

Standard ISO 9001: 2015 as a tool for measuring quality of product and customer satisfaction

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Abstract -The huge competitiveness that exists between the organizations of the market at a time when virtually practically every customer needs to be attracted and an effort is made for he or she to be retained by the organizations, naturally there is a need for the organizations to accept and adopt the standard for quality management ISO 9001: 2015 as a tool for acquiring new and retaining the already acquired customers. In Macedonia, the trend of certification according to the standards for quality management is progressing but not as much as in the western economies.

Key words-standard, organization, risk, process, user satisfaction, application, measurement, improvement



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1 INTRODUCTION

THE standard for quality management ISO 9001: 2015 is a tool that by managers is increasingly recognized as a framework whose interior summarizes the needs of customers and their expectations through the processes of implementation of a product and the service framework leaving the products and services that meet and primarily exceed the customer needs and expectations. The frame ISO 9001: 2015 for every organization is different and above all, it depends on what the top management has decided to cover with this framework (a product or service or all products and services, of one or more locations). The work derives from the gap that was noted by an anonymous survey that was conducted in over 50 organizations in the southeastern region of the country. The goal is to answer the ambiguities that the managers in the country have, which emerged from the analysis of the anonymous survey and to justify and encourage the implementation of the standard for quality management ISO 9001: 2015 by the organizations. In the survey were set ten questions and here we will present answers to four questions related directly or indirectly to the standard for quality management clause. The questions and the corresponding answers which are expressed in percentage are presented by the images etc. 1, Fig. 2, Fig. 3.

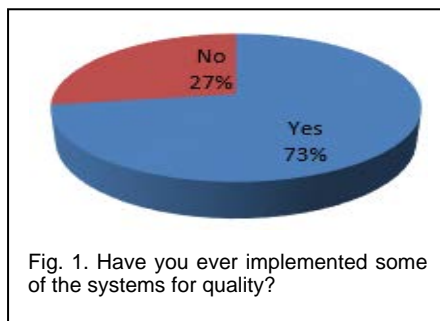


Fig. 1. Have you ever implemented some of the systems for quality?



Fig. 2. Do you know how to measure the quality of your products/services?

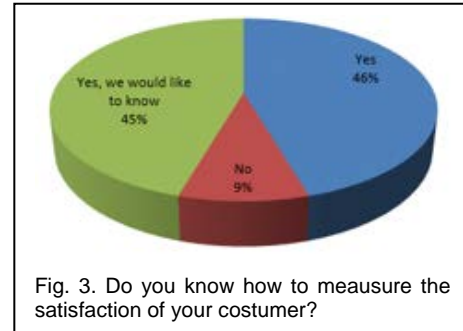


Fig. 3. Do you know how to measure the satisfaction of your customer?

Analyzing the acquired data from the survey it could be concluded that: from Fig. 1. can be concluded that only 73% of organizations reported that they have implemented ISO 9001: 2015, but only 18% know how to measure the quality of their products (Fig. 2) and 46% know how to measure the satisfaction their users (Fig. 4). In addition, the experience gained by the author in implementing the quality standard shows that there is a gap in the understanding of the essential benefit from the introduction and the acquisition of a certificate ISO 9001: 2015. The majority consider the introduction of the standard to make additional costs which further they can not recover while producing products on which they do not know to measure the quality of the product they produce and they do not know to show whether users are satisfied with using their products and services (Fig. 2, Fig. 3).

ISO 9001: 2015 essentially represents the minimum requirements which an organization must meet to obtain the confidence of users that at any time, with a constant price will fail to deliver the agreed amount of a product that has a constant quality and fails to exceed the expectations of its users.

2DEFINING THE PROBLEM

The huge competitiveness that exists between the organizations of the market at a time when virtually every consumer is hunted and an effort to keep the acquired consumer by the organizations naturally imposes the need for the organizations to accept and adopt the standard for quality management as a tool for acquiring new and retaining the already acquired customers. In Macedonia, the trend of certification according to the standards for quality management is progressing but not as much as in the western economies. Through the Ministry of Economy as of

2010 there are awarded grants to organizations that are interested in implementing the system of quality management ISO 9001: 2015 with the previously made SWOT analysis of the Macedonian economy. [1]

Apart from the abovementioned anonymous survey for the need for a doctoral thesis another research is done in which in the Republic Macedonia the standard has been implemented by 40%, of which 60% are satisfied with the application of the standard, 15% are not satisfied while only 25% believe that the certificate is required only for standing on a wall as a painting (4). [2].

