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THE APPRECIATION FOR INTERNATIONAL STANDARDS ON QUALITY MANAGEMENT: LESSONS FROM RESEARCHERS

MIĘDZYNARODOWE STANDARDY ZARZĄDZANIA JAKOŚCIĄ W OCENIE BADACZY

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Summary: The purpose of the paper is to determine scientists' opinion on the ISO 9000 series of international standards on quality management. Two research methods were applied: a literature review and a survey. It was found that the ISO 9000 series standards are acceptable and appreciated by scientists. The most significant benefits resulting from their existence are: promoting quality management in practice, helping understand the essence of quality management and allowing implementing successful solutions in the area of quality management. The main contributions of the study are twofold. Firstly, the research made a holistic evaluation of the international standards on quality management. Secondly, the significance of the standards in the area of the quality management movement was evaluated. There were two limitations connected to conducted research; the first may derive from the fact that Polish dominated in the study sample and the second could derive from the fact that it focused only on the opinions of scientists dealing with quality management.

Keywords: quality management, the ISO 9000 series, ISO 9001, benefits.

Streszczenie: Celem artykułu było zbadanie opinii naukowców na temat międzynarodowych norm ISO serii 9000, dotyczących zarządzania jakością. Zastosowano dwie metody badaw-

cze: przegląd literatury i ankietę. Stwierdzono, że normy ISO serii 9000 są akceptowane i doceniane przez naukowców. Najważniejsze korzyści wynikające z ich istnienia to: promocja zarządzania jakością w praktyce, pomoc w zrozumieniu istoty zarządzania jakością i umożliwienie wdrażania skutecznych rozwiązań w dziedzinie zarządzania jakością. Główny wkład badania jest dwojaki. Po pierwsze, dokonana została całościowa ocena norm ISO serii 9000 dotyczących zarządzania jakością. Po drugie, oceniono znaczenie tych norm w obszarze zarządzania jakością. Zidentyfikowane zostały dwa ograniczenia związane z prowadzonymi badaniami; pierwsze może wynikać z faktu, że w próbie badawczej dominowały osoby z Polski, a drugie ma związek z tym, że badania koncentrowały się wyłącznie na opiniach naukowców zajmujących się zarządzaniem jakością.

Słowa kluczowe: zarządzanie jakością, seria ISO 9000, ISO 9001, korzyści.

1. Introduction

The evolution that quality management has undergone in recent decades has led to the current existence of different options for implementing the practices that this philosophy proposes. In the quality movement there are numerous methods and tools which vary from orientation towards the customer or process to those oriented towards the human dimension or the system dimension, and finally, those that involve a change of culture and of learning (Gutiérrez Gutiérrez, Torres, and Molina, 2010). A specific role in the quality management toolbox is attributed to the international standards on quality management (i.e. the ISO 9000 series of standards). Nowadays the series consists of three related standards: ISO 9000 – that covers the basic concepts and definitions (PN-EN ISO 9000, 2015); ISO 9001 – that includes requirements for the quality management system – QMS (PN-EN ISO 9001, 2015) and ISO 9004 – that focuses on how to make a quality management system more efficient and effective (PN-EN ISO 9004, 2018; Weckenmann, Akkasoglu, and Werner, 2015; Murmura and Bravi, 2017). These documents were developed by the International Organization for Standardization (ISO) and provide guidance and tools for companies and organizations who want to ensure that their products and services consistently meet the customers' requirements and that the quality is consistently improved (www.iso.org). Since its introduction, these standards have received wide acceptance and the number of organizations certified under ISO 9001, the reference standard for certification, has grown rapidly. According to a survey conducted by ISO, a total of 1 058 504 certificates were issued worldwide in 2017, which included only 11 846 for Polish organizations (www.iso.org). Considering the number of valid ISO 9001 certificates divided by the country's total population (all the residents) Poland is in the last but one place in Europe and in a distant 36th place in the world (www.dps.uminho.pt).

