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Serbian Journal of Management 12 (2) (2017) 291 - 301

Serbian
Journal
of
Management

THE SERBIAN QUALITY INFRASTRUCTURE AS VIEWED BY THE QUALITY MANAGERS

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(Received 06 July 2017; accepted 20 August 2017)

Abstract

Globalization of the modern society as well as the increased consumer awareness have lead to the situation where every country in the world has growing needs for a reliable Quality Infrastructure (QI). In this context, the paper highlights the importance of the development of Quality Infrastructure in Serbia in terms of institutional connectivity and legal regulation within the country. Operationally, the paper aims at examining the quality managers' opinions about current situation of QI in Serbia, with the special emphasis on the National Quality Infrastructure (NQI) issues. Additionally, the article presents all governmental and other relevant organizations that may contribute to the development of QI model in Serbia as well as in the whole region, in economical, business and governmental surroundings. The results indicate that although NQI institutions are well established and regulated by the legislation of Republic of Serbia, there is still a room for improvement.

Keywords: quality infrastructure, quality managers, Serbia

1. INTRODUCTION

As the world becomes increasingly complex, practically all governmental and other relevant public institutions create and customers expect the fulfillment of majority of requirements that must be satisfied before the product is even placed on the market. In situation where every country in the world

needs a reliable Quality Infrastructure, the four fundamental components have been developed in order to support the technical Quality Infrastructure and enhance sustainable development and increase involvement in international trade (Filipović et al., 2017). For the last couple of decades, the most remarkable authors have sought to understand, explain and elucidate this term

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that have been added to the international economy. And while most researchers have addressed the abbreviation MSTQ as a term related to all the fields of Metrology, Standardization, Testing and Quality Assurance (Wipplinger et al., 2006), there is a belief that Quality Infrastructure creates new challenges and opportunities for those who want to explore them. According to the definition of the World Trade Organization (WTO), Quality Infrastructure is a set of governmental as well as private organizations regulated by the appropriate set of laws whose activities are related to the elaboration and adoption of standards and the issuance of evidence of compliance with them in order to improve the suitability of products, services, processes and systems for their intended purpose, to prevent trade barriers and enhance technological cooperation in the world.

The influence of standards and technical regulations on international trade has always been a popular topic of political discussion (Filipović et al., 2017). Compliance with standards and technical regulation is of paramount importance (Kellermann & Keller, 2014). Therefore, standardization presents the central element of conformity assessment system as well as a key element of the micro-economic infrastructure that enables the smooth flow of products and services (Filipović et al., 2017). Mijatovic (2014) states that standards are a significant factor in who wins and who loses in the global market place. Not less important, metrology is present in all areas of life. As a science of measurements, metrology plays a fundamental role in scientific and technological progress of every national economy (Filipović et al., 2017). Among other things, metrology ensures that measurements are made with appropriate

accuracy and reliability (Choi et al., 2014). Finally, as a supreme institution of every country in the world, there is the Accreditation Body which ensures that Conformity Assessment Bodies are competent for operating in the fields of testing, inspecting and/or certification. Without such confidence and trust, the world would just not survive.

The paper begins with the description of the National Quality Infrastructure Model, aiming to understand and question some of relevant assumptions that underpin previous claims. The next section of the paper focuses on the research including the methodology and description of the sample. The results and descriptive statistic follow. Finally, the paper offers some concluding remarks with guidelines and suggestions for future research.

2. NATIONAL QUALITY INFRASTRUCTURE MODEL – THE CASE OF SERBIA

European authorities have identified that, in order to extend the European integration process, and thus provide the full benefit of it to the European citizens, the integration of the products and services sectors must be accompanied by the integration of the industrial sector by the development of certain National Quality Infrastructure (NQI). It is essential in breaking down technical barriers to trade and representing a key factor in the greater integration of one country into the international trading system (Sanetra & Marbán, 2006). Moreover, NQI enables sustainable development, mainly through the support to the private sector, by increasing the competitiveness of organization. In the case of a domestic

market, the NQI has a protective function and provides the necessary structure for effective market inspection and consumer protection. In order to ensure fair trade, export and local production must comply with the same rules. This protects domestic manufacturers, while at the same time providing an incentive for their competitiveness.

