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## NEEDS ANALYSIS OF ENTERPRISES IN BOSNIA AND HERZEGOVINA FROM THE ASPECT OF QMS

### *Abstract:*

*This paper presents the status of certification of Quality Management Systems (QMS) in enterprises in Bosnia and Herzegovina. The paper also gives basic information about supporting national and international programs providing support for QMS certification. The research was conducted in two parts: 2009 and 2014. The questionnaires covered business decisions, reasons for the continuation of business decisions, obstacles to establishing business decisions and activities of organizations for the provision of permanent improvements.*

**Keywords:** *Quality Management System, Bosnia and Herzegovina, Enterprises*

### 1. INTRODUCTION

The basic principles of international standardization, concerning the voluntary nature of standards, the consensus of all stakeholders in voting, technical coherence at national and international level, building of standardization institutions and organizations, as well as many others, have been acquired by all the countries of Europe and the former Yugoslavia. The application of all standards, including the quality management standards, other than those referred to in the technical and/or other regulation, is entirely voluntary.

On the other hand, Bosnia and Herzegovina, as part of European continent, is devoted to European market and the processes that occur in it. This implies involvement of Bosnia and Herzegovina in global trends in all areas of life and work. Strong standardization, and application of recent trends and developments in the quality management (assurance), is indispensable prerequisite for technological development and competitiveness of our country.

However, the extremely unfavorable political, commercial, economic, and other issues in Bosnia and Herzegovina caused by the recent war, have led to significant retardation of our country in terms of modern development trends in the field of standardization and quality. However, Bosnia and Herzegovina, in accordance with its capacities follows international trends and participates in the activities of international organizations in this field. To this end, and overcoming obstacles and serious problems in the establishment of the state quality infrastructure which should cover this area, the Institute for Standards, Metrology and Intellectual Property (Institute), and the Institute for Accreditation Bosnia and Herzegovina (BATA) were established in 2001. They performed their tasks in accordance with the procedures, policies and guidelines of international and European organizations.

In December 2001, Technical Committee BAS/TC3 (Quality management and quality assurance) prepared the standard BAS EN ISO 9001:2001, which is a translation of the English version of the European standard EN ISO 9001:2000 and it was adopted as the Bosnian national standard.

## 2. STATUS OF CERTIFICATION IN BOSNIA AND HERZEGOVINA

Activities of most successful organizations in the implementation and certification of quality systems based on international standards in B&H have started much before the standard BAS EN ISO 9001:2001 was adopted. These organizations were primarily manufacturing, export-oriented enterprises that were faced with the demanding global markets and trends in the understanding and quality assurance of products and services [1]. They, with the involvement of foreign consultants and internal training of their staff, managed to gain certification of its quality management system, with high costs for the preparation and certification process. Viewed from today's perspective, based on the majority of researches oriented in this direction, one can conclude that the majority of organizations carried out the certification in this period in order to achieve certification and minimum necessary conditions for participation in the international market. A little attention was paid about the real reasons and substantive aspects of the establishment and functioning of the quality management system. Research and available data indicate that similar processes in this regard took place in most other countries of the former Yugoslavia.

Although in 1991 a former Federal Bureau of Standards of Yugoslavia adopted and translated the international standard ISO 9000, the war and post-war events which have affected these areas, have led to significant stagnation and backwardness in this direction.

Given the fact that B&H suffered by far the largest human and material consequences from the war, it was logical that its lag in monitoring and achieving global and European trends in all areas, is by far the largest. The level of B&H lag compared to some other countries of the former Yugoslavia, can be observed in easiest way from the comparative number of organizations certified according to ISO 9000 standards during the period of their intensive application in the world.

Although BH organizations put efforts to establish quality management systems and to prepare for certification (the company "Pobjeda" Tešanj was supposed to have certification in April 1992, but war delayed that), the first certificates for quality management systems in BH organizations were received in 1997, which indicates a backlog of nearly 10 years as compared with other countries and 8 years with Slovenia.

There is encouraging trend of growing number of certified organizations in recent years. It is significant that, in addition to manufacturing enterprises, an increasing number of organizations in the service domain (municipal administration and other levels of government, public institutions, trade and catering organizations, etc.) enters the project of quality management system implementation, and further trends for development and implementation of standards and quality management system in B&H should be observed in this direction.

