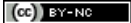


“ISO 9001 as a standard of quality management in Poland and Czech Republic: an analysis based on the global data”

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ISO 9001 AS A STANDARD OF QUALITY MANAGEMENT IN POLAND AND CZECH REPUBLIC: AN ANALYSIS BASED ON THE GLOBAL DATA

Abstract

It is vital to remember that there are numerous kinds of standards compliant with the ISO 9001 standard. ISO 9001 standard is one of many pro-quality solutions adopted in companies worldwide. Starting to apply pro-quality solutions in an organization, in particular the ISO 9001 standard implementation, is up to the decision making body. The analyses also show that the ISO 9001 standard meets the requirements of decision-making body. This trend is positive and continues to increase. Therefore, it is likely to forecast that the implementation dynamics will still be increasing in the near future.

Keywords

ISO 9001, the level of certification and the dynamics of changes, quality, management, Poland, Czech Republic

JEL Classification

L15

INTRODUCTION

Although quality is a multidimensional concept defined by numerous approaches to quality management (e.g., TQM, Kaizen, ISO 9001), strategies and operational activities, ISO 9001 standards are leading norms in Europe. Quality management has been adopted in Poland and the Czech Republic, which translates directly into a number of certificates issued by accredited certification units. The aim of the paper is to analyze the dynamics of issuing Quality Management System (QSM) certificates in Poland and the Czech Republic, certificates of compliance with ISO 9001 standard, in comparison to selected European countries and taking into account the situation in the world in this field. The study also identifies particular limitations such as the lack of data needed to conduct in-depth multi-criteria analyses.

BACKGROUND

"Quality" has many dimensions both in terms of managerial science and practice. From the business point of view, product quality affects the financial and non-financial benefits obtained by entrepreneurs. In holistic terms, the developed quality standards affect both the costs of an organization and its economic turnover. In terms of science, on the other hand, the quality improvement concepts, methods and tools developed by researchers are used by them to participate in the creation of quality

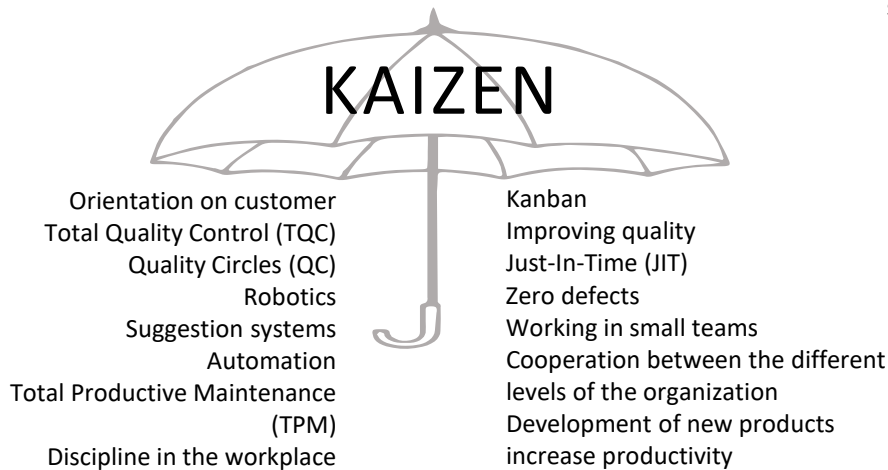


Figure 1. The Kaizen Umbrella

improvement standards worldwide. The key international concepts of quality improvement processes in strategic and operational terms include TQM, KAIZEN and ISO 9001, amongst others.

Total quality management (TQM) is implemented worldwide by means of numerous concepts, for which a number of supporting methods and tools of strategic and operational character were developed (Hawrysz, 2016; Hys, 2015a; Borys, 2012; Conti, 2010). In general, the TQM concept is considered to be a key quality management idea at the international level. The TQM concept has a positive impact on creation of operational solutions, generally acknowledged as Kaizen and on formation of a systemic approach to quality by means of the implementation of the ISO 9001 principles (Hys, 2015b; Wolniak, 2013; Kim, Kumar, & Kumar, 2011; Marin & Ruiz-Olalla, 2011). Kaizen means “good change”, which is possible to achieve in a company by applying tools supporting these processes in a systemic manner (see Figure 1) (Imai, 1986; Vaněk et al., 2015).

