is undergoing evolutionary changes. Currently operating enterprises operate not only in an increasingly volatile and complex environment, but also in increasingly competitive and uncertain conditions. They must therefore be able to change, continuous development, generate process and product innovations, and above all to manage the value stream. Recent corporate practice has revealed that oscillating around internal business problems is not enough for it to function properly. Means, that company management must be directed outside towards business relationships between organizations.

Improvement, according to the literature related to organization management, is a long-term activity that leads to solving problems appearing in processes and improving tchem (Stoner J. A. F., Freeman R. E., Gilbert Jr. D. R., 1997). This is an extremely important issue, and "every organization needs to be constantly improved to survive and grow" (Zymonik Z., Hamrol A., Grudowski P., 2013). Over the years, many methods have been created to assist entrepreneurs in improving processes, and one of such methods is value stream mapping. This method is used in the form of a tool supporting the identification of sources of waste and areas requiring improvement.

2. VALUE STREAM MANAGEMENT

An enterprise can survive on the market and grow only if offers products or services that have value to its customers. Value means that something is created that has value for the client and is ready pay for it. Stream refers to the flow of activities necessary to create units work and deliver them to the client (Tapping, Shuker, 2010).

So the value stream is all the activities that add and not add value, necessary to meet a specific group of needs reported by customers. There are two types of values:

- full value stream,
- internal value stream.

The full value stream includes processes not only inside the analyzed enterprises, but also external processes, from the acquisition of the component through supplier processes, up to the end user / consumer of the product finished. The analysis of the full value stream is crucial from the point of view optimization of inflow costs between participants in the whole chain supply. The internal value stream includes processes within the analyzed enterprises along with relations with direct suppliers and relations with direct factory customers. Internal value stream analysis is crucial from the point of view of improving business efficiency (Czerska, 2009).

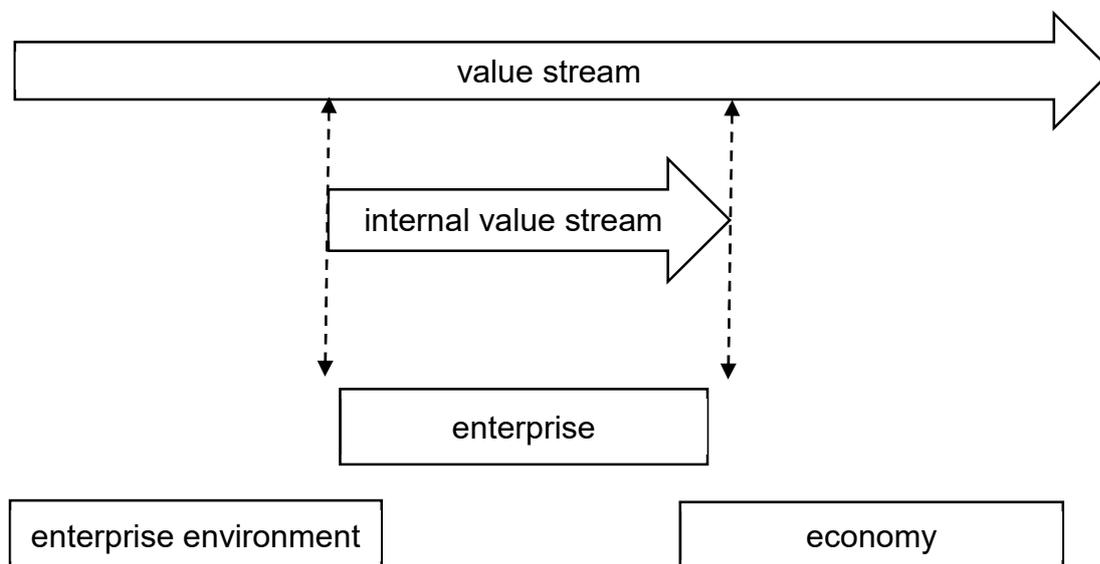


Fig.1. Full and internal value stream

Source: own study

The value stream could be compared to a flowing river straight without plotting and bends. The elements flow without much effort. Each of the processes in the organization is part of this stream and smoothly passes the effects of its work to subsequent links in the organization's chain (Dinis-Carvalho, Moreira, Bragança, Costa, Alves, Sousa, 2015). At the bottom of the river there is an external customer, the final recipient, who buys all finished products or services.