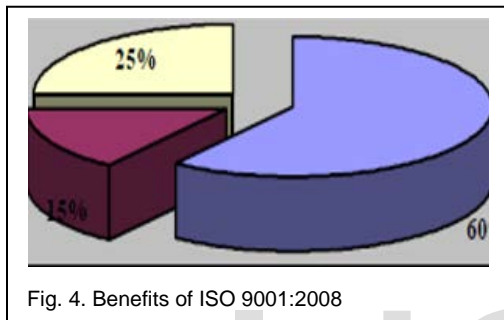


Fig. 4. Benefits of ISO 9001:2008

If a comparison is made between these two independently conducted surveys it will be noted that in Macedonia there is a huge challenge to companies, because the gust of the foreign direct investments, especially in the automotive industry, require that domestic companies adopt the standard as a condition for cooperation because the foreign direct Investors care about their end customer. In Macedonia, an example such as these ones is GM (General Motors) where through a foreign direct investment seat covers for OPEL cars are being produced (GM suppliers must possess ISO 9001: 2015 [3].

There is a large gap of ignorance of this important strategic standard and what is its main function, therefore, taking into account the results of the surveys, the following points will be explained :

- Organization in its context (clause 4, clause 4.1, clause 4.2 and clause 4.3);
- Thinking based on risk (clause 6, clause 4.4.1, clause 5.5.2.d, clause

6.1.2.a, clause 7. clause 8, clause 9.3.2 e, clause 10. 1 and clause 10.2.1.e).

- Measuring the quality of the product (clause 1 a. b, clause 8.2.3, clause 8.3, clause 5.2, clause 4.4.1 clause 4.4.2, clause 9.1.1, clause 9.1.3,) and;
- Measuring customer satisfaction (clause 9.1.2, clause 9.1.3.b).

2.1 CONTEXT OF THE ORGANIZATION

The context of the organization (clause 4) is a completely new chapter in ISO 9001: 2015 and contains four requirements and in this paper we will explain the first three (clause 4.1) understanding of the organization and its context (4.2), the needs of the stakeholders and (4.3) determining the object and scope of the application of the standard. (clause 4.1) To meet the requirement, the standard actually opens the eyes of top management to "look carefully around them." [4] That means in the modern business environment no organization can prosper if they do not take into account all factors (external and internal) and they need to examine well their influence on organizational work and the impact it has on those factors. . In order to succeed the organization to reach this demand, the management should set itself and respond to the following questions, some of them are:2

- What are we good at?
- From what is our competition afraid?
- What our customers think about us?
- Why do all believe that we need improvement?
- What we need to be careful of, so we don't get out of the game?
- What weaknesses our competition has and we can use it?
- For what type of products and services our customers are looking for?
- What technology can help us? ...etc

Although the standard does not emphasize the use of SWOT (strengths-weaknesses arise-opportunities-threats) analysis, as a tool is recommended to the organization so it needs to be applied and that will help to create its strategy towards achieving their goals which are already seclause (4.2)Stakeholders are those with an interest (gain, profit) of the organization's operations. The organization must first determine who are the stakeholders, but generally, the stakeholders of each organization are its

employees, customers, the environment, the regulatory bodies, suppliers, and others. Second, the organization must take into account their needs and find a way to meet them. In table 1 are shown some of the requirements that may arise from the interested parties.

TABLE 1
Requirements of the interested parties

<i>Employees</i>	<i>Better working conditions, higher salaries, paid overtimes and others.</i>
<i>Customers</i>	<i>Better quality, lower prices, increased warranty period, response to complaints, etc.</i>
<i>The environment</i>	<i>Less pollution, social responsibility and others.</i>
<i>The regulatory bodies</i>	<i>Fulfillment of legislation, implementation of legal limits in products and others.</i>
<i>Suppliers</i>	<i>Punctual and accurate product information that is a subject to delivery, prompt payment, gaining confidence and more.</i>

(Clause 4.3) In determining the object and scope of the application, the organization must take into account the requirements under (clause 4.1) and (clause 4.2) for a particular product or service (subject) in a specific location (area). The context of the organization as the framework of the ISO 9001: 2015 is shown in figure 4.