Although there has been ample research regarding the benefits of using the ISO 9000 series of standards, the situation cannot be claimed to be diagnosed to a satisfactory extent (all the more so as the criticism of those documents can still be

heard (Al-Najjar and Jawad, 2011). This results from the fact that the research was based mostly on the opinions of people directly involved in the functioning of quality management systems (i.e. managers, management representatives, and auditors). To get the full picture, it would be advisable to include people representing other points of view. A valuable addition would be, for example, to get to know the opinions of people scientifically dealing with quality management, carrying out research and preparing publications on the topic. Their approach might show the benefits of a higher objective value and supporting the evaluation basing on the theory of quality management at the same time. However, the subject has not received enough attention so far. This study tries to fill the gap in the literature regarding the perception of the usability of the ISO 9000 family. It follows the suggestions of several authors for future research on the benefits of these standards (Khan and Farooquie, 2016; Rusjan and Alič, 2010).

The aim of this paper is to answer the following research questions:

RQ1. Do researchers recognize the international standards on quality management as a useful approach in the context of quality management?

RQ2. Which benefits related to the international standards on quality management are rated highest by researchers?

RQ3. Are there significant differences in the usefulness of the international standards on quality management perception between Polish and foreign researchers?

2. Literature background

The main incentive for creating and developing the international standards on quality management is unifying the approach towards the organization in the area of applying process approach and continuous quality improvement of products and services (Wolniak, 2017). Utilizing these standards in organizations allows establishing the fundamental elements of a system approach to quality management such as consistent terminology, defined limits of responsibility, consistent documentation, standardization of activities in the area of key processes and activities involving contacts with clients (Casadesus, Gimenez, and Heras, 2001; Gaspar, Popescu, Dragomir, and Unguras, 2018).

It is worth to stress the educational role of the discussed standards. Every implementation or adjustment of the quality management system to the requirements of successive, updated ISO 9001 revision and the remaining standards of the 9000 series requires the managers and employees working under such a system to enhance their knowledge on quality management and to learn new skills (Fonseca, Domingues, and Guimarães, 2017; Almeida, Pradhan, and Muniz, 2017). It also requires training not only in the methods and tools of quality management but also in risk or knowledge management.

During the latest revision of ISO 9001, special attention was paid to the necessity of creating proper relations between the organization and the surroundings. It makes the standard even more responsive to contemporary business requirements and also

closer to such quality management solutions as e.g. the Excellence Model (Fonseca and Domingues, 2017). Including a quality management system in an organization is one of the elements to ensure achieving the quality level expected by its interested parties (Olkiewicz, 2018).

There is a positive connection between utilizing QMS by an organization and the satisfaction of subjects involved in the supply chain of the organization (Fonseca and Lima, 2015).

A systematic approach to quality management, included in system mechanisms, improves the efficiency of the organization to reach its goals and emphasizes training (Olkiewicz, 2018).

At the same time, some researchers and practitioners claim that implementing and certifying a quality management system in accordance with ISO 9001 is insufficient activity in the reality of a competitive environment while a successful response to the market's needs requires applying more proactive methods and management tools (Chen, Anchecta, Lee, and Dahlgaard, 2016). The view is supported by the results of a research on-premises to implement a quality management system, among which prevail factors concerning the will to design the basis to increase the efficiency of the processes, raising the quality of products and services and also improving the organization in activities involving relations with clients.

In particular the representatives of small and medium organizations claim that the positive effects of implementing quality management system appear mainly among management and operative processes (Zimon, 2016).