Beyond the increased awareness of organizations, increase in number of certificates is also affected by stimulative measures introduced at different levels of authorities, through introduction of quality management standards, as well as the emergence of a growing number of local consultants and private companies in this field that offer these services.

The number of ISO 9001 certifications is unfortunately unevenly distributed throughout the territory of Bosnia and Herzegovina. Since Bosnia and Herzegovina consists of two entities (Federation of Bosnia and Herzegovina and Republika Srpska) and Brčko District, the ratio of the number of certificates varies. That relationship used to be up to 3:1 between the FB&H and the RS. This can be justified through the number of registered enterprises, which is 2 times larger in FB&H. As for the Federation, which is territorially divided into 10 cantons, the territorial distribution is also not even. The largest number of certificates is in Sarajevo Canton, followed by the Zenica-Doboj Canton, Tuzla Canton and Herzegovina-Neretva Canton. Other cantons have significantly smaller number of certificates. The industrial centers where a good part of the

industry is concentrated, has also the largest number of certificates. In Republika Srpska, the two largest industrial areas are dominant: Banja Luka and East Sarajevo.

According to the official ISO data [2], there were 1239 ISO 9001, 174 ISO 14001, 23 ISO 22000 and 7 ISO/IEC 27001 certificates in Bosnia and Herzegovina until 2012 [2].

### 3. SUPPORTING PROGRAMS FOR ESTABLISHMENT OF QMS IN ENTERPRISES

National programs for QMS implementation and certification are only symbolic, with only a few exceptions (Declaration on Quality by Council of Ministers, and support for SMEs by Zenica-Doboj Canton).

The Council of Ministers of Bosnia and Herzegovina, aware of its role in promoting the idea of quality in Bosnia and Herzegovina, adopted the Declaration on Quality on November 6th 2001, thus confirming sincere commitment to the road to European integration, and for consistent application of European ideas, principles and standards. This Declaration indicated that the courses of action of State authorities in this field are fully complementary with global and European trends. The result of their work include Bosnian Standards (BAS), prepared by Technical Committees, and published by the Institute for Standardization of Bosnia and Herzegovina.

We have to mention the Government of Zenica-Doboj Canton, the first governmental authority which started the incentives for these activities. Government of Zenica-Doboj Canton carried out a program of financial reward of companies who introduced and certified quality management system according to international standards, since 1999 [24]. The program approved financial rewards for companies who introduced and certified quality management system according to international standards ISO 9000, HACCP and others, laboratory accreditation, and for providing the CE mark for the product. The height of financial rewards depends on the size of the organization (number of employees) and the type of applied standards, ranging from 2.500 to 10.000 EUR. According to the Ministry of Economy of the Government of Zenica-Doboj Canton, these funds benefited more than 300 organizations from Canton until now [3].

The foreign trade chamber of Bosnia and Herzegovina had some activities in cooperation with certification organizations (TÜV Academy), but these activities were abandoned after the personal changes in top management of the Chamber.

The most recent EU funded project is "EUQMS: Support to Introduction of Quality Management Systems" [4]. Overall objective of the project is to generate economic growth and employment by strengthening the competitiveness of the SME sector in BiH. The project's purpose is to support SMEs to introduce Quality Management Systems in accordance with International Quality Standards ISO 9001. The project is funded by IPA Program 2009. Contracting Authority is Delegation of the European Union to Bosnia and Herzegovina. Project Duration is 24 months (18 September 2012 - 17 September 2014). The main project partner is Ministry of Foreign Trade and Economic Relations (MoFTER) of Bosnia and Herzegovina. The project has 4 main activities:

- Activity 1: SME capacity building to achieve ISO9001 certification
- Activity 2: Support to development of BiH network for services to SMEs
- Activity 3: Strengthen QMS business support structures and systems
- Activity 4: Publicity and awareness raising campaign

Other projects and programs in the field of quality were funded by various donors.