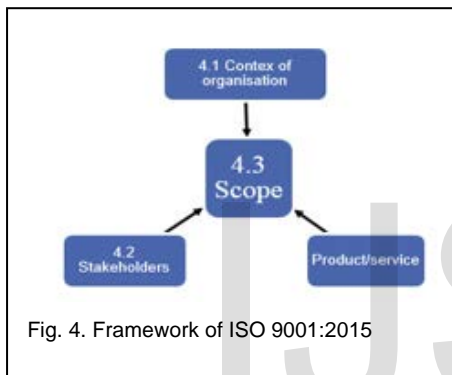


Fig. 4. Framework of ISO 9001:2015

2.2 RISK-BASED THINKING

The risk is a product of two factors: the expected consequence of events and the possibility for the event to occur [5]. The thinking based on risk is a precondition of meeting the following requirements of the standard clause 4, clause 5, clause 6, clause 7, clause 8, clause 9, clause 10. Risk identification is a key thing that must be determined before you begin designing the system for the quality management. Firstly are determined the risks of item 4.1, 4.2 and 4.3 [6]. If the organization does not try to answer the previous questions (the second one), it will certainly take risks because it does not know what is good, it does not know what customers think, it will not know to exploit the weakness of the competition if it is previously not determined and it does not know what products customers require and more. Furthermore, what is the risk if the organization does not fulfill some of the demands of stakeholders, eg the risk of non-payment of salaries which has an effect on the motivation and the desire of quality performance of tasks that ultimately would result in inconsistent product in

the hands of the customer and a loss of the same one, the result is a weakening of the financial health of the organization and in the end to its liquidation. Each process that is defined and falls within the ISO 9001: 2015 should succumb to the thinking based on risk (clause 4.4.1 F). [6] It must be known the fact that the processes are interrelated or in other words, the exit process is the input of another process, according to the final result of the process is an input in the process where the outcome of this process will also cause inconsistent results. The thinking based on risk must be one of the main tasks of leaders, so they must promote and provide training for the employees because the thinking based on the risk is the responsibility of everyone in the standard (clause 5.5.1.d) [6]. In defining the risks, the organization must plan the measures which will be implemented depending on whether the risk is acceptable, avoidable or needs to be transferred (clause 6.1.2.a) [6] and because of this, the organization must provide resources (clause 7) [6]. The organization must measure the performance of processes so it can be able to determine if the conditions are created for the risk of inconsistent procedural outcome (clause 8) [6] the undertook measures to be measured, to collect information from them and analyze them and finally to assess whether the outcome of the risk is reduced, avoided or increased (clause 9.3.2. f) [6]. Finally (clause 10.1) (clause 10.2.1.e) [6] the organization needs to take the risk, if it is able to turn into an opportunity for improvement and increasing customer needs and in the end to make an update of the risks and opportunities. The standard does not emphasize the need for implementation of the standard for managing risk ISO 31000: 2009 for determining the risks but, it gives the organization opportunities and it also frees the organization to

find methods as it will determine, analyze, respond to risk and assess its impact if that happens. There are methods of quantitative and qualitative assessment of the risk, and in the automotive industry, the FMEA method is mandatory in a qualitative risk assessment. [7]

2.3 MEASURING THE QUALITY OF THE PRODUCT

Firstly, the organization needs to determine the quality of the product. It involves a bit more comprehensive analysis in which the meeting of the customer's requirements related to the product, increasing the satisfaction of the customer (clause 1.1) must be covered [8]. The standard is tuned to customers and these are the two main things that every manager must understand and seek to establish such processes that will realize those goals. There are two types of organizations, some delivering products at the specification of the user and others who create products based on a marketing research of customer needs. For the first, the user has predefined characteristics (specifications) of the product and the customer submits an offer to the organization for making the product, the organization analyzes the equipment, personnel, tools, cost and decides whether it accepts the offer or not. The standard, in order to protect the organization requires from it to check the requirements of the user (clause 8.2.3). The second type of organization are conducting a marketing research between the potential customers in order to check what is that which does not exist on the market and it is of great need for customers. These organization must understand well the potential customers who answered the survey and to define exactly what characteristics the product or service is suppose to have. The process of making the product or the service in the standard is shown in (clause 8.3). From what was previously said, most important before we go to the measurement of the quality is: for the first type of organizations, that the organization is capable and ready to fulfill the characteristics and performances of the products needed, and for the second type of organizations, to find a way of understanding the expectations and needs of the potential users and on that base to create a product or service. Garvin(1984)² in the