In other words, it may be claimed that the ISO 9001 standard is more focused on understanding the nature of quality management in an organization implementing the system rather than directly improving the efficiency of processes and the quality of products and services. Such an approach has been confirmed by the results of

Table 1. Benefits resulting from the existence of international standards on quality management

Specification	Sources
Defines a contemporary approach to quality management	Wolniak, 2017; Gaspar et al., 2018; Fonseca et al., 2017
Systematizes knowledge of quality management	Fonseca and Domingues, 2017
Promotes the concept of quality management	Fonseca and Domingues, 2016; Fonseca et al., 2017
Provides effective mechanisms of quality management	Olkiewicz, 2018; Chen et al., 2016; Zimon, 2016; del Castillo-Peces et al., 2016; Palmes, 2019
Facilitates relations between organizations	Olkiewicz, 2018; Fonseca and Lima, 2015; Neyestani and Juazon, 2017
Strengthens the positive opinion on quality management among practitioners	Fonseca and Domingues, 2016; Fonseca et al. 2017

Source: own study.

research which prove that implementing a system of quality management receives better opinions in organizations where change was triggered by internal factors (del Castillo-Peces, Mercado-Idoeta, Prado-Roman, and del Castillo-Feito, 2016). Nevertheless, it has been often mentioned that the main reason and benefit of implementing and certifying a system is receiving or maintaining competitive advantage (Neyestani and Juazon, 2017).

Nevertheless, the researchers are not unanimous in their evaluation of the relation between utilizing the ISO 9001 standard and the company's performance (Fonseca and Lima, 2015).

However, most of the research shows that the ISO 9000 series of standards (ISO 9001 above all) reflect the current expectations of the business world and the modern concept of quality management (Fonseca and Domingues, 2016; Kakouris and Sfakianaki, 2019).

Such a positive opinion of the series of standards discussed here was formulated among others by certification units' auditors in IRCA (Fonseca and Lima, 2015). Based on the study of the scientific literature it is possible to distinguish six elementary benefits resulting from the existence of the ISO 9000 family presented in Table 1.

3. Sample and methodology

The research process was carried out in three stages:

Stage I. Construction of the questionnaire. Based on the study of the literature, six main benefits connected with the ISO 9000 series were identified. They were defined in the form of the following statements:

1. ISO 9000 series of standards help understand the essence of quality management.
2. ISO 9000 series of standards organize the knowledge on quality management.
3. ISO 9000 series of standards contribute to promoting (wide-spreading) the quality management in practice.
4. ISO 9000 series of standards allow implementing successful solutions in the area of quality management.
5. ISO 9000 series of standards facilitate contacts between organizations (e.g. choice of partners, communication, and cooperation).
6. ISO 9000 series of standards strengthen positive opinion on quality management among practitioners (managers and workers of an organization).

The respondents' task was to decide to what extent they agree with the given sentences. For this purpose, a 5-grade scale was used where 1 – means “not”, 2 – “rather not”, 3 – means “neither yes nor not”, 4 – “rather yes” and 5 means “yes”

Stage II. Choice of the study sample. The knowledge of quality management including the ISO 9000 series standards were accepted as the criterion for the choice of the respondents. The questionnaire was aimed at the authors who in the period from 1st January 2015 to July 2018 published a scientific study on the ISO 9000 series. The questionnaire was sent to authors and co-authors of:

a) an article in one of three English-language science journals i.e. International Journal of Quality & Reliability , Total Quality Management and Business Excellence Management and TQM Journal. The journals are recognized as leaders in the area of quality management (Carnerud, 2018),

b) an article in Polish-language science magazine „Problemy Jakości”,

c) a scientific Polish-language (reviewed) monograph or a chapter in such monograph.

The scheme allowed creating a list of 218 authors (69 from Poland and 142 from other countries).

Stage III. Data collection. The request to fill in the questionnaire was sent from September until December 2018. It resulted in receiving 73 correctly filled in questionnaires, 45 from Poland and 28 from other countries. The group of foreign respondents included three representatives of Malaysia, Portugal, Sweden and Italy, two representatives of Spain, India, Serbia, and England and one person representing each of the following countries: Brazil, China, Finland, Greece, Lithuania, Germany, Slovenia, and the USA. The whole sample group (73 people) was dominated by 40-year-olds or older (87%), employed at universities (92%) dealing with quality management for 10 years or longer (92%). Beside scientific activity they had the experience, in the previous three years, of conducting lectures for students (92%), carrying out professional training on quality management (66%) and practical activities i.e. performing audits, implementing systems of quality management, etc. (62%). Interpretation of survey results was performed using SPSS statistical program.