European Union funded a number of programs: Phare PraQ III (1996-1999), EU Support for Regional Economic Development in Bosnia and Herzegovina EURED (2003), Training and Consultancy EUTAC Project (CARDS 2005), Employment policy reform and establishment of

labor market information system (CARDS 2006), EU support to institutional capacity building for regional and local economic and SME development in BiH (IPA 2007), SME policy development support (IPA 2007), SME entrepreneurship learning (IPA 2007), Supporting export development and promotion in BiH (IPA 2007), Support to economic development in BiH (IPA 2008), Co-financing support to implementation of the Regional Development Agencies business plans for 2009-2011 (IPA 2008), TAM/BAS program (IPA 2009), EU support to establish and strengthen business infrastructure to improve SME competitiveness (IPA 2009), Safety Infrastructure (IPA 2007), Strengthening of BiH accreditation system (IPA 2007), Development of new accreditation schemes (IPA 2009),

USAID-SIDA within its FIRMA project, the support is provided for developing the services for SMEs to improve their competitiveness in the local, regional and international markets.

Other donors in BiH include Germany, Sweden, Netherlands, Italy, Switzerland, Japan, Canada, United Kingdom and Norway.

The German Development Cooperation program administered by the KFW Group concentrates on providing a range of financial services for SMEs and guarantee funds. German Technical Cooperation (GTZ) has launched a six-year project to modernize curricula and improve students' practical skills in vocational and technical education and is very active within the development of a comprehensive support for SME development and competitiveness within BiH. The UK Department for International Development provided technical assistance to the BiH stakeholders in social inclusion and poverty reduction policy as well as BiH Agency for statistics.

The TAM/BAS program provided turn around management and business advisory services was established in order to assist the development of small and medium sized BiH enterprises.

#### 4. ANALYSIS OF ENTERPRISES' NEEDS FROM THE ASPECT OF QMS

Organizations which have introduced the quality management system and obtained the certificate are now at a certain stage of development. The lack of flexibility and larger direct connection with the business results of the organization in the standard essentially forces organizations to start thinking about expanding the standards to some other quality management system that will have that connection, to take measures in this regard, and to upgrade the organization in this area.

Analysis of issues related to follow up decisions in the field of quality is given in Table 1. Answers indicate what are/will be business decisions with regard to quality. It was possible to choose more than one answer. Columns show the percentage responses received from 204 organizations from across the B&H in 2009 [1], and the same questions answered by quality managers in 25 organizations in the Federation of B&H in March and April 2014.

*Table 1. Business decisions according to organizations*

	Circle what are / will be your business decisions in terms of quality?	2009		2014	
		No	%	No	%
1.	Certification by new standard ISO 9001 (when adopted)	149	30,5	25	31,3
2.	Getting or implementation of ISO 14000	90	18,4	16	20,0
3.	Model of Business Excellence	50	10,3	10	12,5
4.	Process renewal	49	10,0	8	10,0
5.	Benchmarking	43	8,8	4	5,0
6.	TQM model	33	6,8	8	10,0
7.	Certification by OHSAS 18001	24	4,9	4	5,0
8.	Balanced ScoreCard	22	4,5	3	3,8
9.	Using the method of twenty keys	14	2,9	2	2,5
10.	Other	14	2,9	2	2,5

11.	The total sample of valid responses	488	100,0	80	100,0
12.	Proportion of valid responses with respect to the sample	200	98,0	25	100,0

We asked whether the organizations will be certified by the new standard. More than 30% of organizations, both now and five years ago, have responded positively, which means it is likely ISO 9001 will remain dominant as usual, first standard to be introduced in the organization.

A slight increase in the number of organizations (from 18.4% to 20%) wants to implement the environmental management system ISO 14001, which is becoming increasingly popular and necessary, given the general state of the environment and environmental protection worldwide. Model of Business Excellence and TQM model are also given some importance (2 - 4%). About 10% of organizations decided to perform process renewal in both studies. A comparative evaluation (benchmarking) will be used by a little less organizations than before (8.81%, now 5%). Getting OHSAS is a priority in about 5% of organizations. Other certifications organizations cited include:

- implementation of ISO/IEC 27001
- implementation of ISO 22001
- SA 8000 (Social Accountability 8000)
- ISO/TS 16949
- HALAL standards
- ISO DIN 18800
- ISO 17025
- CE marking.

The second question was "What were or will be the reasons used by organizations to decide to continue activities and introduce the other systems?" Organizations were able to choose more options. The answers are presented in Table 2.