The Quality Infrastructure of each country has its stakeholders and interested parties. Popović et al. (2011) highlighted that there are three key stakeholders for QI:

1. Market - Users and end consumers with their needs and expectations;
2. Competent state authorities who supervise the market in terms of preserving safety, health and environmental protection;
3. Organizations for international or

regional trade cooperation.

Quality Infrastructure “operates as a highly-decentralized network of public and private institutions” (Frota et al., 2010). In Figure 1, Pejovic (2012) shows the NQI components and their influence of international and national organizations as well as the interconnection for joint actions within the QI and examples of different standards on the basis of which a conformity assessment can be carried out in order to satisfy needs, safety and protection of users.

However, the relevance of Quality Infrastructure is not restricted to trade but also includes other institutions and organizations with a high degree of standardization and quality control activities, such as environment, health and consumer protection. To what degree the contributions

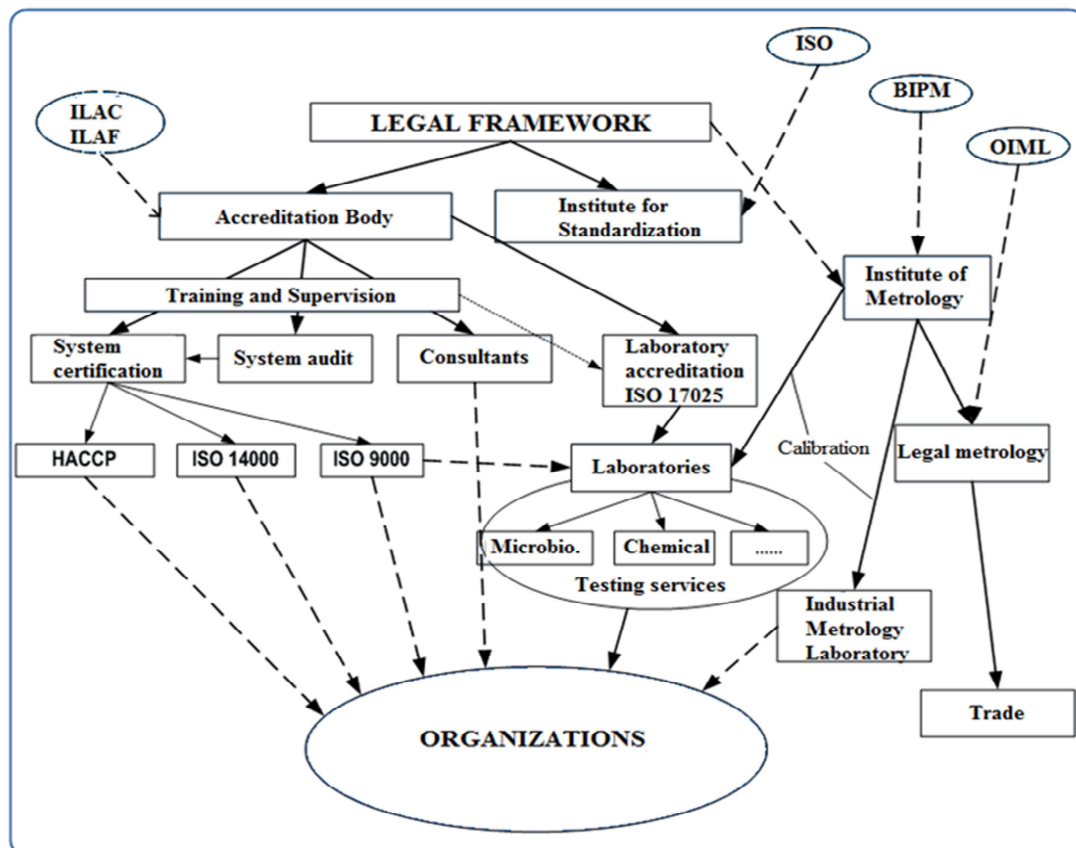


Figure 1. Components of National Quality Infrastructure (Pejovic, 2012)

of QI may actually be realized partly depends on factors beyond the system limits of key NQI institutions. „They include the condition of regional transportation and communication networks and the development stage of local production facilities as well as the quality of technical, administrative and political institutions in general” (Miesner, 2009).