4. Results

Most experts who expressed their opinions in the survey, claimed that the standards help understand the nature of quality management (83.6% respondents). Just fewer

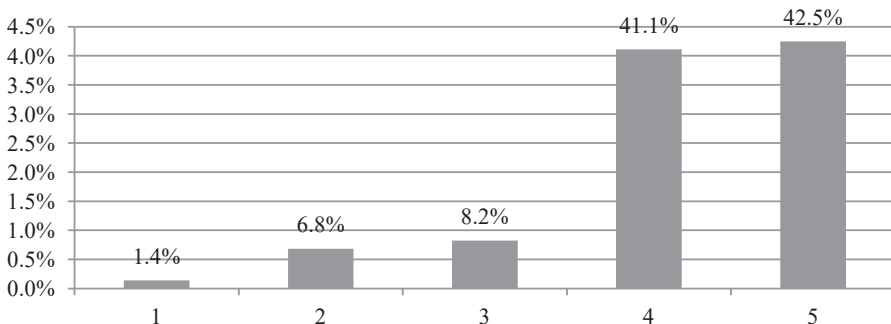


Fig. 1. Distribution of the answers concerning the statement “the ISO 9000 series of standards help understand the essence of quality management”

Source: own study.

than 10% had the opposite opinion. The average grade of the series of standards in this area was 4.16 (see Figure 1).

The surveyed experts had more diverse opinions on the statement: “the ISO 9000 series of standards organized the knowledge on quality management”. Nearly 70% of the respondents evaluated the statement as positive while nearly 20% expressed their negative opinions. The average grade of the issue was 3.92 (see Figure 2).

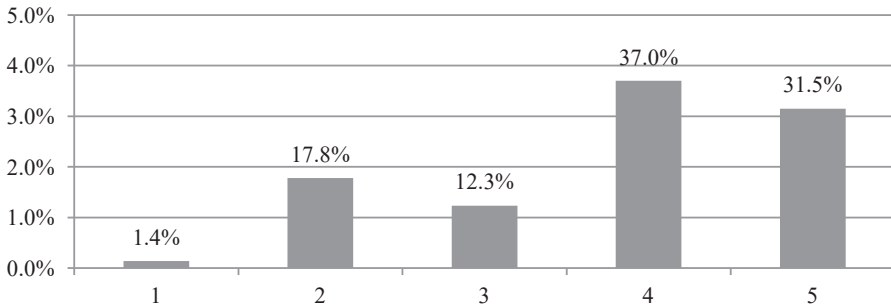


Fig. 2. Distribution of grades concerning the statement: “the ISO 9000 series standards organize the knowledge on quality management”

Source: own study.

The assessment concerning the significance of the ISO 9000 series in the area of promoting quality management is almost totally positive. The clear majority of experts chose to answer “yes” or “rather yes” (respectively 61.6% and 30.1% of the respondents) to the question about the significance of the aspect. In this case, the average grade was 4.49 (see Figure 3).

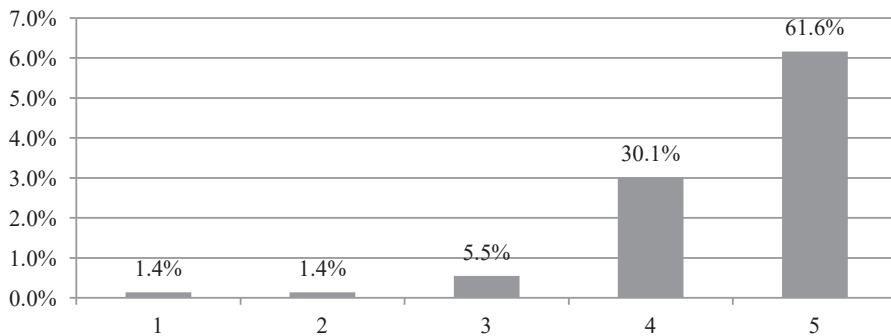


Fig. 3. Distribution of grades concerning the statement “the ISO 9000 series of standards contribute to promoting (spreading) the quality management in practice”

Source: own study.

