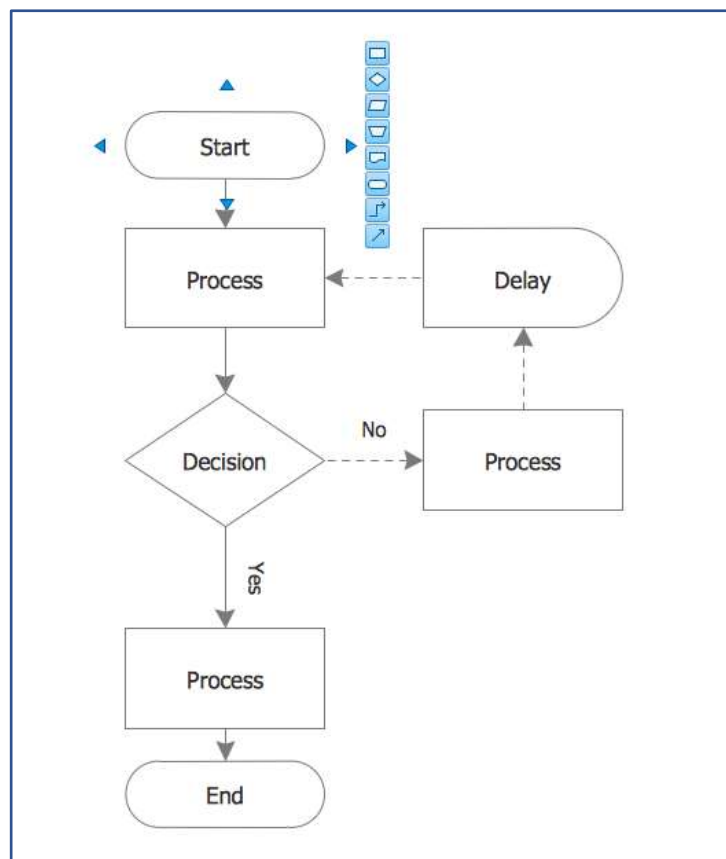


# Research of Six Sigma Systematic Thinking when Improving Quality in Automotive Industry

by

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## **Abstract**

The monograph deals with the issue of using Six Sigma systematic thinking, methods and tools to eliminate deficiencies in chosen organization in automobile industry. This work is divided into four main parts. First part explains the overview of the current state and it defines the basic term of quality and what Six Sigma is in the area of ensuring quality and potential lack of quality. Then we clarify the basic pillars of Six Sigma, Six Sigma implementation process and tools used in Six Sigma. Furthermore, definitions of Six Sigma, its history, principles, levels, key components and procedure of realization of Six Sigma itself are mentioned in this work. This moves us to more concrete theme which is implementation of Six Sigma at the occasion of decreasing number of scraps (wasters) in the production of silencers in automobile industry. In the second part, we specify the objective of this work and in the third section we suggest the methodology used to solve implementation of Six Sigma which is necessary to help us to meet the goal of our work. The fourth chapter deals with experimental research and results.

**Key words:** Six Sigma, systematic thinking, scraps, deficiencies, DMAIC methodology.

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# CONTENTS

<b>INTRODUCTION.....</b>	<b>1</b>
<b>1 OVERVIEW OF THE CURRENT STATE OF THE ISSUES IN QUESTION CHAPTER .....</b>	<b>3</b>
<b>1.1 Quality and Six Sigma .....</b>	<b>3</b>
<b>1.2 Six Sigma.....</b>	<b>5</b>
1.2.1 Meaning of Six Sigma .....	5
1.2.2 What is Six Sigma.....	6
1.2.3 Definitions of Six Sigma .....	7
1.2.4 Why Six Sigma?.....	8
1.2.5 Statistical basis of Six Sigma and evaluation of success .....	9
1.2.6 Historical evolution of Six Sigma.....	11
1.2.7 The predecessor of the Six Sigma method .....	12
1.2.8 The differences between Six Sigma and TQM.....	14
1.2.9 Lean Six Sigma .....	17
<b>1.3 The basic pillars of Six Sigma .....</b>	<b>18</b>
1.3.1 Six Sigma as a project .....	18
1.3.2 Basic principles of Six Sigma.....	20
1.3.3 Team work .....	22
1.3.4 Key components of Six Sigma .....	23
1.3.5 Belt system.....	23
<b>1.4 Six Sigma implementation process.....</b>	<b>26</b>
1.4.1 Six Sigma implementation process .....	27
1.4.2 The similarities of DMAIC and DMADV .....	27
1.4.3 1.4.3 The differences between DMAIC and DMADV .....	27
1.4.4 Process of DMADV .....	28
1.4.5 Process of DMAIC.....	30
<b>1.5 Tools used in Six Sigma .....</b>	<b>33</b>
1.5.1 Flowcharts.....	33
1.5.2 CTQ The Critical to Quality Tree.....	34