Some quality infrastructure contents must be harmonized, and corresponding amendments of laws are consequently necessary. National legislation is responsible for defining the required level of protection of the state and its population. In Serbia, the QI is supported by the four principal laws (the Law on Accreditation, the Law on Metrology, the Law on Technical Requirements for Products and Conformity Assessment and the Law on Standardization). However, there are more laws and regulations which directly or indirectly affect NQI (see Accreditation Body of Serbia, 2017).

In Serbia, accreditation is carried out only by the Accreditation Body of Serbia, founded by the Republic of Serbia and entrusted with accreditation tasks - assessment of technical competence. The Institute for Standardization of Serbia is the only national body for standardization of the Republic of Serbia which adopts, develops, reviews, amends, supplements and

withdraws Serbian standards and other related documents. Recently, the Institute was given the authority to provide expert assistance to perform management system certification activities as well as the activities in certification of the products and persons (Law on Standardization, 2015). When it comes to conformity assessment, in Table 1 are showed the numbers and types of accredited conformity assessment bodies. It can be notice that the most numerous organizations in Serbia are actually testing laboratories, because all conformity assessments rest on their results and reports (Bozanic & Pejovic, 2010).

Laboratories are divided into laboratories for calibration, testing and medical laboratories. In order to achieve compliance, Directorate of Measures and Precious Metals plays crucial role. The Directorate, as a part of Ministry of Economy, performs activities pertaining to the control of the system of legal units of measurement, development, realization, official recognition and improvement of measurement standards of the Republic of Serbia etc.

Beside these principal institutions, the QI also comprises the five ministries, universities, the Intellectual Property Office, the Chamber of Commerce and Industry, consulting organizations, certified organizations etc. Inspired by Ruso et al. (2017), Serbian QI institution network is

Table 1. Type and number of Accredited Conformity Assessment Bodies (ABS, 2017)

CONFORMITY ASSESSMENT BODIES	No.
Testing laboratories	305
Calibration laboratories	53
Medical laboratories	10
Certification bodies operating certification of products	21
Certification bodies operating certification of management systems	10
Certification bodies operating certification of personnel	3
Inspection bodies	131