The experts taking part in the survey were also positive about the statement: “the ISO 9000 series of standards allow implementing successful solutions in the area of quality management in organizations”, where 50.7% respondents chose to answer “rather yes” and 31.5% “yes”. The average grade of the issue was 4.08 (see Figure 4).

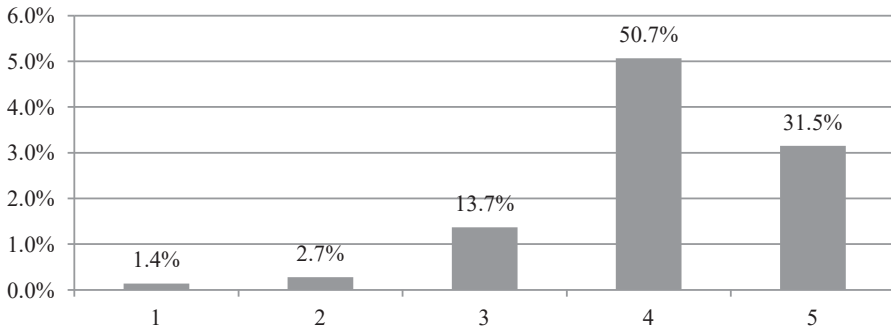


Fig. 4. Distribution of grades concerning the statement “the ISO 9000 series of standards allow implementing successful solutions in the area of quality management”

Source: own study.

A similar average grade of 3.92 was received for the question about the significance of the ISO 9000 series of standards in organizing contacts between organizations. Around 75% of the respondents chose to answer “yes” or “rather yes”; 6.9% of respondents were negative about it, while 17.8% did not have a defined opinion on the matter (see Figure 5).

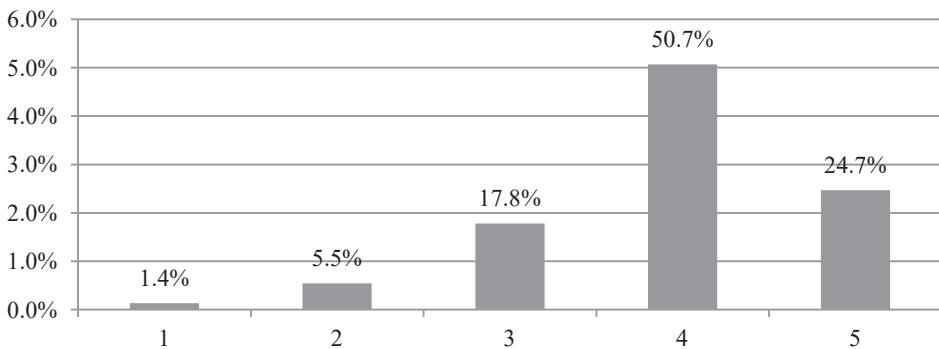


Fig. 5. Distribution of grades concerning the statement “the ISO 9000 series of standards facilitate contacts between organizations (e.g. choice of partners, communication, cooperation)”

Source: own study.

The experts’ opinion on the positive influence of the ISO 9000 series of standards on practitioners’ opinions about quality management is quite the opposite. The impressions in the area are strongly polarized, 41.1% of the respondents are positive

and 26.4% negative about the issue. As many as 42.5% of the respondents chose the answer “neither yes nor not”. The average grade of this aspect was 3.32 and is the lowest among all the analysed questions (see Figure 6).

