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## Total quality management practices in Bosnia and Herzegovina: Do organizational contextual factors matter?

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## **TOTAL QUALITY MANAGEMENT PRACTICES IN BOSNIA AND HERZEGOVINA: DO ORGANIZATIONAL CONTEXTUAL FACTORS MATTER?**

### **PRAKSE TOTALNOG UPRAVLJANJA KVALITETOM U BOSNI I HERCEGOVINI: DA LI SU VAŽNI KONTEKSTUALNI FAKTORI ORGANIZACIJE?**

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#### **ABSTRACT**

*The main focus of this paper is to present the TQM practices of 593 companies in Bosnia and Herzegovina. In addition, our results confirm that there are statistically significant differences in TQM practices between firms in a highly competitive and less competitive environment, as well as between firms with and without ISO certificates. TQM practices do not differ between companies that belong to different groups that we constructed based on their age, location, export-orientation and the firm size. We contribute to the existing body of knowledge by identifying organizational contextual factors that might matter in designing more complex structural models.*

**Keywords:** Total quality management, Contextual factors, Bosnia and Herzegovina

#### **REZIME**

*Glavni cilj ovog rada je predstaviti prakse totalnog upravljanja kvalitetom (TQM) za 593 kompanije u Bosni i Hercegovini. Pored toga, naši rezultati potvrđuju da postoji statistički signifikantna razlika u TQM praksama između firmi koje se nalaze u visoko konkurentnom okruženju i onih u manje konkurentnom okruženju; kao i između firmi sa i bez ISO sertifikata. TQM prakse se ne razlikuju između kompanija koje pripadaju grupama konstruisanim na osnovu godine osnivanja, lokacije, izvozne orijentacije i veličine firme. Kroz ovaj rad dajemo doprinos postojećoj teoriji tako što identifikiramo kontekstualne faktore organizacije koji bi mogli imati uticaja na rezultate istraživanja u kompleksnijim strukturalnim modelima.*

**Ključne riječi:** Totalno upravljanje kvalitetom, Kontekstualni faktori, Bosna i Hercegovina

## **1. INTRODUCTION**

In today's era of globalization and market liberalization, companies face increasing competition, on domestic and foreign markets. As the business environment is under influence of ever-increasing customer demands and technological progress, companies opt for the implementation of various management systems, such as Lean Management, Six Sigma or Total Quality Management (hereinafter: TQM). The quality has become one of the key topics in business magazines and among consultants. Existing literature suggests that TQM increases flexibility, reduces costs, improves product quality, the responsiveness of employees to work tasks, and employee satisfaction [1,2]. The main focus of this paper is to analyze the TQM practices of companies in Bosnia and Herzegovina and to confirm whether TQM practices differ between companies in different competitive intensity and with different contextual factors.

## **2. TOTAL QUALITY MANAGEMENT**

Over the past three decades, there has been an increased interest in TQM as a strategy that is able to provide companies a competitive advantage [3]. Companies that apply TQM and continue to improve product quality will improve their competitive positions, business success and differentiate their products [4,5]. One of the main issues of TQM implementation is its universal applicability [6]. Some authors [7,8] questioned this argument suggesting that these principles could, in fact, be context-dependent, which could render certain TQM practices and tools inappropriate. In that sense, we will focus on the different characteristics of the company, ie. ISO certification, size of the company, affiliation of the company, export/import orientation of the company and the age of the company.

ISO 9000 can be considered to be a subset of TQM [6]. Comparing ISO 9001: 2015 with TQM approaches [9] concluded that it is a step towards TQM, with significant organizational benefits, such as less emphasis on documentation and new/enhanced approaches. However, the literature [10,11,12] reveals different conclusions regarding ISO certified companies and the implementation of TQM practices. Companies of different sizes possess different characteristics that could affect the effects of TQM implementation and how TQM contributes to organizational performance [6]. On the one hand, small companies have equal management structures and greater flexibility than larger companies [13], greater customer orientation, and therefore can more easily implement TQM. On the other hand, large companies have a much more formal and complex structure [14] and have more funds to take action for TQM. In general, the emergence of TQM is related to the industrial sector, while lately more and more attention is given [15,16] to the service sector. The attention of the authors [17,18] also captures the effect of TQM in the context of different sectors.