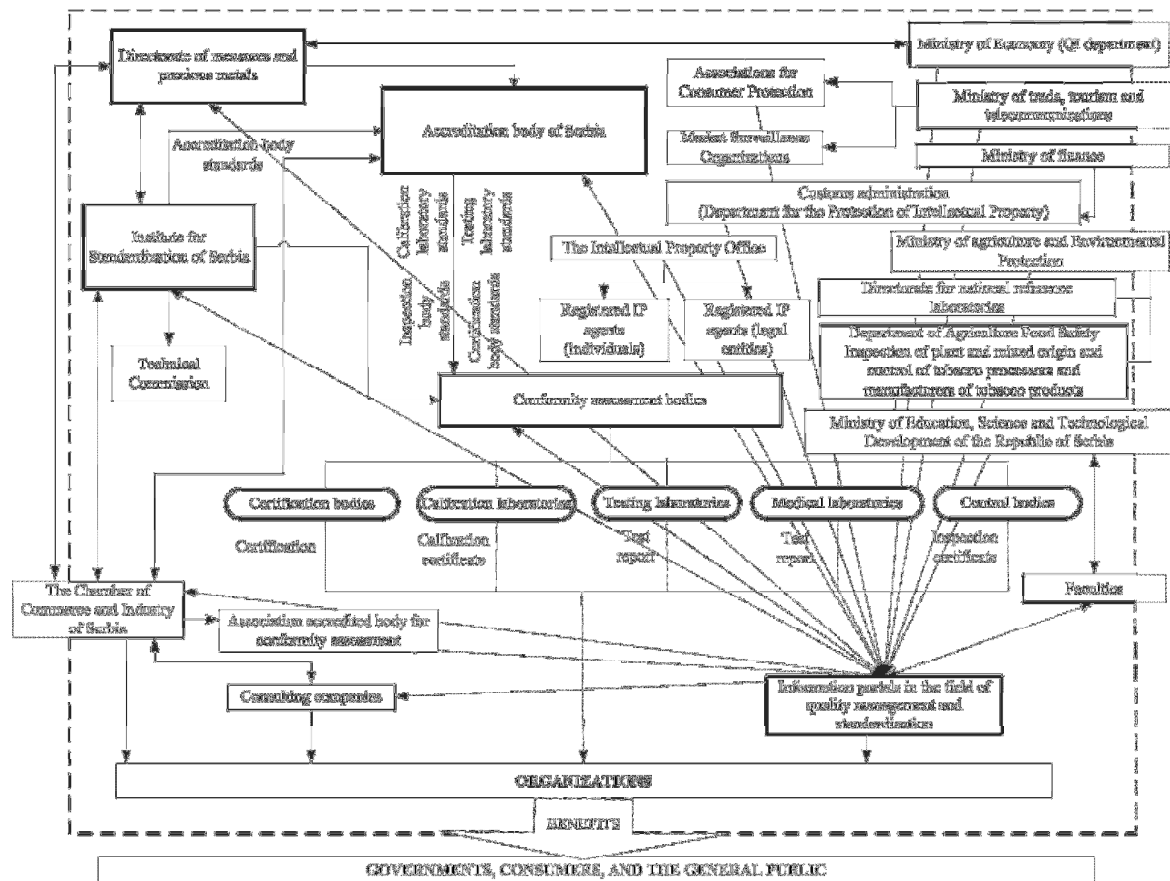


Figure 2. Serbian Quality Infrastructure Model (modified from Ruso et al. (2017))

upgraded and in the Figure 2 it can be seen the comprehensive model of Serbian QI. The institutions involved in the periphery (dashed line) are the Ministry of Trade, Tourism and Telecommunications, the Ministry of Finance, the Ministry of Agriculture and Environmental Protection, the Ministry of Education, Science and Technological Development, the Chamber of Commerce and Industry and faculties. Each of them has a special department or office related to QI. Also, it is essential that universities' governing bodies have good relations with the academic community (Espinoza & González, 2013) because work on producing quality management experts is paramount

(Milosevic et al., 2013) for the success of NQI policy-making. Nowadays, information portals are important communication link among the QI institutions, which follow and present the latest information in the field of management system (primarily quality management field) and exchange knowledge in Serbia and the region.

The connections between these institutions can be multiple and it is essential that all of them are connected and communicate among themselves in regional and international level, thus making an invisible national and global network (Figure 2).

3. METHODOLOGY

In the mentioned institutions and organizations, the quality managers are of central importance (Elg et al., 2011). They are the people that are most knowledgeable about the quality management situation in the organizations (Lagrosen, 2007) and can have scientific knowledge or practical experiences in Quality Management and Standardization field. Relying on the NQI model (Figure 2), quality managers were asked to express their own opinion about current situation in Serbia. The questionnaire was created in electronic form and comprising 89 closed questions. Acting under the advice of Dolnicar & Grün (2014), four-point Likert-type answer format (1 - Disagree Strongly; 4 - Agree Strongly) was employed. Additionally, according to Barth (2016) and Perona-Garcelán et al., (2016) Cronbach's alpha was used for the assessment of the inter-consistency. The paper shows only part of the results of the conducted research presented by descriptive statistics.

3.1. Sample

The questionnaire was distributed to 2879 experts and a total of 502 experts completed the questionnaire (response rate of 17.47%). Total of 47.6% of the respondents were women and 68.4% experts earned graduate degree. Most of respondents are engineers of organizational sciences (Quality Management and Standardization Department) (31.6%), mechanical engineers (14.5%) and technology engineers (14.3%). Also, 76.5% of experts work in private sector and majority come from industry (34.1%) and consulting (16.9%). Total of 31% of the respondents have 1-5 years of work

experience in the Quality Management and Standardization field, 23% have between 6-10 years of work experience, and 14% have less than 1 year.