On the other hand, the incorporation of the ISO 9001 standard in a given organization confirms that the implemented activities apply a systemic approach to quality management (Rusjan & Alič, 2010; Sampaio, Saraiva, & Rodrigues, 2009a; Singh, Feng, & Smith, 2006).

1. STANDARDS OF QUALITY

The approach to quality varies from country to country, but a concrete region may also play an important role here (Sucháček & Baránek, 2010). It is conditioned by many factors: firstly, it depends on the level of development and the situational context of the given society, e.g., the economic, socio-cultural, legal and political, technical and technological framework. Nowadays, three key quality management concepts: TQM, Kaizen and ISO 9001 are fostered (Sampaio, Saraiva, Rodrigues, 2009b; Saraiva, Duarte, 2003). Regardless of the differences among them and the fact that each concept suggests to employ distinct politics, strategies, methods and tools, they seem to have one common underlying idea: consolidation of activities results that aim to increase organization's profits.

The concepts of quality management constituted the basis for seeking solutions that would allow decision-makers to optimize their expenses and activity results. American, European or Japanese approach to quality management in organizations is the result of the policymakers search for solutions optimizing the effects of their actions in relation to investment (Pawliczek & Piszczur, 2013).

However, it is essential to point out that the idea to control and standardize systems, which would regulate quality level, has been present since the dawn of time. In contrast, people have been searching endlessly for additional profits in order to improve the results (though with different intensity). Quality systems have emerged and have gained the increasing popularity due to certain belief that their comprehensive application, in the

entire value chain, might facilitate achieving the main goal of a given organization. That goal is to increase profits (economic and non-economic).

In accordance with the concept of quality control, the competence models should be used to systemize competencies of managers. It is therefore essential to determine which skills are crucial for managers, and which competencies should be the most developed and perfected (Kashi & Friedrich, 2013; Hajdu, 2014). It is similarly important to optimize the use of human resources, which as already mentioned, also contributes to achieve the aims of the company. So the organization structure of the company should be designed with regards to the life cycle of the company and its products (Ministr, 2013).

The quality of managerial decision-making is influenced by a number of factors, which shall be constantly monitored. Especially, as nowadays sophisticated information systems are at hand, allowing on-line management of qualitative parameters of advanced methods of strategic as well as operational planning, production optimization and accurate fulfillment of customer requirements (Chuchrová, Vilamová, & Kozel, 2016; Danel et al., 2015; Danel et al., 2013).

2. DATA AND METHODS

Organizations used the formalized quality management compliant with the ISO 9001 standard since the early 1990s (Chiarini, 2015). In this paper, the author continues the work specified in the articles concerning the global trends of the dynamics of changes in the introduction of ISO 9001 standard-compliant quality certificates (Pawliczek et al., 2015; Hys, 2015b; Vilamová et al., 2013; Psomas & Fotopoulos, 2010). The study is focused on the issue of the company certification level compliant with the ISO 9001 standard worldwide. It has been assumed that quality stands for the level of meeting clients' requirements, while the level of the clients' requirements which are being met is a key factor of the economic reality assessment performed by the managers. This issue has an impact on the market possibilities of a particular company. In the context of the contribution made by the management, the quality management sys-

tem in the ISO 9001 standard is considered as a system of organization management, in particular its supervision in relation to quality.

Preparation and analysis of data, as well as drawing conclusions, have been carried out based on the desk research method. The data were obtained while analyzing source materials such as: announcements, information available on the Internet, publicly available reports of companies and research institutions.

3. RESULTS AND DISCUSSION

3.1. Implementation of ISO 9001 norm by the region

The number of implementations of ISO 9001 standard performed by companies in various regions of the world is presented in Table 1.

When an organization meets requirements presented in the norm, it indicates that its quality management system is effective; with regard to its management system, it means that it meets specified requirements that have a significant impact on the results achieved by the organization.