In managing the value stream, we strive to ensure that our products reach the customer smoothly, without any interruptions. Therefore, value stream management involves the process of measuring, understanding and improving the flow and interaction of all related tasks to keep costs, service and product quality as competitive as possible (Kyete, Locher, 2004). The presented state is, however, an ideal, unreal state and the pursuit of it serves to improve the value stream.

The value stream mapping is intended to visualize both the information and material flow from the moment raw materials enter, through all stages of the production process, to the shipment of final products. In the form of a map, the stream of values is mapped, which is a key element of improvement actions, which is carried out according to the following course of action: selection of actions for improvement, preparation of a current state map, development of a future state map, preparation of a plan for implementing the proposed changes (Grajewski, 2012).

Activities that enable this task to be performed is to trace the entire stream, talk to people from various departments, also from outside the company, who are dealing with the given process. The most effective is analyzing, in which managers from various departments, business units and external organizations participate from beginning to end, i.e. all participants of the process (Jones, Womack, 2010).

Value stream research also has an insightful value regarding materials and information. One of the features of the extended value stream is the restriction of processing excessive amounts of information and the transmission of only a "pure" information signal (Lacerda, Xambre, Alvelos, 2016). This means passing down the organizational structure and thus information management from higher levels of the organization, transfer among rank-and-file employees and middle management, so that everyone can directly send a signal about their current needs to the previous stage and plant (Henrique, Rentes, Filho, Esposto, 2016.).

Mapping the internal value stream helps to see waste and the relationship between material flow and information flow (Andrade, Pereira, Del Conte, 2015). Considering one enterprise, it is possible to indicate specific loss locations and the possibilities of limiting them. However, the greatest potential improvement is outside the enterprise, including the enterprise and its supply chain (Locher, 2012). In contrast, extended value stream mapping goes beyond the boundaries enterprises and analyze both the supply chain and the enterprise environment. Performing extended mapping requires collaboration between management and managers who obtain information about what is happening with flowing information in individual enterprises. Extended mapping is more demanding than level one mapping enterprises, however, the benefits resulting from it definitely exceed expectations (Teichgräber, De Bucourt, 2012). Elimination of losses allows you to reduce the time it takes to complete orders, reduce costs, and increase the efficiency and throughput of processes in those companies that work together as part of a full value stream (Czerska, 2011).

CURRENT STATUS ANALYSIS

Determining the value stream means clearly defining the value from the point of view of the customer and the company itself. Reflecting basic production processes on the map - designating areas where material flows exist and places where inter-operational stocks accumulate (Trojanowska, Kolińska, Koliński, 2011.). Presentation of material and information flow on the map using arrows - indication of transport processes, inter-operational movements and information flow (Zymonik, Hamrol, Grudowski, 2013). Figure 2 for presenting the amount of information processed in the surveyed enterprise.