4. RESULTS

As it is suggested by many authors (e.g. Moschidis, 2009; Ma et al., 2010; Barth, 2016; Chatzipetrou & Moschidis, 2016), Cronbach's alpha was considered as outputs the most understandable for the readers to explain relations among qualitative type of variables (Cronbach's alpha = 0.714 to 0.926). By literature, it is certain that all market participants benefit of well established QI (Trajković & Milosević, 2016), starting from manufacturers, regulatory bodies, to end users of products or services. Following this line of thought, quality managers were asked to express their opinion about NQI benefits. Majority of them think that Serbian QI has not enabled economic growth, access to cheaper products and has not increased the living standards. When it comes to the safe products, competitive products and unimpeded import/export of products the opinions are divided (Figure 3).

According to Berry & Baybeck (2005) and Walker (1969), states may be more likely to adopt legislations that their politically, demographically and economically similar neighbours adopt, which is discussed by a lot of authors (see Shipan & Volden, 2012; Jansa et al., 2015; Bugaric, 2015; Twining, 2005). In our survey, 71.9% of respondents think that the NQI laws in Serbia have been downloaded from the European Union. Similar to Berry & Baybeck (2005), the quality managers in Serbia believe that during the harmonization process, decision-

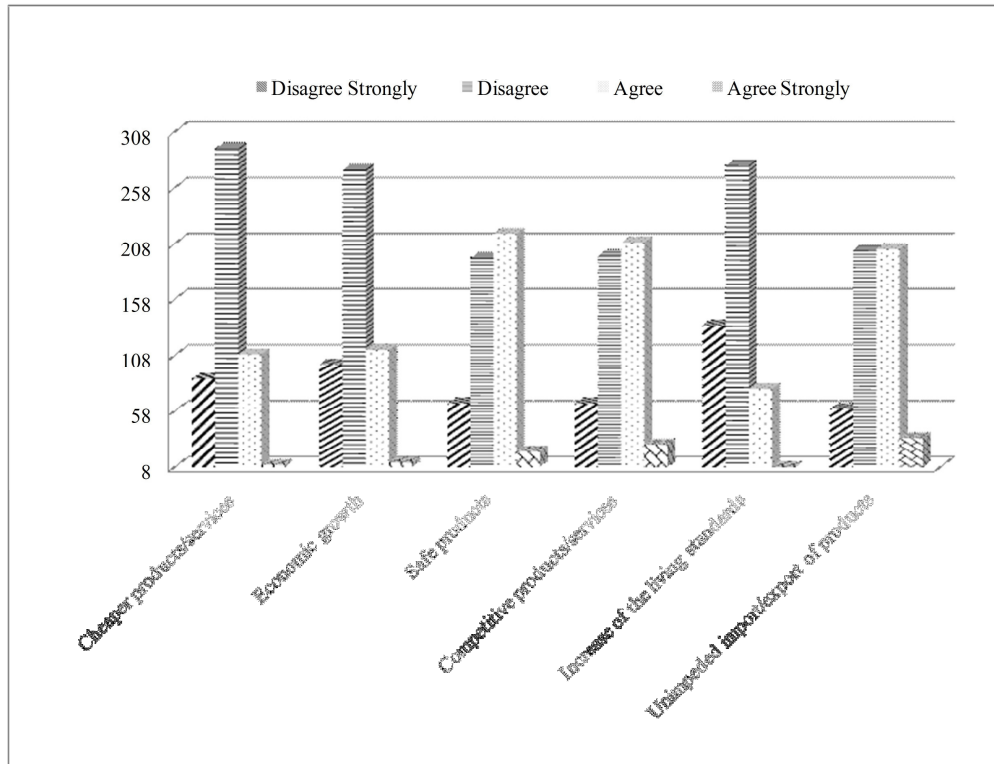


Figure 3. Quality Infrastructure benefits

makers do not take into consideration specificities such as national culture, language barriers, tradition, administrative overload and economic policy of state. The obvious reason for that is that adoption of NQI laws are fundamental condition for entry into the WTO and the EU, hence, policy-makers process them mechanically

and without adjustments (Figure 4).