Table 1 represents the number of ISO 9001 certificates registered from 1993 to 2015 on continents/regions.

One should pay attention to the year 2015. Out of the total number of certificates in this year, the following number consist of ISO 9001: 2008 (= 1 029 746), and ISO 9001: 2015 (= 4190).

The European countries have played a leading role since the introduction of ISO 9001 standard. It is to some extent natural and is expressed by the number of issued certificates (Table 1). Nevertheless, it is worth noting that a significant shift has been occurring recently. Europe's contribution to the total number of certificates accounted for 81.1% in 1993, whereas the 2015 data show that the contribution currently amounts to 42.5%. Despite still being a leader, Europe's contribution has dropped significantly – even 57.5% of its contribution was taken over by organizations from other parts of the world, i.e., East Asia and the Pacific region, in

Table 1. The number of the registered certificates by continent

Source: own compilation based on the ISO Survey of Management System Standard Certifications.

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total	46571	70364	127348	162700	223298	271846	343641	457833	510349	561766	497919	660132	773843	896905	951486	980322	1063751	1118510	1111698	1017279	1022877	1036321	1033936
Africa	1009	1177	1563	2255	2555	3342	4928	4769	3903	4529	3769	4865	6763	7441	7446	8534	8435	7667	7775	9674	9819	10143	12154
Central and South America	140	475	1220	1713	2989	5221	8972	10805	14409	13679	9303	17016	22498	29382	39354	37458	35549	49260	51663	51459	52466	50165	49265
North America	2613	4915	10374	16980	25144	33550	45166	48296	50894	53806	40185	49962	59663	61436	47600	47896	41947	36632	37530	38586	48579	41459	46938
Europe	37779	55400	92611	109961	143674	166255	190247	269332	269648	292878	242455	320748	377172	414208	431479	455303	500286	530039	492248	469739	458814	453628	439477
East Asia and Pacific	4767	7719	19766	27885	42824	54671	81950	109217	155597	177767	185846	240938	266100	320320	354056	366491	408498	438477	471836	396398	387543	414801	422519
Central and South Asia	74	330	1038	1712	2963	3556	5508	6411	6348	9383	9162	13856	27966	44923	50379	44171	44432	37596	33577	32373	44847	44790	40822
Middle East	189	348	776	2194	3149	5251	6870	9003	9550	9724	7199	12747	13681	19195	21172	20469	24604	18839	17069	19050	20812	21335	22761

Source: own compilation based on the ISO Survey of Management System Standard Certifications.

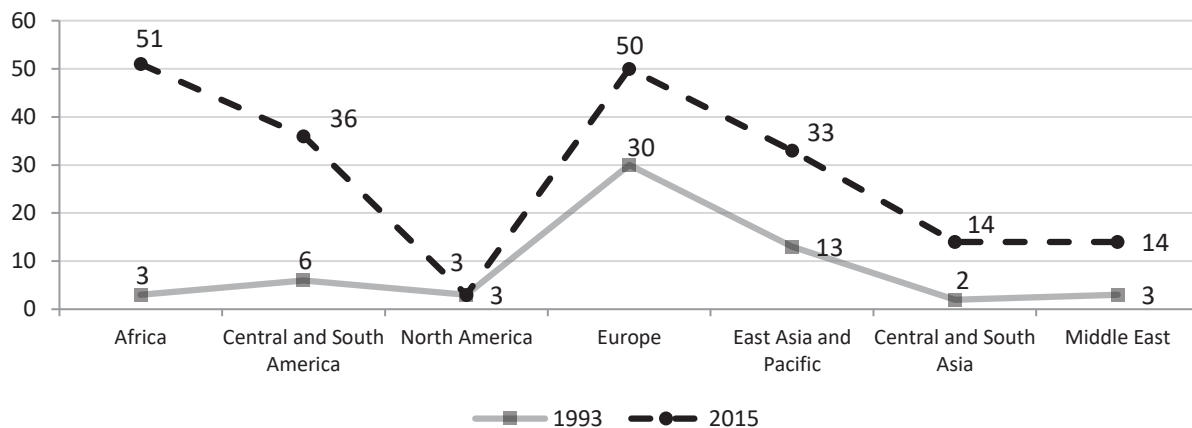


Figure 2. The number of countries, which apply ISO 9001 certification in a particular region in 1993 and in 2015