business magazine Harvard Business Review (HBR) for the first time promotes the eight competitive dimensions of quality which are: 1. The performance of the product 2. Product Features 3. Confidentiality 4. Compliance 5. Endurance 6. Improvability 7. Aesthetic quality 8. Perception [9]. The performances of a car are the acceleration, comfort, management, and the quiet ride. The product features are the second dimension of quality and are often called the second aspect of performance [10]. The product features are actually represented on how the products perform their basic function, the main function of a car is the transportation of passengers, but shipping can be the passage to a certain destination for a shorter period of time, with lower fuel consumption and so on. Confidentiality is a quality dimension through which the product can perform this function in a defined period of time. In the automotive industry, the manufacturers provide a five-year warranty on their cars, anyone who will increase the warranty period acquires a competitive advantage. Compliance is the fourth dimension of quality, in our case, it means that the product must meet the requirements according to ISO 9001: 2015 standard otherwise the standard calls it inconsistent. The endurance for a product it represents its life cycle and it has two dimensions, an economic and a technical dimension. When it comes to the technical dimension, it means that the product must be used as much as possible before being replaced. For the cars, it is said that their economic value declines by 10% per year, which means that after 10 years the car is not worth a penny, although some cars perform their function even after 50 years that does not mean that all the features are the same as 40 or 45 years ago. Improvability is the sixth dimension of product quality through which the organization with kindness, courtesy, and as soon as possible will repair the product if it ceases to perform its function. Aesthetics is the seventh dimension of quality, that particularly takes part in the automotive industry, the cars not only have to be fast, comfortable, and safe, but they must as well be aesthetic and attractive for the eye of the customer. Manufacturers know that the most important condition that the car will attract the consumer is through its aesthetic appeal and further consumer interest in features and other features. Finally perception of quality, interesting dimension to the product associated with the reputation of the organization. For example, there

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TABLE 2
The meaning of quality

<i>Product features that meet customer needs</i>	<i>Manufacturing a product without flaws</i>
<i>Increases the customer satisfaction</i>	<i>Reduces the error rate</i>
<i>The product is easily sold</i>	<i>Reduces the additional work, the drawback</i>
<i>Is accepted by a larger number of users</i>	<i>Reduces customer dissatisfaction</i>
<i>It provides an income</i>	<i>Reduces the inspection</i>
<i>Beats the competition</i>	<i>Increases production, reduces the time for a new product on the market and others.</i>

are hundreds of car manufacturers but when the name of Mercedes is mentioned that means a synonym for quality for a passenger car, and if the name Volvo is mentioned and if the customer primarily want a safe, durable car and if he or she needs to choose between Mercedes and Volvo chances to buy Volvo are larger because the company Volvo has a reputation for producing safe and durable automobiles etc. No organization can not fail to be the best in all dimensions of product quality, the example with Mercedes and Volvo, and this is why it is recommended to the companies to determine some of the dimensions of quality produce and be the best in the making of their product, with what they will gain a reputation as the best in fulfilling some of the dimensions of quality. Once an organization defines in what will be the best, the organization has a mission and vision translated into the quality policy (paragraph 5.2.) and also establishes processes to ensure the fulfillment of the quality policy (clause 4.4.1.). The organization achieves quality by creating a system for the quality management, and ISO 9001: 2015 is one of those systems, which is the sum of quality assurance, quality control, statistical process control and evaluation [9]. QA involves the establishment of procedures, work instructions and other documents which are explained to people and it is explained to them how to fulfill their task (clause 4.4.2). Quality control is the establishment of measuring instruments with which the employed in the processes that are part of the scope of ISO 9001: 2015 can be measured and any discrepancies are going to be removed (clause 9.1.1). The statistic control of processes involves the acquisition of statistic data about processes in real time where the management will learn (analyze) to read the signals sent by some appropriate processes and will act through the measures specified in determining the risks which were previously

described (clause 9.1 .3). The assessment involves inspection, control or testing through which the establishing of whether the procedures and work instructions in the execution of processes and tasks will realize the defined dimension of quality as much as possible with a smaller number of inconsistent product and it is understood that the signals which are sent by the processes are in the frames of the planned deviations (clause 9.2.1.). Despite the numerous meanings of quality, the two critical ones that are central to the management of quality are: that the quality means are those characteristics of products that meet customer needs and thereby gain customer's satisfaction and quality means producing a product without flaws. [10]