In order to build and improve NQI, stakeholders approach is crucial. Consequently, if the stakeholders do not participate and their voice is not heard then such established NQI will take negative effect on the needs and expectations of the public in terms of safety, security, labelling

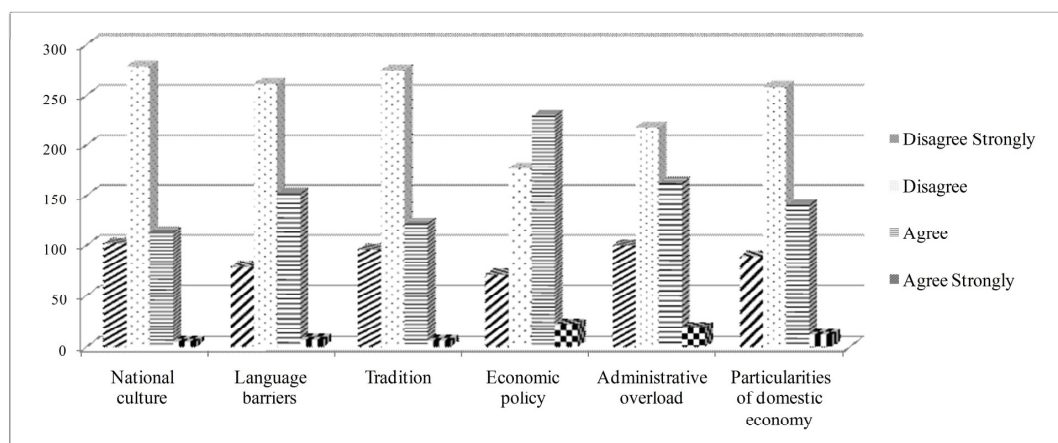


Figure 4. NQI laws adoption without adjustments

and sustainability (Trajković & Miošević, 2016). Hence, the respondents were asked about the impact that stakeholders have during the NQI decision-making. The first four places take lobby groups (agree – 57.4% and agree strongly – 23.7%), experts and scientists (agree – 56% and agree strongly – 8%), foreign funding of NGOs (agree – 55.6% and agree strongly – 13.3%) and media (agree – 47.8% and agree strongly – 12.7%). Involving the public in decision-making is said to have numerous benefits, such as increasing the knowledge for policy, easing policy implementation and reducing stakeholders conflict (Van Damme et al., 2016). Contrary to Van Damme's statement, quality managers in Serbia believe that the public has the least impact on QI decision-making process (agree – 34.3% and agree strongly – 5.2%). Despite the influence of the media, another interesting finding is that the majority of respondents believe that QI is not sufficiently covered in the media (94.8%). Furthermore, with the aim of media exposure quality management terminology such as 'quality' (82.86%), 'standard' (81.67%), 'quality of life' (81.47%) and

'product safety' (75.69%) are often use in policy speeches (Figure 5) and usually in wrong context (89.6%). Finally, quality managers think that in NQI decisions-making, the requirements of different interested parties (groups) are not taken in consideration (Figure 5). The exceptions are groups for economy and food safety. In these cases, opinions are divided.

