

# The Challenges and Opportunities of Introducing Six Sigma at Customer Support Telecommunication Company

Samir Čaušević, Elma Avdagić-Golub

*Faculty of Traffic and Communications, University of Sarajevo, Sarajevo, Bosnia and Herzegovina*

**Abstract** – Six Sigma is a version, a philosophy, a strategy and a set of tools for improvement of the quality services and processes. Till now, this method was mostly used in the world of manufacture. Telecommunication is the industry that is based on the service, where the customers are the main focus, and their needs very often seem unpredictable. In this work, a critical review had been given to the application of the Six Sigma methodology in the department of customers support of a telecom company. Through SWOT analysis, given is a review of the opportunities and challenges of this methodology, and also what is necessary to be changed for this methodology to have a purpose and application in one telecommunication company.

**Keywords** – Quality services, Six Sigma, customer support.

## 1. Introduction

Because of the dynamic increase of the current markets, long-term and sustainable business success depends on the ability of the company to adapt itself and continues to change its basic terms and challenges by choosing proper strategies, and projects as well. Sufficient potential for saving by quality improvement is especially present in the cost-related industries.

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DOI: 10.18421/TEM84-29

<https://dx.doi.org/10.18421/TEM84-29>

**Corresponding author:** Elma Avdagić-Golub,  
*Faculty of Traffic and Communications, University of Sarajevo, Sarajevo, Bosnia and Herzegovina*


**Email:** [avdagicelmaa@gmail.com](mailto:avdagicelmaa@gmail.com)

*Received:* 07 October 2019.

*Revised:* 07 November 2019.

*Accepted:* 12 November 2019.

*Published:* 30 November 2019.

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Approximately 90% of quality costs (mistakes), which are caused by poor quality, are concealed and they are investigated very rarely although they take 30% of the income in industrial as well as service sectors.

The market development like this, surely, will reinforce competition and for every branch and there will remain just a few companies, as a result. Because of that, the generation of appropriate solutions, with a goal of gratification of customer's needs, is a critical competitive advantage, which is important for the strong and sustainable competitive position as well as maintaining and increment of company value. This will be possible only if companies are in ability to make solutions by their criterion, which means that they are cost-effective, better, faster, safer and more reliable than their competitors'. Six Sigma as a modern strategy of the quality management can help the company to achieve and keep business success in a long-term sense. It is a promising strategy which by combining Porter's generic competitive strategies of cost leadership and differentiation, makes goals more achievable. Six Sigma is one method for improving performances that focuses on reducing the number of defects in products, processes and services. It was successfully introduced in many major groups such as General Electric and Motorola [1]. The most significant feature of the Six Sigma methodology is to try to measure and reduce variations within the process, to do things better, to reduce cycle times, to do things faster and to increase utilization rates, or to do things cheaper.

## 2. The concept of quality of service in telecommunications

The profitability of the organization is defined by high sales and low costs. The high sale is mainly defined by quality and price. As a result of that, the main goal of every organization is the improvement of quality by decreasing of costs. One of the usually used definitions in the field of telecommunications had given in the recommendation ITU E.800 according to which Quality of Service (QoS) is presented as the united effect of the performances of

services that determine the degree of satisfaction of the customer [2],[4]. The product or service is specific to the telecommunication market. In the service sector, there is another aspect of quality service which is rated by the customer, and also a new term of quality of experience of end customer as a key criterion in the process of the servicing. That is the way how the customer perceived usage of a certain service, which is a subjective category. The primary means to achieving Six Sigma quality level is to eliminate the causes of quality or process related problems before they are transformed into defects. The focus of “six sigma” is not on counting the defects in processes, but the number of opportunities within a process that could result in defects [3]. That means that in one call center, the lost call in one hour is not currently a problem, but it will be if the call is lost twice in a whole day from the same customer, and thereby creates dissatisfaction with the customer and its lost.

### 3. Opportunities for the application of Six Sigma in the Customer Support

Customer Support encompasses the call center’s department of support to customers of the telecommunication company. They are a key channel of support to customers, which solves customer’s problems related to the service used. Each of us has at least once called the department of customers support because of some problem, and also tried to solve that problem immediately. Application of Six Sigma on the surrounding like this means that we have service of customer support which works as it will never lose any singular call, actually that on one million income calls there will be 3,4 lost. It would mean that every call/problem reported from the customer, is accepted, analyzed, and solvable. The increment of the number of calls in the Customer Support means the bigger number of problems.