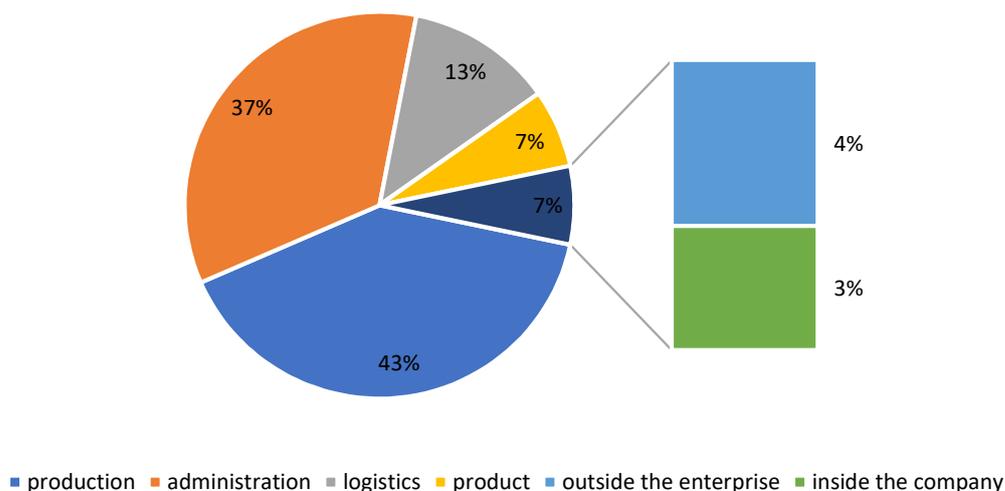


Fig. 2. Information processed in the audited enterprise

Source: own study

The origin of information requires recognition of its sources. Employees declared themselves which sources of information they use (fig. 3).

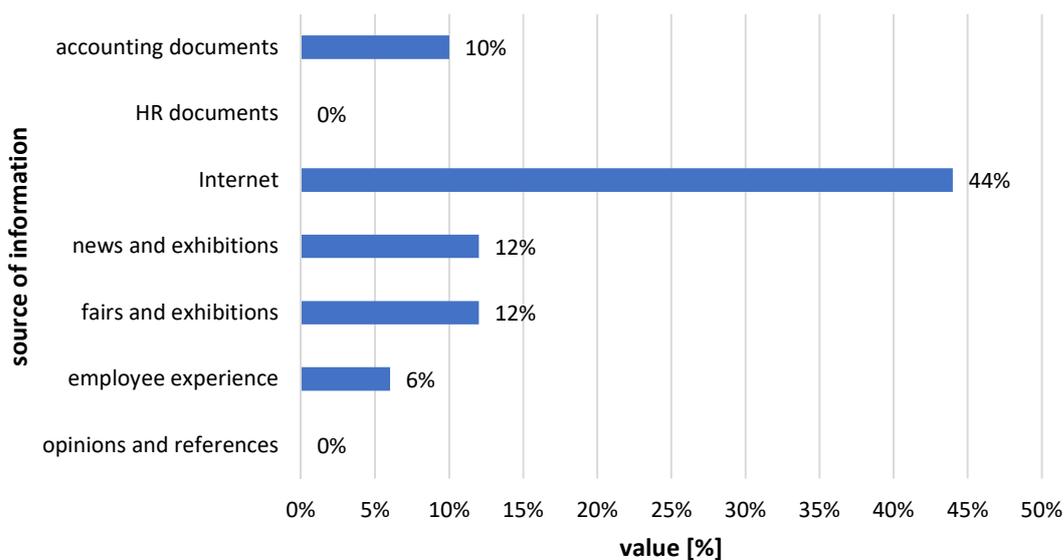


Fig. 3. The most frequently used sources of information in the enterprise

Source: own study

Employees indicated the Internet as the most frequently used source of information, while the least frequently use HR documents as the source of information. As important as information is also the awareness of the possibility of its loss. Hiding threats or data loss does not help either the business or its image. Figure 4 presents the answer to the question regarding the possibility of data loss.

CONCLUSION

Information Value Stream Mapping applied in the analyzed company allowed for effective use of information resources and reduction of waste. Speed of access to information and awareness concerning time of particular operations have contributed to improvement of quality of the performed tasks and reduction of service time of the particular task. Information Value Stream Mapping enables to create and modify the respective processes that take place in the company. It facilitates the work of management within control over feasibility of tasks. Moreover, the conflicts concerned with division of tasks for employees do not occur. In the examined enterprise, activities for the mapping of the information value stream were initiated, so far the information processes have been identified. A significant part has already been subject to value stream mapping, in particular as regards administrative and accounting processes. The remaining processes will be mapped successively.

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