particular (40.9%). It is due to the changes occurring in organizations localized in East Asia and the Pacific region. These changes concern spatial transformations and allocation of industrial centers. New companies that follow the principles of cooperation with European trade partners, are actively participating in the process of standardization according to the ISO 9001 standard. The issue quality management system incompatibility was thus eliminated. Considering the existing data, it is possible to assume that this tendency will continue in the coming years.

From 1993 to 2015, the regional share in percentage is as follows: Central and South America (0.3–4.8%), North America (5.6–4.5%), Central and South Asia (0.2–3.9%), the Middle East (0.4–2.2%) and Africa (2.2–1.2%). The last global indicator taken into account is the number of countries on the particular continent, implementing the system, which is in compliance with ISO 9001 standard (Figure 2).

At present, 201 countries participate in certification process in compliance with ISO 9001 standard. In 1993, the number of countries in the world where companies have implemented standard ISO 9001 was 60. Therefore, it can be concluded that throughout past 22 years, application of standard in the business practice has increased by 30%. The fastest growth can be observed in following regions: Africa, Central and South America, Europe,

East Asia and Pacific, Central and South Asia, the Middle East. In North America the number of countries does not change – it is constant. Detailed data are as follows. The ratios, however, seem to be rather unequal: Africa (51 countries), Europe (50), Central and South America (36), East Asia and Pacific (33), Middle East (14), Central and South Asia (14) and North America (still 3). Therefore, it can be noted that the developing countries are characterized by the most dynamic growth in the number of certified systems ISO 9001, i.e., BRICS (Brazil, Russia, India, China, South Africa).

3.2. Implementation of ISO 9001 in Poland and the Czech Republic in comparison to other European countries

In Europe, 50 countries implemented in their companies certificates of compliance with ISO 9001. Whereas, the number of implemented certificates ISO 9001 registered in 2015 in European countries differs significantly in the spatial arrangement. In Europe, the most active countries in the field of ISO 9001 system implementation are: Italy, Germany, United Kingdom, Spain, France and Romania. The threshold of ten thousand certificates was exceeded by the countries such as Switzerland, Poland, the Czech Republic and the Netherlands (Figure 3).

Source: own compilation based on the ISO Survey of Management System Standard Certifications.

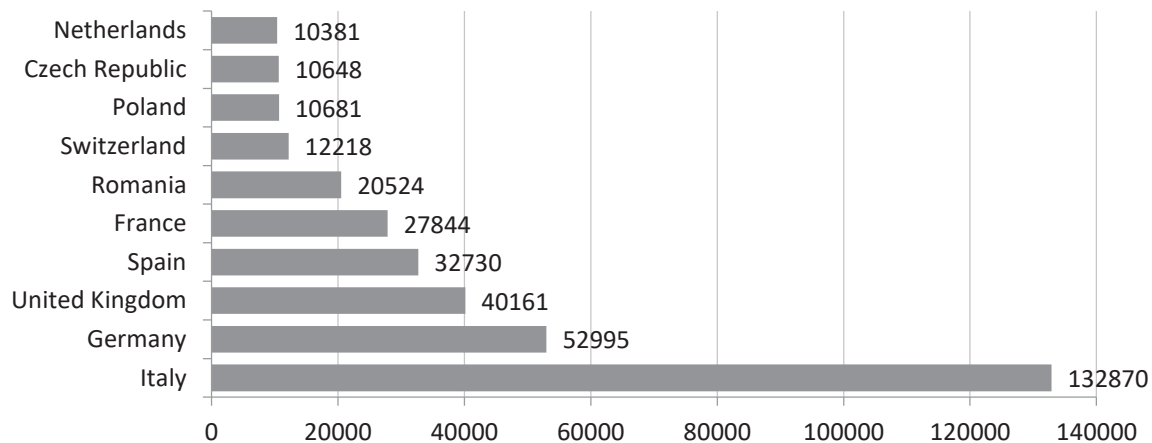


Figure 3. The number of the registered certificates in the European countries – 10 top countries

In other European countries, the average number of implemented certificates of ISO 9001 is 2,210, while the minimum number is 9 (Kosovo), and the maximum number does not exceed 9,100 (Russian Federation) (Figure 4).