The most common reason in 2014 are the requirements of customers (23.2%) who were given precedence over the requirements of management (21.2), environmental requirements (17.2%) and the requirements of the standards (15.2%) who were dominant in 2009. (Perhaps the requirements of the owner and management requests are dominant in total, because these terms are usually misused and do not differ enough in B&H). Technological necessity, as well as the wishes of employees and suppliers conditions have fallen as a business decision in relation to the previous period.

*Table 2. Reasons for the continuation of business decisions*

	Circle or write why will you decide about the above-rounded business decisions in terms of quality?	2009		2014	
		No	%	No	%
1.	Technological necessity	43	7,5	5	5,1
2.	Owners requirements	54	9,4	11	11,1
3.	Environmental requirements	81	14,1	17	17,2
4.	Wishes of employees	22	3,8	2	2,0
5.	Suppliers conditions	23	4,0	2	2,0
6.	Requirements of the standard	120	20,9	15	15,2
7.	Customers' requests	114	19,8	23	23,2
8.	Management requests	107	18,6	21	21,2
9.	Other	11	1,9	3	3,0
10.	The total sample of valid responses	575	100,0	99	100,0
11.	Proportion of valid responses with respect to the sample	198	97,0	25	100,0

Organizations cited the reasons by themselves why they were / will opt for these activities, because:

- Competitive market conditions,
- The requirements of legislation,
- Striving for improvements,
- The requirements of the community,
- Improving the internal organization of business in order to improve the quality of "our" product,
- The requirements of customers from EU
- Good experience with the standards, ...

Organizations will have to continue their journey after the quality management system implementation. Given the reasons, they will decide between the introduction of a new system or planning improvements in specific business processes. Organizations will certainly have obstacles in this way and certain setbacks and obstacles are expected that will either prevent or slow the planned activities. We explored what would be a major obstacle-interference in establishing business decisions in organization with regard to quality. The results are presented in Table 3.

Organizations were able to choose more options. The main obstacle is overburden of management with a regular job. (N = 100, 42.7%), followed by too little staff support in changes (N = 35, 10.7%); indifference of lower managers for the introduction of new system (N = 28, 8.5%), poor training of employees (N = 23, 7.0%), lack of interest of customers (N = 22, 6.7%), lack of interest of the employees (N = 21, 6.4%), poor support of information (N = 21, 6.4%), problems with suppliers (N = 16, 4.9%).

*Table 3. Obstacles to establishing business decisions*

	What were / are now / will be the main obstacles / barriers to the establishment of the above-rounded business decisions?	2009		2014	
		No	%	No	%
1.	Indifference of lower managers	28	8,5	2	2,4
2.	Indifference of employees	21	6,4	2	2,4
3.	Too little staff support in changes	35	10,7	12	14,3
4.	Poor information support	21	6,4	4	4,8
5.	Overburden of management with a regular job	140	42,7	41	48,8
6.	Poor training of employees	23	7,0	10	11,9
7.	Problems with suppliers	16	4,9	4	4,8
8.	Lack of interest of customers	22	6,7	9	10,7
9.	Other	22	6,7	0	0,0
10.	The total sample of valid responses	328	100,0	84	100,0
11.	Proportion of valid responses with respect to the sample	185	90,6	25	100,0

Other obstacles stated by the organizations:

- Requirements to reduce the number of employees compared to the growing number of obligations,
- Changing managers from election to election,
- Disorganization of legislation at the state level,
- Costs of introducing quality systems,
- Unfair competition,
- Low participation of government in the changes,
- The requirements of customers and gaining customer confidence
- Weak financial capacity,

The certification is only one step and the initial step in process that follows. To be certified and go to sleep afterwards, is certainly not the solution. Table 4 presents the shares of what BH organizations do or plan to do on this issue internally. The organizations will dedicate the biggest attention, as seen in the Table 4, to the performance of internal audits (18.2%) as opposed to 5

years ago, when they attributed 27.6% to the improvement process. The reason for such large changes can be found in a fact that organizations invested significantly in establishment of processes in the organization in the previous period, and now they are looking for "internal reserves" through internal audits which will improve this difficult situation. This also gives importance to internal audits as a powerful tool that basically does not cost much, and is available once we train personnel who will be willing to consistently implement it.

The second activity is drastic cost reduction, which is likely the consequence of current economic crisis, where all strive to reduce the costs of all kinds. It is followed by the process improvement and shortened time-to-market and more corrective and preventive actions. So, in short: self-reliance, and seeking other opportunities in the organization. If we compare it with the situation five years ago, we see changes in the presence of organizations.

