

SIX SIGMA, A TECHNIQUE FOR THE COMMERCIAL LOGISTICS MANAGEMENT

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ABSTRACT

Six Sigma is the most efficient existing method for solving the commercial logistics problems made available to companies. Initially, this was a set of practices that were used in the manufacturing processes for removing the defects, but over time, the concept was extended also to other types of activities. In 1986, Bill Smith from Motorola developed the specific Six Sigma elements for the first time and stated that level 6 Sigma corresponds to an output of 99.9997%, meaning 3.4 defects/million opportunities in the commercial logistics activity.

Keywords: Six Sigma, 99.9997% success rate/million opportunities, 3.4 defects/million opportunities, DMAIC, DMADV, DPMO.

Classification: D02, L23, M11

INTRODUCTION

Six Sigma is a technique of commercial logistics strategic management, developed by Bill Smith from Motorola, it is a type of a more detailed commercial logistics activity quality control. This technique is used worldwide, the name deriving from the Greek letter “sigma” (a symbol used in statistics for representing the “deviation from the standard level” - an indicator of variation or inconstancy in a group of articles or in a process). Six Sigma mainly intends to achieve high performance while maintaining a low number of defects in the commercial logistics activity and a low cost.

CONTENT

Several definitions regarding the essence of this technique are presented in specialised literature. Some authors simply define the Six Sigma technique as “a method of solving the problems. In fact, it is the most efficient existing method for solving the problems, available for improving the company’s business or performances” (Gygi C et al., 2005).

Other authors define the Six Sigma as “a comprehensive and flexible system for achieving the support and maximisation of the business success. Six Sigma implies a close comprehension of the client’s needs, disciplined use of facts, information and statistical analysis, as well as the special attention to the management, improvement and reshaping the business process.” (Pande P.; Neunan R.; Cavanagh R., 2009).

The performance levels achieved for the Six Sigma technique can be expressed by the indicator “defect/million opportunities” (DPMO), the values of which are shown in Table 1.

Table 1. The Correlation Between the Sigma Level and DPMO

If the output is...	The Sigma level is...	DPMO is...
30.9%	1.0	690.000
69.2%	2.0	308.000
93.3%	3.0	66.800
99.4%	4.0	6.210
99.98%	5.0	320
99.9997%	6.0	3.4

Therefore, the best known Six Sigma levels is level 6 corresponding to an output of 99.9997%, meaning 3.4 defects/million opportunities. There is also a performance improvement on Six Sigma level 7, which would correspond to an output of 99.9999981%, meaning 0.019 defects/million opportunities, but this is yet too much for a company’s business... The Six Sigma technique leads to the following advantages: it generates a long-term success; it adds value for clients; it promotes learning; it implements the strategic change; it accelerates the company’s business improvement rate; it establishes a performance objective for each level; reduction of defects; improvement of communication; increase of employees’ satisfactions; increase of productivity; improvement of output capacities; quality improvement; the reliability of products and processes is improved; reduction of unit costs; improved design; reduction of delivery time, etc.

A commercial logistics management process according to the Six Sigma technique is a redesigned process, because any process that does not meet the set objectives is vitiated in design, in its implementation or in both cases presented.

By applying the Six Sigma technique, the vitiated processes can be reshaped with the purpose of minimising the losses.

Applying this technique in the processes of a company pursues to improve its activity by influencing the following basic elements, and namely: the improvement of the process; designing/redesigning the process; the management of the process. All these differ depending on the business process which the company wants to reshape.

The content of these basic elements is as follows: *the improvement of the process* consists in finding some directional solutions meant to induce the removal of the essential causes of the problems aiming the company's performance.

Most Six Sigma projects represent efforts to improve the structure of the personnel; *designing / redesigning the process* because the purpose of Six Sigma is not to repair the process, but rather to replace the process with a new one (or to replace part of the process).

The business world nowadays is constantly changing, and this makes it impossible to maintain a company on the top without redesigning the process; *the process management*, meaning the Six Sigma methodology, becomes integral part of the business management because: the processes are analysed and managed, and the responsibilities are assigned to those entitled to ensure the cross-management of the key processes; client's requirements are clearly defined; deep assessments of the results of the process activities and resources are performed in real time; the improvement, design and redesign of the process are used for increasing the company's performance, competitiveness and profitability levels. [2]

The Six Sigma technique uses two main improvement indicators, namely: *definition, measurement, analysis, improvement, control (DMAIC)* and *definition, measurement, analysis, design, inspection (DMADV)*. (Gygi C et al., 2005)

The **DMAIC** indicator is the result of a process that involves covering the following stages, namely: defining the process improvement objectives; measuring the current performance level; analysing the data in order to observe the cause-effect relation within the process; improving the process based on the data. It is important to constantly improve or modify the process so that it suits the current situations. The control is vital because it must verify and correct any variation in order to prevent the loss of the process quality.

The **DMADV** indicator is used for assessing a new product or designing a new process, and its calculation implies covering the following stages: defining the objectives; measuring and identifying the features for the QTC (Critical-To-Quality); analysis and assessment with the purpose of developing new alternatives; choosing the best design for the overall process; optimising the design features; verifying the design or testing the product.

Assessing the managerial activity that uses the Six Sigma technique leads to a management hierarchy based on the levels for classifying martial arts.

This classification (Stamatis D.H., 2003) implies the existence of the following categories of managers, namely: the category of „*executive managers*” includes a company's CEO and other members of the top management.

They are responsible for creating the Six Sigma within the company and for putting it into practice; the category of “*champions*” is below the previous category and they are qualified business leaders, who promote and lead the performance of the Six Sigma process in a key department of the business; the category of “*black belt masters*” are qualified business leaders, responsible for the Six Sigma strategy, training, monitoring, guidance, development and results; the category of “*black belts*” are the qualified experts leading the process improvement teams, dealing with the projects and guiding the green belts; the category of “*green belts*” are teachers with teaching and leadership skills.

They are qualified leaders of quality, being responsible for the Six Sigma strategy, training, guidance, development and results; the category of “*members of the project team*” are people supporting certain projects in their field of activity. (Modrak, V., & Pandian, R.S., 2011)

Other authors (Gygi C et al., 2005) suggest a hierarchy consisting in 7 hierarchic levels further adding the category of “*yellow belts*”, a category located right over the category of “*members of the project team*”.

The content of the category of “*Yellow belts*” consists in “all others” within the company, whom apply the elements of the Six Sigma technique and thereby improve their work.

They may be people with managerial activity, managers, project members or anyone else... (Gygi C et al., 2005)

CONCLUSIONS

In some form, the Six Sigma methodology represents the evolution of the TQM (Total Quality Management) for the company’s entire activity, being influenced by important specialists in the field of quality, such as W. Edwards Deming and Joseph Juran. However, the Six Sigma is... a real mechanism, basically for increasing the company’s competitiveness. (Slack, N., Chambers, S., & Johnston, R., 2001)

In developed economies, most of the companies have reached the 6th level of Sigma only in certain processes. This is still very much, because this level provides companies with a wide range of advantages, such as: generating a lasting success, establishing a performance target for each product or activity, making a profit, increasing the competitiveness, etc.

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