Market competition is considered a key situational factor in the total number of factors that make up the business environment [19]. With the increasing intensity of competition in the market, companies face increasing competition threats and challenges. A study [19] suggests that companies must produce and distribute high-quality products to meet customer and competition standards in highly competitive markets. In that sense, in highly competitive markets, the TQM practices should also be at a higher level.

## **3. METHODS**

The research strategy employed in this paper is based on survey design. The questionnaire was constructed based on the previously validated measurement models of TQM [20] and competitive intensity [21]. We used enablers from the EFQM model, which is validated in the literature [22] as a frame for operationalization of TQM practices. Based on the information from Financial–intelligence Agency of Bosnia and Herzegovina; Agency for Intermediary, IT and Financial Services Banja Luka and Municipal Court of Brcko District, the population size was estimated to be 7,062, excluding micro-sized enterprises. The emails were sent to managers

of the companies between September and November 2018. The response rate was 12.62% (or 685 firms), but our analyses were conducted on the sample of 593 firms after elimination of those firms that provided inaccurate data. After assessing confirmatory and discriminatory validity of the TQM construct (consisting of leadership, human resources, processes and resources, policy and strategy and partnership), we calculated average values for each construct and finally average TQM, representing a level of TQM implementation for the specific firm. As our aim was to analyze differences between several groups, we run several statistical tests in STATA 15.1. Our aims were not to established the causal relationships between variables, but to identify if there are differences in TQM practices between (a) companies doing business in a highly competitive environment and those doing business in less competitive markets; (b) older and younger companies; (c) companies with ISO and firms without ISO certificates; (d) export-oriented and non-export-oriented companies; (e) small-sized and medium-sized enterprises and (f) companies in Republic of Srpska and companies in Federation of Bosnia-Herzegovina. Effect sizes ( $r$ ) were estimated by using Stata “bootstrap” function and interpreted in according to the Cohen’s rules of thumb for interpreting these effect sizes: (a) small effect size for  $|r| > .1$ ; (b) medium effect size for  $|r| > .3$  and (c) large effect size for  $|r| > .5$ .

#### 4. RESULTS

Table 1 provides a ranking of the industries based on the TQM average score. Industries with NACE codes of R, L, O, N and B should be interpreted with cautions due to a small number of observations in these industries. Managers of the companies from Transportation and Storage (H) industry perceived their total quality management practices the highest, closely followed by Human Health and Social Work Activities (Q), Professional, Scientific and Technical Activities (M), Accommodation and Food Service Activities (I) and Financial and Insurance Activities (K). The average TQM scores are very close in each of these industries. On the other hand, Mining and Quarrying (B), Electricity, Gas, Steam and Air Conditioning Supply (D), Education (P) and Water Supply; Sewerage, Waste Management and Remediation Activities (E) have the lowest average TQM score.

*Table 1. Total Quality Management Practices of the Companies in Bosnia-Herzegovina*

Industry		Obs.	L	HR	PR	PS	P	TQM	CI
R	Arts, Entertainment and Recreation	2	6.80	6.14	5.90	6.21	6.17	<b>6.24</b>	4.00
H	Transportation and Storage	14	6.11	6.17	6.29	6.18	6.29	<b>6.21</b>	4.64
Q	Human Health and Social Work Activities	37	6.31	6.22	6.26	5.98	6.15	<b>6.19</b>	3.58
M	Professional, Scientific and Technical Activities	26	6.03	6.18	6.35	5.94	6.40	<b>6.18</b>	4.07
I	Accommodation and Food Service Activities	17	6.27	6.06	6.50	5.80	6.25	<b>6.18</b>	3.98
K	Financial and Insurance Activities	23	6.23	6.09	6.41	5.99	6.06	<b>6.16</b>	4.27
L	Real Estate Activities	2	6.00	6.21	6.55	5.64	6.33	<b>6.15</b>	4.60
F	Construction	90	6.17	5.91	6.25	5.60	6.34	<b>6.06</b>	4.28
S	Other Service Activities	63	6.10	6.06	6.19	5.61	6.12	<b>6.01</b>	3.92
C	Manufacturing	116	6.07	5.92	6.24	5.71	5.96	<b>5.98</b>	3.89
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	82	6.09	5.92	6.05	5.67	6.05	<b>5.96</b>	4.46