Due to the purpose of the article, particular attention will be paid to implementation of ISO 9001 norm in Poland and the Czech Republic. Total number of implemented certificates in these countries in the period 1993–2015 is presented in Table 2.

Analysis of the dynamics of the implementation of the ISO 9001 standard in these countries in the years 1993–2015 shows clearly that it is the Czech Republic that has greater activity in this area (Table 2). In the analyzed period, merely in the year 2003, 2008 and 2015, Poland implement-

ed more certificates of ISO 9001 than the Czech Republic. In the remaining years, the Czech Republic implemented far greater number of certificates. In 2015, the number of certificates exceeded significantly the average value in Europe (Figure 5).

At this stage of the analysis, the limitation of further research has been disclosed. Although quantitative data are available regarding the number of implementations of ISO 9001 in a given country, in a given year, in general and percentage approach, there is lack of an extensive database that allows to conduct in-depth research. The authors note that there is a lack of information concerning the name of companies that have already implemented certificate. This kind of database would allow for an analysis of the research problem formulated as fol-

Table 2. The number of the registered certificates by continent

Source: own compilation based on the ISO Survey of Management System Standard Certifications.

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Czech Republic	18	47	180	366	746	1443	1500	3855	5627	8489	2565	10781
Poland	1	16	130	260	669	768	1012	2075	2622	3091	3216	5753
Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Czech Republic	12743	12811	10458	10089	14031	16242	12697	10679	12679	13229	10648	
Poland	9718	8115	9184	10965	12707	12195	10984	10105	10527	9574	10681	

Source: own compilation based on the ISO Survey of Management System Standard Certifications.