5. CONCLUSION

To sum up, the quality of "institutions" in the sense of rules, enforcement mechanisms and organizations plays an essential role within the context of National Quality Infrastructure and determines the effectiveness of the system. Here, the intervention categories consist not only of national, regional and international levels, but also of political-administrative and technical structures in the fields of standardization, accreditation or metrology. In order to check a view of quality managers, the survey related to Serbian QI was carried out. The results suggest that NQI institutions

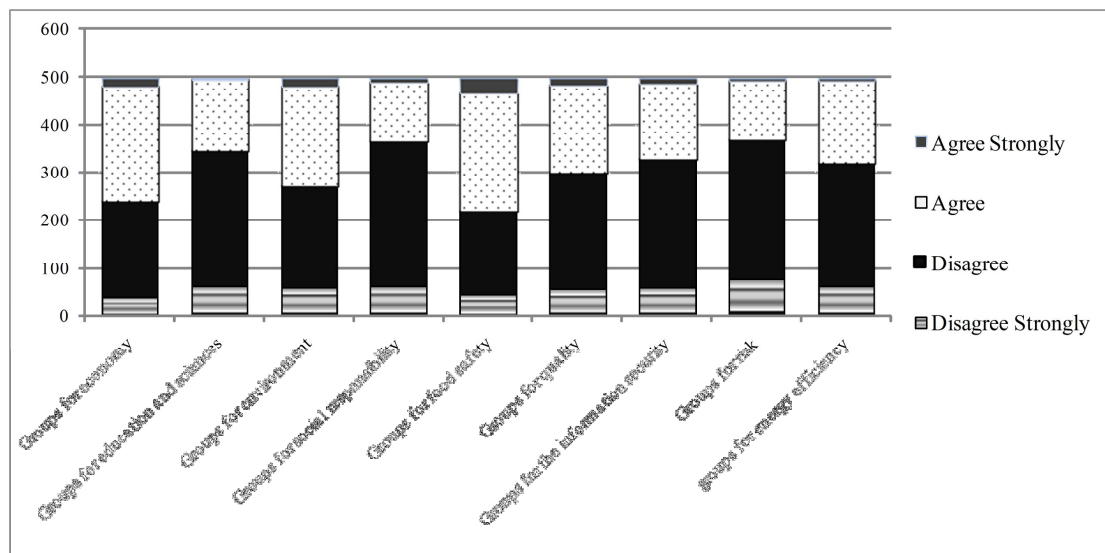


Figure 5. Consideration of requirements of interested groups

are established and regulated by legislation but still such NQI has not enabled economic growth, access to cheaper products and has not increased the living standards. When it comes to the safe products, competitive products and unimpeded import/export of products the opinions are divided.

Stakeholders are supposed to participate in improving and building of NQI via decision-making and quality management processes. According to respondents' opinion, lobby groups, experts, scientists, foreign funding of NGOs and media play very important role in decision-making. Still, during the decision-making, requirements of different interested parties, such as group for education and sciences, social responsibility, quality, risk, information safety, and energy efficiency, are not wholly taken in consideration. As a consequence of the above, and in order to accelerate the process of harmonization, national culture, language barriers, tradition, administrative overload and economic policy of state are not fully considered.

With the aim of media exposure, terms 'quality', 'standard', 'quality of life' and 'product safety' are often 'abused' by policy-makers in Serbia and usually in wrong context. This cognition indicates us that people who make decisions within in QI field are not totally familiar with quality infrastructure concepts. Uncritical model-taking from the West and a lack of awareness of the importance of NQI, often leads to inadequate policy decisions.

In the nutshell, the research indicates that although NQI is tolerably developed, there is still a room for improvement. Quality experts' perception is not so bright. It should be stressed out that NQI system supports the development of all sectors of the economy due to the fact that is the basis for safety and

quality of products, at all stages, from design, manufacture to the placing on market. Therefore, establishing good Quality Infrastructure is a step towards good governance, which creates a favourable trade climate in the region. Good governance means good policy frameworks conducive to social, ecological and market-economic development (PTB, 2007). Altogether, the conclusions provided in this study should serve as an important marker for all CEE candidate countries as well as good input for policy-makers to anticipate problems relevant to the NQI.

The results are subject to limitations inherent to this kind of analysis where single research method has been used. Hence, as recommendation for future research, it would be interesting to employ triangulation methodology and include the public and policy-makers' perceptions. Also, after possibly increasing the number of participants, an interview could be conducted and combined with current findings. Moreover, a cross-country analysis, which includes NQIs in different countries, both developing and developed, could be performed.

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