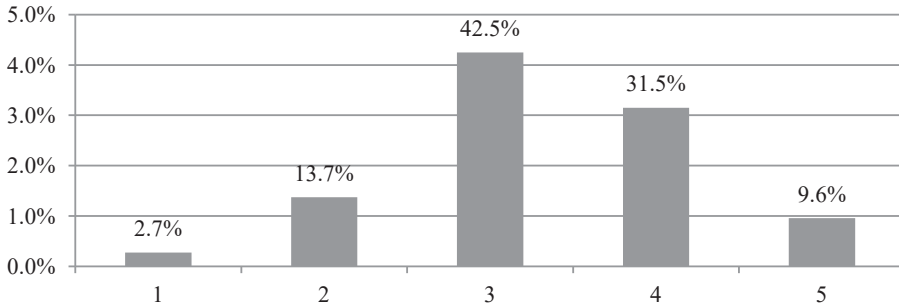


Fig. 6. Distribution of grades concerning the statement “the ISO 9000 series of standards strengthen a positive opinion on quality management among practitioners (managers and workers of an organization)”

Source: own study.

Table 2. Results of ANOVA

No	Specification	Average grade			Results of analysis of variance						
		Researchers			SS	df	MS	F	p	Test F	
		Polish	Foreign	Total							
1	2	3	4	5	6	7	8	9	10	11	12
1	ISO 9000 series standards help understand the essence of quality management	4.20	4.11	4.16	BW	0.149	1	0.149	0.165	0.685	3.976
					WS	63.879	71	0.900			
					Total	64.027	72				
2	ISO 9000 series standards organize the knowledge on quality management	3.93	3.57	3.39	BW	2.261	1	2.261	1.831	0.180	3.976
					WS	87.657	71	1.235			
					Total	89.918	72				
3	ISO 9000 series standards contribute to promoting (wide spreading) the quality management in practice	4.56	4.39	4.49	BW	0.457	1	0.457	0.741	0.392	3.976
					WS	43.790	71	0.617			
					Total	44.247	72				
4	ISO 9000 series standards allow to implement successful solutions in the area of quality management	4.11	4.04	4.08	BW	0.098	1	0.098	0.141	0.708	3.976
					WS	49.409	71	0.696			
					Total	49.507	72				

1	2	3	4	5	6	7	8	9	10	11	12
5	ISO 9000 series standards facilitate contacts between organizations (e.g. choice of partners, communication, cooperation)	4.02	3.75	3.92	BW	1.279	1	1.279	1.675	0.200	3.976
					WS	54.228	71	0.764			
					Total	55.507	72				
6	ISO 9000 series standards strengthen positive opinion on quality management among practitioners (managers and workers of an organization)	3.44	3.11	3.32	BW	1.964	1	1.964	2.332	0.131	3.976
					WS	59.790	71	0.842			
					Total	61.753	72				

Source: own study.

Finally, a comparative analysis was performed. It compared the answers of Polish and foreign experts concerning the benefits resulting from the existence of the international standards of quality management. The ANOVA test was undertaken, but no significant statistical difference was found between the two groups of respondents.

5. Discussion

The results were interpreted according to the following intervals:

- (4.5, 5] – a high level of recognition,
- (4, 4.5] – an average level of recognition,
- (3.5, 4] – a low level of recognition,
- (3, 3.5] – a very low level of recognition,
- [1, 3] – lack of acceptance.

RQ1. Do researchers recognize the international standards on quality management as a useful approach in the context of quality management?

The average grade of every, out of 6 benefits of the ISO 9000 series, identified on the basis of the scientific literature review was higher than 3 (see Table 3). The cumulative average grade calculated from all benefits included in the survey was 3.98. The research proved that the ISO 9000 family is well recognized (with a positive opinion) in the environment of scientists dealing with quality management. This is in line with what was found by Gutiérrez, Torres, and Molina (2010), which stated that the ISO 9000 series of standards is one of the most important approaches (initiatives) in the quality management movement. The same conclusions were also reported in many other studies based, however, on opinions of other categories of the respondents, i.e. managers, management representatives, auditors (Terziovski and Power, 2007; Santos and Millan, 2014; Ismyrlis and Moschidis, 2015).