The opportunities for applying Six Sigma in this sector are as follows:

- Analysis of the number of calls during the week, month, year which will present variations inside these processes as a result. By presenting the biggest load per day, month and year, we can take further steps to reduce them.
- Analysis of the waiting time on the resolution of the problem during the week, month, year, which surely will be connected with the previous item which is mentioned before.
- Analysis of lost calls for 24 hours.

- Analysis of a number of operators/agents who are necessary for the optimal work of a center like this.

Six Sigma will help us firstly to evident problems inside the process which make waiting on lines, losing the calls. The goal of the Six Sigma method is to bring the process to an ideal state, with as low as possible dissipation. This method will show us whether there is a need for a change in the number of agents in the call center, but also the activities which we should undertake to fix the state. In the last two decades, Six Sigma has been used especially in the manufacturing, the application in the service sector is less tried and tested, because of the fear that processes in the service sector are not subject to strict statistical tools on which this method is based. The best way to check whether conducting of Six Sigma strategy makes any sense are three elementary principles of statistical opinion, and they are: [10]

1. all work occurs in a system of interconnected processes;
2. all processes exhibit variability; and
3. all processes create data that explains variability and it is our responsibility to understand the sources of variability and devise effective strategies to reduce or eliminate variability.

If we observe the department of Customer Support, then the answer to all three questions which are mentioned above will be affirmative. Customer Support is a department which is connected with other departments, logistics, economic service, law service and others by the processes. Every process has its steps that are measurable and therefore show the variability. In the end, every process has data that explains the variability which can be reduced or removed by this method. The most important thing is that management must properly understand the company’s processes..

### 4. Challenges and DMAIC process in Customer Support

Six Sigma methodology is based on the DMAIC cycle. DMAIC is an abbreviation consisting from the first letters of each singular phase which makes this cycle: Define – Measure – Analyse – Improve – Control. In this work, we will implement Six Sigma methodology through five phases of the DMAIC process on the department of Customer Support, so that we will explain what is necessary to do and what are challenges in which managers that conduct Six Sigma ideology can meet.

1. Define phase – defining the project is the first step of the Six Sigma DMAIC cycle. This phase

has a task to form a project team, document the main processes, and develop the main project document, the so-called project charter. In the define phase, it is necessary to explain the problem and narrow the volume of the problem in that way that measurable goals can be achieved inside a few months of the duration of the project. According to the authors, the main tasks inside the define phase are:

- a) Develop the project charter
- b) Define volume, goals, and deadlines of the project
- c) Define processes (top-level) and stakeholders
- d) Choose the members of the project team
- e) Get permission from the sponsor of the project.

The problem in this phase of the project can be the team that will participate in it, because the department of Customer Support which works 24/7, where the workers are very much loaded with work and they do not manage to do other activities besides their daily obligations. Many Six Sigma books advice that this methodology is not possible to implement without the complete support of the management, and also without educated Six Sigma staff, what is more important. This is one of the critiques of Six Sigma methodology, actually that too much time and money is necessary for the Six Sigma experts and that these activities can take them away from the primary activities that are needed for the company [11]. However, the companies which have successfully implemented Six Sigma methodology claim that it is possible to make that with minimal costs. The part of this phase is to form CTQ Tree (critical for the quality matrix). This is the tool which is used for finding the needs and requests of process customers, and their detail specification [5]. What is the key request of the customer, what are the possibilities that Customer Support fulfills those requests? It is necessary to define the key points which bring to the fulfillment of the wanted requests. This is a very important step in conducting this methodology because in the case that we are mistaken in recognizing the customers' key requests, the project will not have any sense.

2. Measuring phase – is the second step where the project team collects information and data which are connected to an already defined problem. It is important to measure the current Six Sigma performance of the process, and also look at the defined problem deeper. W. Edwards Deming stated “the variation is an evil” which means that every deviation of the process is originated from too big and unacceptable variations [6]. It is

important to highlight that this is still the phase where there are not perceived any solutions, but it is needed to learn as much as possible about the described problem and collect as much as possible data about the size and the type of the problem. The measuring phase serves as the “baseline” of the study based on which we can compare “before/after” data and in that way, we can get information about the real improvement. The most famous and the most used tools inside this phase of the Six Sigma projects are:

- a) The map of the processes
- b) Ishikawa diagram
- c) Cause – Effect matrix
- d) FMEA (Failure Mode and Effect Analysis)
- e) Data Investigation Plan
- f) MSA – analysis of the measuring system
- g) Tools for the visualization
- h) Calculating the abilities of the processes (Cp,Cpk,Pp,Ppk,Sigma,PPM)

The maps of the processes picturesquely show the way how the company works, actually the way how the operations are held inside the organization. The map of the processes gives us an integral picture, and because of that processes are something that is very often neglected, because people are obligated for departments, budget and similar, but very rare for the processes [7]. Customer Support is the department that communicates with all other sectors in the company, and therefore the making of the map of the process of this department involves the whole organization. Customer Support solves the problems of the customers, which are scholastic, very often those are new problems, and their resolution requires new processes. It means that one of the requests of this phase is making the permanent map of the process, which will have the possibility of complementing.

The measuring system has a very important role in the measuring phase during the Six Sigma project because of the imperfections of the measuring system which can lead to the fake and incorrect data and therefore lead us to wrong analysis and wrong inferences about where the problem lays and what is the right solution. Namely, the modern analysis of the measuring system goes far away from the calibration of the measuring devices. It is needed to test and “measure the measuring system”, and also quantify the deviation of the measuring system. These deviations, if they exist, can come from the wrong settings of tools, measuring methods

as well as mistakes of the operators which perform them. One more important thing in the Six Sigma project as well as in the usage of any statistic method is the procedure of collecting the samples. The sample has to be representative and it should present the whole population, and also it should not express the system difference between data and this is actually the reason why we take, or why we do not take certain samples.

Customer Support is composed of a bigger number of agents who have different business abilities, some agents are faster, effective, more accurate than other. Because of that, the analysis of the call samples should take into account the abilities of the agents. The department of Customer Support should take care of the “Hawthorne effect”. Hawthorne effect is the theory that says that when we start to measure something, things are changing right now in that way that operators are taking care more and work better [8]. Therefore, the result of our measuring is not representative considering that it does not show the real picture of the process, where the workers are relaxed and pay less attention. Six Sigma should be an ideology that will change the contemplation of the employers, fix the processes for the long term, not only during the project duration.

One more challenge of the application of this method is an unpredictable amount of traffic (the customer requests). The number of income calls depends upon the number of problems that the customers have. Problems like that can appear in the case of natural disasters, the maintenance works on the net which can cause problems with the net and the customer’s service, the social events that will make the load on one place. Because of that, the measuring system should add the variable which will include all exceptional cases that are mentioned above.

3. Improvement phase – After the identification of the cause of the problem and proved assertions by data, it is needed to make changes to remove detected problems in the goal of improvement of the processes actually eliminating the problems. The improvement phase is composed of the development of ideas and solutions and also the selection of an optimal number of the solutions (often all solutions cannot be implemented) in the goal of the best results. The most famous tools of this phase are:

- a) Brainstorming
- b) 6-3-5 method
- c) Six Thinking Hats
- d) Cost-Benefit Analysis
- e) Method of the simulation

The improvement phase in our problem will give us the answers to whether we should engage new agents, whether some agents are less capable of this job, and also whether is the schedule of the agents adequate for 24 hours, whether we have unsatisfied customers and what we should change. The changes which we do will show us their results in the control phase.

4. Control phase – the challenge in this step lays in that how to maintain Six Sigma initiative alive considering that people very often think that the end of some project means also the end Six Sigma methodology. The most famous tools of the control phase are:

- a) PDCA cycle
- b) Audit
- c) Statistical Process Control (SPC)
- d) Standardization of the activity
- e) Graphical representation and the presentation of the solutions

The results and improvements that we have reached by systemic work inside the improvement phase are often possible to use in other departments in the organization. The purpose of this phase is to secure that the problem stay fixed and safe [6]. However, the department of Customer Support is often the “filter” department where the employers stay short-time, where the employers give the demission because of the load or they switch in other departments, so therefore it is hard to maintain the rules which are set by Six Sigma. The transfer of these results and improvements on the new members, as well as other people in the organization, is possible to be done only by the way of the standardization and documentation of results and good practices. It is needed to establish programs of quality.

The author in [9] cites that “CEO and only CEO is the one who makes Six Sigma possible and successful in the organization”. Although we are not aware of that, the top-management is the one which sets the base for the planning implementations. Without the base and the top-management support, leadership, and help, it would be very hard for the Six Sigma team to recommend the projects of improvement, as well as enable the progress and end the project inside the planned time and costs. Six Sigma projects are in every case useful for the organization, but the fact is that firstly it should be ended what requires resources in the form of personnel, material, infrastructure in the “know-how”. Top-management should understand this very well in the purpose of insurance of these resources.