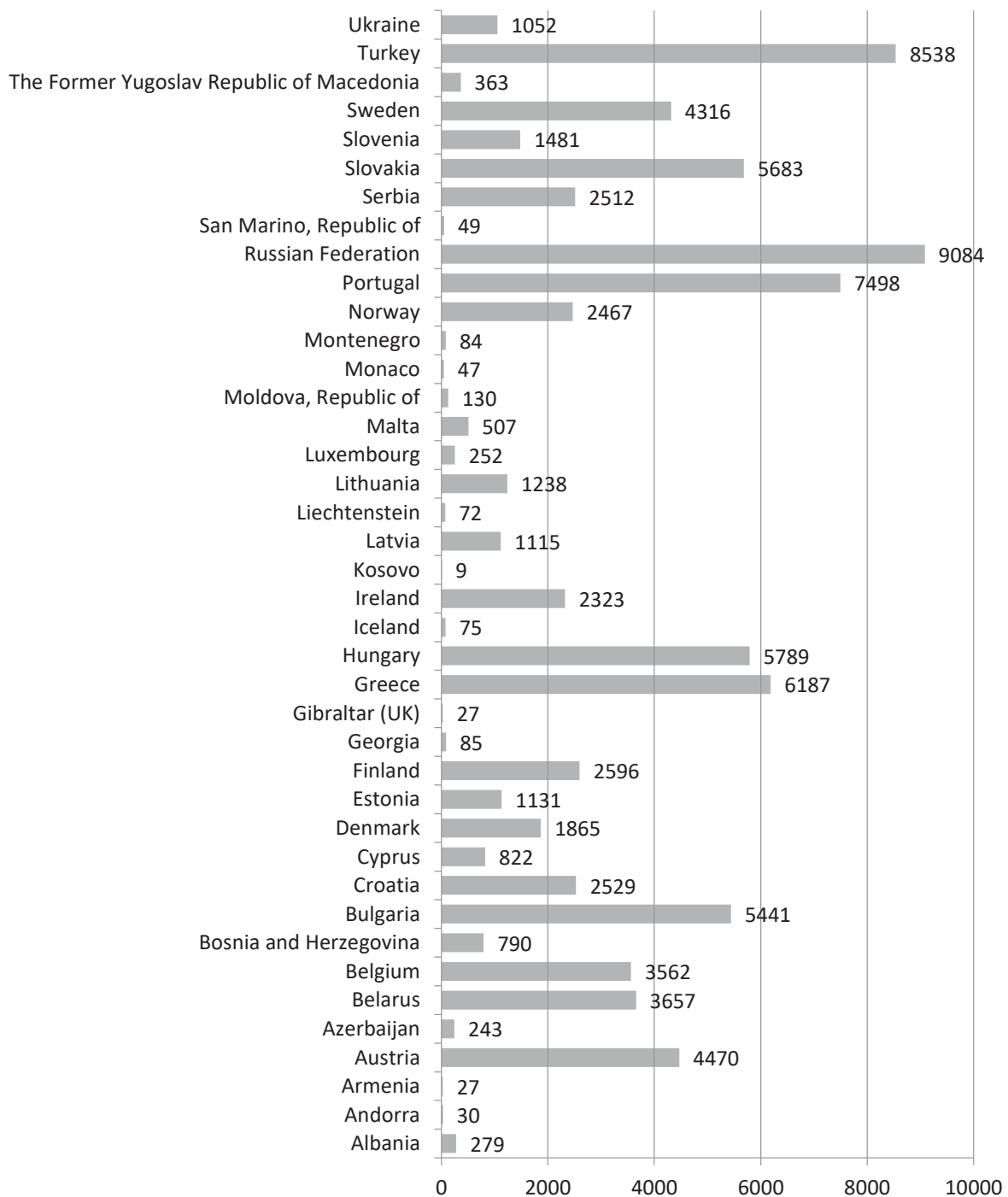


Figure 4. The number of the registered certificates in other European countries (2015)

lows: implementation of ISO 9001 affects the economic and non-economic success of the company. The data on which the analysis was carried out are absolute numbers. This fact does not allow tracing the development of the company in a longer time-

frame. It would be important to conduct research, through which one could carry out the analysis of monitoring the impact of (un)favorable implementation of the ISO 9001 standard on the results achieved by the company.

Source: own compilation based on the ISO Survey of Management System Standard Certifications.