*Table 4. Activities of organizations for the provision of permanent improvements*

	There is a common belief that obtaining certification is just the beginning. What are the activities, which you run / planning to run for the provision of continuous improvement?	2009		2014	
		No	%	No	%
1.	Process improvement	186	27,6	15	13,6
2.	Reshaping organization	52	7,7	6	5,5
3.	Shortening the time required to complete the cycle of order execution	57	8,5	11	10,0
4.	Drastic cost reduction	42	6,2	18	16,3
5.	Permanent control points	91	13,5	8	7,3
6.	More preventive and corrective measures	71	10,5	11	10,0
7.	Improvements by Deming circle (PDCA)	67	10,0	9	8,2
8.	Improvements through internal audits	97	14,4	20	18,2
9.	Other	11	1,6	2	1,9
10.	The total sample of valid responses	674	100,0	110	100,0
11.	Proportion of valid responses with respect to the sample	204	100,0	25	100,0

Organizations had the ability to specify other activities that are considered to contribute to organization improvements, and they stated:

- Making annual improvement plans,
- Improve the document management,
- Control of implementation of quality management process,
- Encouragement of innovative activities by stimulating suggestions for improvements and cost savings by all employees and
- Stimulation and motivation of employees.

## 5. ANALYSIS OF CUSTOMERS' NEEDS FROM THE ASPECT OF QMS

We have to return to the main target of the standards and to those from whom we expect demands and satisfaction: THE CUSTOMER. In order to estimate the impact of standards on customer satisfaction, we've put together eight questions. 196 organizations gave feedback to this part of the questionnaire. In 65% of cases they were filled by business functional managers, who have very different names by the organizations. 25% were completed by quality managers, and the rest mainly by managers or chief executives of organizations. So we can say that the answers express the business and functional managers [1].

Influence of standards to increase the quality of products and services to increase the customer satisfaction and loyalty are shown in Table 5. The introduction of standards has contributed to the increase of quality of products and services. Mean is 4.07; and Standard deviation is 0.69 (about 81% of organizations agree or agree very well - score 4 and 5).

There could be perhaps more reasons for this; better arrangement of the internal work organization, specialized education of employees who come into contact with customers (relations vendor/customer, on sales methods, etc.), and many others.

*Table 5. Activities of organizations for the provision of permanent improvements*

Factor/ Ratings	Mean	Standard deviation
Quality of products and services increased	4,07	0,69
Customer satisfaction increased	4,11	0,66
The loyalty of existing customers increased	3,85	0,83

A similar result as in effect on the improvement of the quality of products and services, appeared in impact on the increase in customer satisfaction. Over 85% of organizations agree with the influence. Mean is 4.11; Standard deviation is 0.66 and it is the best realized value among the factors of customer satisfaction. There were no differences (grade 1).

Large customer satisfaction in the current system, where only the price or some other factor (e.g. political connections and acquaintances...) is a criterion in choosing the contractors, does not affect loyalty. Customers must opt for another bidder several times due to cost or other factors, with whom perhaps they are not too satisfied. That is because the standard has no great influence, but it still exists, shown by mean of 3.84 and 0.83 standard deviation.

It should be noted that this is one of the two worst-rated factors on customer satisfaction.

The answers have also shown that organizations that had a standard for a longer time, better recognized the effects of the introduction, implementation and certification of QMS.

## 6. CONCLUSION

This paper shows the status of certification of Quality Management Systems (QMS) in enterprises in Bosnia and Herzegovina, and gives the basic information about national and international programs supporting QMS certification.

The questionnaire about business decisions, reasons for the continuation of business decisions, obstacles to establishing business decisions and activities of organizations for the provision of permanent improvements, used in a large research conducted in 2009, was submitted to another 25 organizations in 2014. The answers have shown that the focus was slightly transferred from the standard requirements towards customer demands.

Concerning obstacles, the main obstacle is overburden of management with a regular job, both in 2009 and 2014.

Organizations stated that improvements came from process improvements in 2009, and through internal audits in 2014.

Finally, an analysis of customers' needs has shown that certification lead to increase in customer satisfaction, followed by the increase in quality of products and services.

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