Table 1. SWOT analysis

<p><b>Strengths:</b></p> <ul style="list-style-type: none"> <li>• Focus on the customer (this is the method that is focused on the customer's needs, and because of that it is ideal for the application in the department of Customer Support)</li> <li>• Understanding of the needs and wishes of the customer is a critical base for service quality and making satisfaction and loyalty of the customer</li> <li>• Simple integration with other methods for improvement of quality</li> <li>• Data and statistical access to solving the problem. Steadily statistical contemplation in solving all problems and improvement of process</li> <li>• Clearly defined structure of the team</li> <li>• Enough of studies which support Six Sigma method</li> <li>• Standardized tools and powerful IT</li> <li>• Analysis of the main samples customer's calls</li> </ul>	<p><b>Weaknesses:</b></p> <ul style="list-style-type: none"> <li>• High investment in training</li> <li>• No uniform accepted standards for training</li> <li>• Primarily this is the task of the top-management, and then of the others</li> <li>• Instruction</li> <li>• The change of contemplation of employers, long-time commitment and clear vision</li> <li>• The big flow of workers</li> <li>• The big level of statistical knowledge</li> <li>• Quality data available, especially in processes for which no data are available at the outset</li> </ul>
<p><b>Opportunities:</b></p> <ul style="list-style-type: none"> <li>• Highly competitive market and demanding customer</li> <li>• The method which has powerful access for solving the problem with unknown solutions</li> <li>• Applicable in all processes – where is variation, Six Sigma is there too</li> <li>• Reduced number of non-value added operations</li> <li>• Improved multifunctional teamwork in the whole organization</li> <li>• Simplification of the call center operations</li> <li>• Better usage of human and material resources</li> <li>• Simplification of operations which reduce the level of stress which characterizes this sector</li> </ul>	<p><b>Threats:</b></p> <ul style="list-style-type: none"> <li>• The big risk for companies which do not work positively</li> <li>• The disadvantage of the manager's commitment</li> <li>• Not enough patience for implementation</li> <li>• Very few empirical studies are conducted</li> <li>• Not enough experience in the application in the service sector</li> </ul>

## 5. SWOT analysis

SWOT analysis is the method of strategic management that establishes present, future opportunities and threats from the environment and own weakness. Application of SWOT analysis on the Six Sigma will give us a visual presentation of opportunities and challenges for the application of it in the department of Customer Support. As we can see in SWOT analysis, possibilities are overcoming challenges by far. Customer Support is the first touchpoint with the customer. Their adequate work,

processes which do not require much time, right time and effectively solving customer's problems, helps in the building of satisfied and loyal customer.

Considering the big proportions of many operations of the Customer Support center, even relative small improvement of Sigma values of processes can be dramatic and reduce the rate of mistakes, which increases the satisfaction of customers and is bringing financial benefit.

By focusing on removing unnecessary actions, identification of truly added values of activities helped by DMAIC tools for solving the problem, it is possible to reach significant improvements in costs

and levels of quality of the provided services to customers.

## 6. Conclusion

Whether it is about a company that deals with the manufacture, service offering or international organization, it is composed of activities that are based on the processes. If processes are there, variations are there too. And when there is a variation, one of the answers is Six Sigma. Six Sigma is the process which brings additional benefits to the telecommunication industry and helps organizations to adopt the best practices for service offering by a quality process which provides its success. Specifically, Six Sigma's business orientation will provide that the activities of the service offers are directed on problem-solving of these services which affect customer satisfaction. As a result of it, the increment in quality will be bigger in the telecommunication industry in total business. The optimization of the process, continuous improvement, measuring the service quality and improvement of processes is the most important point for Six Sigma and the telecommunication industry combination. One of the most important limiting factors in the area is difficulty in quantification and collecting of data about services of the telecom operator because these organizations do not mention qualitative data and quality programs. Quality of service has to be defined and measured by defining the factor of quality and standard. The present tense presents the „inflation time“ of products and services. In highly developed and averagely developed countries, ruthless fight is lead for every customer. Because of it, one telecom company cannot allow itself the luxury to lose the customer because of Customer Support, every call is some problem, and the goal is to reduce them.

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