RQ2. Which benefits related to the international standards on quality management are rated highest by researchers?

The researchers who took part in the survey claimed (the average grade > 4) that the standards, most of all, promote the concept of quality management in practice, explain what quality management is about and provide solutions which can successfully be used in practice. Similar advantages were pointed out by Gaspar and others (2018) Zimon (2016) and Chen and others (2016). The respondents referred more critically (the average grade > 3 and < 4) to the opinion that the standards facilitate contacts between organizations, organize the knowledge on quality management, and – what is quite surprising – to the claim that they strengthen a positive opinion on quality management among practitioners, meaning managers and workers of organizations. Taking into consideration the assessment of all benefits, it is possible to conclude that the scientists positively evaluate (the average grade > 3) the necessity of developing and the content of the international standards on quality management. They appreciate the ISO 9000 series of standards mainly because its introduction has contributed to the increase of awareness concerning the significance of quality management and also for including the fundamental information explaining the nature of quality management. However, they are more critical about the usefulness of the standards in developing an organization e.g. gaining competitive advantage, winning new business areas or solving possible problems.

Table 3. The ranking of benefits resulting from the existence of the international standards on quality management

No	Specification	Average grade
1	ISO 9000 series standards contribute to promoting (wide-spreading) the quality management in practice	4.49
2	ISO 9000 series standards help understand the essence of quality management	4.16
3	ISO 9000 series standards allow implementing successful solutions in the area of quality management	4.08
4	ISO 9000 series standards facilitate contacts between organizations (e.g. choice of partners, communication, cooperation)	3.92
5	ISO 9000 series standards organize the knowledge on quality management	3.39
6	ISO 9000 series standards strengthen positive opinion on quality management among practitioners (managers and workers of an organization)	3.32

Source: own study.

The results, however, show an obvious contradiction. The respondents graded relatively high the statement “the ISO 9000 series standards allow to implement successful solutions in the area of quality management” while they gave much lower grades to “the ISO 9000 series standards strengthen positive opinion on quality management among practitioners”. The explanation for this situation is that the experts

find the users of the ISO 9000 series (most of all those who use it in business practice) unable to fully take advantage of all the benefits they could get if the standards were properly utilized. This type of problems has already been noted by, among others, Khan and Farooque (2016) and Fonseca and Lima (2015).

RQ3. Are there significant differences in the usefulness of the international standards on quality management perception between Polish and foreign researchers?

The research also showed that Polish researchers rated every analyzed benefit higher than their foreign counterparts. However, the ANOVA test proved that the differences are not statistically meaningful. Therefore it may be claimed that the group taking part in the survey was homogenous on the opinions about the benefits resulting from the existence of the ISO 9000 family.

6. Conclusions

The research concerned the "position" of the international standards on quality management in the area of quality management. Based on the research results it was shown that the standards are acceptable and appreciated by scientists dealing with quality management, but the level of the appreciation is not very high.

The most significant benefits resulting from their existence are: promoting (spreading) the quality management in practice, helping understand the essence of quality management and allowing implementing successful solutions in the area of quality management. At the same time, it was proven that there are no statistically meaningful differences in the assessment of these standards between Polish and foreign researchers.

There are three primary limitations for this research with respect to the generalisability of the findings. The first limitation of the study may derive from the fact that Polish dominated in the study sample. However, the statistical analysis showed that it had little influence on the results. The second limitation could derive from the fact that it focused on the opinions of scientists dealing with quality management. Therefore the results should be compared with the opinions of people representing a different point of view, e.g. consultants implementing quality management systems. Further research can also be extended to find the reasons why the respondents gave low grades to the statement "the ISO 9000 series standards strengthen positive opinion on quality management among practitioners". The third limitation of the study is that the ISO 9000 series of standards have been analyzed as one whole. However, it should be noted that the ISO 9000, ISO 9001 and ISO 9004 documents probably differ from each other in terms of the characteristics taken into account in the study. This should be remembered when analysing the research results.

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