If we analyze what for the organization means any of these two meanings of quality presented in table 2. we will establish the following: define the properties that meet the customer satisfaction for the organization means a higher price of the product because the quality is more expensive and thus increase income, while producing a product without lack, for the organization means gaining quality with lower cost per unclause

2.4 MEASURING THE CUSTOMER SATISFACTION

A quality product "manufactures" a satisfied customer. While hunting for new users is realized through the process of defining and producing a product with features that meet users, the organization must find the customer satisfaction or dissatisfaction through the establishment of channels through which the organization will get that information. All of the established processes in the system of the quality management ISO 9001: 2015 should by definition bring the customer satisfaction and a part of those processes and processes for dealing with customer dissatisfaction that should remove the mismatch between the organization and the user (clause 9.1.2). The customer satisfaction is not only the perception of the consumer towards the product or service but

also the degree of pleasure that can vary between high satisfaction and low satisfaction (clause 9.1.3.b) [11]. The standard pushes the organization to monitor the customer perception (clause 9.1.2). Measuring customer satisfaction can be done through two methods: qualitative and quantitative method. Qualitative method is conducted through focus groups, the interview users and aims to identify the cause, resulting in a lack of satisfaction, and the quantitative method is implemented on a larger group of consumers (online, mail, email, Facebook, etc.) with which consumers are asked to respond to questions already established, while the interviewer should rather take into account whether through these established issues he or she will be able to find out the true customer satisfaction and the reason why. The purpose of the standard is to help the organization to continuously manufactures satisfied customers but as well, to assess their level of satisfaction. The results of the measurement of the product quality and the customer satisfaction measurement of the organization are a roadmap towards the improving of processes (section 10) and the increase of the product quality, ie to increase the customer satisfaction higher than the previous measurement. This circle is known as the circle of Deming or Q-D-C-A (plan, do, check, action) [12].

3 CONCLUSION

The purpose of the standard for quality management ISO 9001: 2015 for the organizations is to help them build a management system of quality that will help all employees to cope with all the uncertainties that are impediments to the achievement of the organizational objectives determined by the quality policy. Obstacles can be internal and external and they are created if the leaders of the organization did not foresee all the factors that affect the organization and the factors that the organization affects on. The failure to comply with the basic requirements of the interested parties causes a barrier. The context of the organization is initially an essential requirement in the standard which every manager in the Republic Macedonia must understand because it helps him to capture the big picture of the organization and in advance to foresee the problems that will face toward achieving the organizational goals. The standard requires that, in defining all the processes which are part of the territory and subject of the standard need to be applied based on seeing the risk, firstly to perceive

risks that could occur if the organization does not determine all internal and external factors that affect its work and meet the requirements of all interested parties so further it can be able to determine which is the risk of failure of the process goals that must be predefined. The organization ranks the risk and thus uses two methods: qualitative and quantitative. Means for managing the risk and the application of measures must be set aside because prevention is always cheaper than the emergence of risks that could bring huge savings because the organization must classify risks according to the impact they would have on the organizational performance and accordingly the estimated impact to set aside adequate resources. Determining risks and determining the measures for each risk and helps the organization with less money and effort to provide a product that meets customer needs and expectations, and in a word to deliver a quality product. Through the measurement of product quality and keeping documented information, the organization at any time can prove that the delivered product meets the customer and regulatory requirements and may be useful if the trust between the customer and the organization is questioned. To the managers in the organization, the eight dimensions of quality are explained and some of them are advised to be the best and to build a reputation on what they will be recognized. The processes for achieving quality is critical to any organization and there must be installed instruments, inspection etc. which will not allow the process to produce a product that is not according to certain standards, ie inconsistent product. In order to ensure quality through working guidelines and procedures where employees are explained and how to carry out their task, the control and inspection to remove mismatched products from the matched because it is substandard if to the user an inconsistent product is delivered, and finally through the established measuring instruments, sensors gather information which through their analysis to detect possible hot spots which can cause lower quality than that specified in the organization should be recognized. The excellent quality produces satisfied customers. The organization through a quantitative and qualitative method makes an investigation of the customer opinion and perception of quality and it ranges it from low to very high customer satisfaction. Questions should be designed so where the organization will succeed better in understanding the customer

needs and expectations through continuous improvement processes that are required in the standard will be able to incorporate them into the product and service. The purpose of measuring customer satisfaction is to find out about some new needs among users where with users it will produce an overcome customer satisfaction.

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