1.5.3	The Process Map .....	35
1.5.4	The Cause-Effect Diagram .....	36
1.5.5	The Histogram .....	37
1.5.6	The Pareto Chart .....	39
1.5.7	The Process Summary Worksheet .....	40
1.5.8	The Scatter Diagram.....	41
1.5.9	The Affinity Diagram .....	42
1.5.10	The Run Chart .....	43
1.5.11	The Control Chart.....	44
1.5.12	Design of Experiment .....	46
<b>2</b>	<b>OBJECTIVE OF THE WORK .....</b>	<b>48</b>
<b>3</b>	<b>WORK METHODOLOGY AND RESEARCH METHODS .....</b>	<b>49</b>
<b>3.1</b>	<b>Description of the organization .....</b>	<b>49</b>
<b>3.2</b>	<b>Definition phase .....</b>	<b>49</b>
3.2.1	Creation of opportunities for improvement.....	49
3.2.2	Creation of a project plan .....	50
3.2.3	Creation of a team participating in the project .....	50
3.2.4	Defining the process.....	50
3.2.5	Identification of critical customers´ requirements .....	51
3.2.6	Description of product.....	51
<b>3.3</b>	<b>Measuring phase .....</b>	<b>51</b>
3.3.1	Identification of the performance indicators .....	52
3.3.2	Creation of the data collection plan .....	52
3.3.3	Validation of the measuring system.....	52
<b>3.4</b>	<b>Analysis phase.....</b>	<b>54</b>
3.4.1	Identification of the causes of the problems.....	54
3.4.2	Selection of the main causes .....	55
3.4.3	Determination of relationships .....	55
<b>3.5</b>	<b>Improvement phase .....</b>	<b>55</b>
<b>3.6</b>	<b>Phase of control.....</b>	<b>56</b>

<b>4</b>	<b>RESULTS OF THE WORK .....</b>	<b>57</b>
<b>4.1</b>	<b>Description of the organization .....</b>	<b>57</b>
<b>4.2</b>	<b>Definition phase .....</b>	<b>57</b>
4.2.1	Creation of opportunities for improvement.....	57
4.2.2	Creation of a project plan .....	58
4.2.3	Creation of a team participating in the project .....	59
4.2.4	Defining the process.....	60
4.2.5	Identification of critical customer requirements.....	61
4.2.6	Description of product.....	61
<b>4.3</b>	<b>Measuring phase .....</b>	<b>62</b>
4.3.1	Identification of the performance indicators .....	63
4.3.2	Creation of the data collection plan .....	64
4.3.3	Validation of the measuring system.....	68
<b>4.4</b>	<b>Analysis phase.....</b>	<b>71</b>
4.4.1	Identification of the causes of the problems.....	71
4.4.2	Selection of the main causes .....	72
4.4.3	Determination of relationships .....	73
<b>4.5</b>	<b>Improvement phase .....</b>	<b>95</b>
<b>4.6</b>	<b>Phase of control.....</b>	<b>96</b>
<b>5</b>	<b>DISCUSSION .....</b>	<b>100</b>
<b>6</b>	<b>CONCLUSION.....</b>	<b>103</b>
<b>7</b>	<b>BIBLIOGRAPHY .....</b>	<b>105</b>

## INTRODUCTION

Quality is the most important component which is needed for success in the market today. If the organization is unable to create quality, the chances to keep in the market are very small. The quality in organization must be created and monitored constantly. Quality management system and its continuous monitoring of their activities has been implemented to achieve the desired objectives with regard to quality and production efficiency. The primary objective of the quality management system is to produce quality products before discovery of defective products that have already been produced. Properly implemented system helps the organization in the analysis of customer requirements and in producing quality products.

Quality has been recognized as an important aspect in a business environment for a long time but the identification of quality as a core concern has evolved through a number of changing business conditions, including: competition, the customer focused organization, higher levels of customer expectation, performance improvement, changes in organization forms, changing workforce, information revolution, electronic commerce and the role of the quality department (Gryna, 2001).

The focus on continuous quality improvement is advantageous because it leads to the elimination of deficiencies by reducing the undesirable variability in business processes and cost savings that should be spent on removing or repairing non-conforming products.

First, it is necessary that the organization performs market research, customer needs and expectations. The main expectations include the functionality, reliability, environmental friendliness and affordability of the product. It is important to find a balance between quality, cost of production and the total final price that satisfies a customer and an organization, too (Nagyová et al., 2016).

In the 21st century, it is necessary to ensure the long-term success of each organization to focus on the development of its products and services. Furthermore, there is a need to introduce a system to support the elimination of defects and consequently increase profitability, which is needed for development of competitiveness.

In a competitive economy, continuous quality improvement and cost reduction are necessary to stay in business. Organization must earn a reasonable profit to survive. Profit is the result of reducing manufacturing cost and increasing revenue (Stamatis, 2000).

One possibility to ensure and achieve this state is to use the Six Sigma. Near perfection is the ultimate goal of Six Sigma. When an organization has achieved true Six Sigma quality, they will eliminate defects and non-conformance to virtually zero.

Therefore, in order to conduct research on Six Sigma, the starting foundation must be the formulation and identification of useful theories that are related to the Six Sigma phenomenon (Linderman et al., 2002).

Using Six Sigma philosophy is important especially in medium and large organizations, because Six Sigma is an equivalent replacement for TQM. We will show the differences in the following chapters.