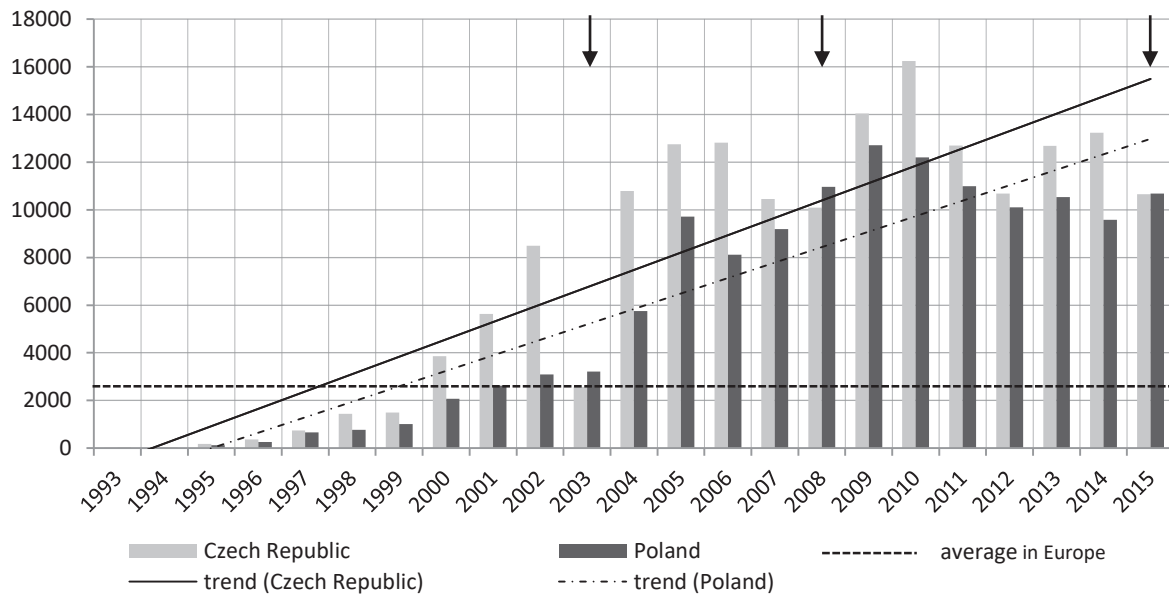


Figure 5. The number of the registered certificates in Poland and the Czech Republic

CONCLUSION

The aim of this paper is to present and analyze trends in the scope of the implementation of quality certificates of compliance with the ISO 9001 standard. An analysis of the dynamics of changes in the scope of the number of implemented certificates of compliance with the ISO 9001 standard enable to draw the following conclusions. Generally, the number of certificates of compliance with the ISO 9001 standard has been continuously growing worldwide. In Europe, including Poland and the Czech Republic, in the field of quality management systems, ISO 9001 is a leading standard. Quality management has been adopted in these countries in 1993, which directly translates into the number of certificates issued by certification bodies. General, in 2015, in terms of the number of certificates, Poland was ranked 8th in Europe, however, the Czech Republic was ranked 9th. Analysis of the dynamics of the implementation of the ISO 9001 standard in the years 1993–2015 shows clearly that it is the Czech Republic that has greater activity in this area. Only in the year 2003, 2008 and 2015, Poland implemented more certificates of ISO 9001 than the Czech Republic.

However, taking into account comprehensive approach to issue of quality, one shall bear in mind that the number of certificates is not the only indicator of the level of quality in the particular country. Organizations, apart from ISO 9001 standard, implement other solutions, which are based on various concepts of management, such as TQM or Kaizen. Currently, however, there are not any statistic data or registries concerning the number of organizations that have adopted these philosophies. Therefore, if one wishes to perform any analysis, it has to be carried out on the basis of particular case. The following step is the recommendation to introduce a comprehensive registry of solutions implemented within Quality System Management. However, it does not mean that these companies do not meet quality standards.

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REFERENCE:

1. Borys, T. (2012). Interdyscyplinarność nauk o jakości, *Zarządzanie i Finanse*, 10(3), 7-23.
2. Chiarini, A. (2015). Effect of ISO 9001 non-conformity process on cost of poor quality in capital-intensive sectors. *International Journal of Quality & Reliability Management*, 32(2), 144-155. <https://doi.org/10.1108/IJQRM-03-2013-0041>
3. Chuchrová, K., Vilamová, Š., & Kozel, R. (2016). Strategic Analysis as a Tool for Strategic Decisionmaking Processes at Industrial Companies. *Actual Problems of Economics*, 176(2), 180-191.
4. Conti, T. (2010). System thinking in quality management. *The TQM Journal*, 22(4), 352-368.
5. Danel, R., Kozel, R., Chlopeký, J., Vilamová, Š., & Piecha, M. (2015). Information Support for Sales Management in the Company OKD a.s. *Proceedings of the 11th International Conference on Strategic Management and Its Support by Information Systems 2015*, 46-54.
6. Danel, R., Otte, L., Vančura, V., Neustupa, Z., & Šeliga, Z. (2013). Software Support for Quality Control in Coal and Coke Production in OKD a.s. *Proceedings of the 14th International Carpathian Control Conference ICCS 2013*, 33-37.
7. Hajdu, Z., Andrejkovič, M., Mura, L. (2014). Utilizing experiments designed results during error identification and improvement of business processes. *Acta Polytechnica Hungarica*, 11(2), 149-166.
8. Hawrysz, L. (2016). Quality measurements in public sector organisations. *British Journal of Economics, Management & Trade*, 11(1), 1-7. <https://doi.org/10.9734/BJEMT/2016/21973>
9. Hys, K. (2015a). Dyfuzja systemu zarządzania jakością i koncepcji społecznej odpowiedzialności organizacji (A diffusion of a quality management system and a concept of corporate social responsibility of the organization). Opole: Wydawnictwo Politechniki Opolskiej.
10. Hys, K. (2015b). ISO 9001 – Certificates by industrial sector in the world as a key decision variable. *Manager*, 22, 7-18.
11. Imai, M. (1986). *Kaizen: The key to Japan's competitive success*. McGraw-Hill, New York.
12. The ISO Survey of Management System Standard Certifications. (2015). International Organization for Standardization, Geneva.
13. Kashi, K., & Friedrich, V. (2013). Manager's Core Competencies: Applying the Analytic Hierarchy Process Method in Human Resources. *Proceedings of the 9th European Conference on Management Leadership and Governance*, 384-393.
14. Kim, D. Y., Kumar, V., & Kumar, U. (2011). A performance realization framework for implementing ISO 9000. *International Journal of Quality and Reliability Management*, 28(4), 383-404.
15. Marin, L. M., & Ruiz-Olalla, M. C. (2011). ISO 9000:2000 certification and business results. *International Journal of Quality and Reliability Management*, 28(6), 649-61.
16. Ministr, J. (2013). The influence of human resources on the IT service management. *Proceedings of the 35th International Conference on Information Technology Interfaces, ITI 2013*, 323-328. <https://doi.org/10.2498/iti.2013.0561>
17. Pawliczek, A., Kozel, R., Vilamová, Š., & Janovská, K. (2015). On the Strategic Planning, Innovation Activities and Economic Performance of Industrial Companies. *Acta Montanistica Slovaca*, 20(1), 16-25.
18. Pawliczek, A., & Piszczur, R. (2013). Utilization of Modern Management Methods with Special Emphasis on ISO 9000 and 14000 in Contemporary Czech and Slovak Companies. *Proceedings of the 11th International Conference Liberec Economic Forum 2013*, 436-445.
19. Psomas, E., & Fotopoulos, C. (2010). Total quality management practices and results in food companies. *International Journal of Productivity and Performance Management*, 59(7), 668-87.
20. Rusjan, B., & Alič, M. (2010). Capitalising on ISO 9001 benefits for strategic results. *International Journal of Quality & Reliability Management*, 27(7), 756-778.
21. Sampaio, P., Saraiva, P., & Rodrigues, A. G. (2009a). ISO 9001 certification research: questions, answers and approaches. *International Journal of Quality and Reliability Management*, 26(1), 38-58.
22. Sampaio, P., Saraiva, P., & Guimaraes Rodrigues, A. (2009b). An analysis of ISO 9000 data in the World and the European Union. *Total Quality Management & Business Excellence*, 20(12), 1303-1320.
23. Saraiva, P., & Duarte, B. (2003). ISO 9000: some statistical results for a worldwide phenomenon. *TQM & Business Excellence*, 14(10), 1169-78.
24. Singh, P. J., Feng, M., & Smith, A. (2006). ISO 9000 series of standards: comparison of manufacturing and service organisations. *International Journal of Quality & Reliability Management*, 23(2), 122-142.
25. Sucháček, J., & Baránek, P. (2011). Headquarters of Largest Enterprises in the Czech Republic from Regional Perspective. *Finance and the Performance of Firms in Science, Education, and Practice*, 469-478.

26. Vaněk, M., Špakovská, K., Mikoláš, M., & Pomothy, L. (2015). Continuous Improvement Management for Mining Companies. *Journal of The Southern African Institute of Mining and Metallurgy*, 115(2), 119-124.
27. Vilamová, Š., Janovská, K., Kozel, R., Besta, P., Stoch, M., & Čech, M. (2013). Selected Aspects of Marketing Management of Metallurgical Companies. *22nd International Conference on Metallurgy and Materials METAL 2013*, 2043-2049.
28. Wolniak, R. (2013). The assessment of significance of benefits gained from the improvement of quality management systems in Polish organizations. *Quality & Quantity*, 47(1), 515-528. <https://doi.org/10.1007/s11135-011-9534-x>