A	Agriculture, Forestry, and Fishing	12	6.03	5.98	5.88	5.31	5.97	<b>5.83</b>	4.17
J	Information and Communication	46	5.90	5.91	5.92	5.24	5.80	<b>5.75</b>	3.98
B	Mining and Quarrying	6	5.57	5.79	6.12	5.50	5.72	<b>5.74</b>	3.90
D	Electricity, Gas, Steam and Air Conditioning Supply	10	5.86	5.77	5.80	5.56	5.70	<b>5.74</b>	3.56
P	Education	18	5.77	5.75	5.90	5.44	5.54	<b>5.68</b>	3.84
E	Water Supply; Sewerage, Waste Management, and Remediation Activities	27	5.96	5.44	5.74	5.35	5.27	<b>5.55</b>	2.21
O	Public Administration and Defence; Compulsory Social Security	1	4.60	4.86	4.90	4.00	4.00	<b>4.47</b>	2.00
N	Administrative and Support Service Activities	1	4.80	5.00	4.00	4.14	4.33	<b>4.46</b>	3.40
	<b>All industries</b>	<b>593</b>	<b>6.08</b>	<b>5.94</b>	<b>5.65</b>	<b>6.15</b>	<b>6.03</b>	<b>5.97</b>	<b>3.98</b>

*Legend: L - Leadership; HR - People; PR - Process & Resources; PS - Policy & Strategy; P - Partnership; TQM - Total Quality Management; CI - Competitive intensity*

In the following section, we present the results of six statistical tests, comparing whether TQM practices differ between (a) companies conducting their businesses in more and in less competitive environment; (b) younger and older companies; (c) companies with and without ISO certificate; (d) export-oriented and non-export-oriented companies and, finally, (e) small and medium-sized enterprises.

On average, TQM practices were greater in the competitive environment ( $M = 6.19$ ,  $SE = 0.04$ ) than in the less competitive environment ( $M = 5.78$ ,  $SE = 0.04$ ). This difference was significant  $t(591) = 7.08$ ,  $p < 0.001$ ; it represents a large-sized effect ( $r = 0.58$ ). This might imply that companies in a more competitive environment are forced to focus on quality issues more than those companies in a lower competitive environment. TQM practices were not greater for the companies older than 19 years ( $M = 5.99$ ,  $SE = 0.04$ ) than for the companies younger than 19 years ( $M = 5.95$ ,  $SE = 0.04$ ). This difference was not significant  $t(591) = 0.63$ ,  $p > 0.05$ ; it also represents a weak-sized effect ( $r = 0.05$ ). The same results were obtained when we compare differences between TQM practices of firms younger than 10 and older than 10 years. Thus, TQM practices do not vary with the age of the company, i.e. being a long established company does not imply that TQM practices would be ignored; or vice versa. TQM practices were not greater for the companies conducting their businesses in the Federation of Bosnia and Herzegovina ( $M = 5.95$ ,  $SE = 0.06$ ) than for the companies in the Republic of Srpska ( $M = 5.95$ ,  $SE = 0.03$ ). This difference was not significant  $t(591) = 0.83$ ,  $p > 0.05$ ,  $r = 0.08$ . As expected, there is nothing specific in each entity that would make TQM practices differ. On average, TQM practices were greater in the companies that possess ISO certificates ( $M = 6.04$ ,  $SE = 0.05$ ) than in those without ISO certificate ( $M = 5.91$ ,  $SE = 0.04$ ). This difference was significant  $t(591) = -2.10$ ,  $p < 0.05$ ; however it represents a medium-sized effect ( $r = 0.17$ ). While ISO and TQM have many similarities, having an ISO certification does not necessarily mean that the company will focus on total quality management. However, as our results confirm, ISO certificated companies have reported better TQM practices. On average, TQM practices were not greater for the companies that are export-oriented ( $M = 5.99$ ,  $SE = 0.04$ ) than for those that are not ( $M = 5.95$ ,  $SE = 0.04$ ). This difference was not significant  $t(591) = -0.68$ ,  $p > 0.05$ ,  $r = 0.06$ ). This result was contrary to our expectation: we expected that companies with higher export orientation would demonstrate a higher level of TQM practices, but this is not the case. This might be explained by the fact that quality matters both in the local and foreign markets; therefore all companies are focusing on

ensuring a higher quality of their products and processes. Finally, we could not find statistically significant difference in TQM practices between small-sized enterprise ( $M = 5.97$ ,  $SE = 0.04$ ) and medium-sized enterprise ( $M = 5.98$ ,  $SE = 0.04$ ). This difference was not significant ( $t(591) = 0.21$ ,  $p > 0.05$ ,  $r = 0.02$ ). Both small-sized and medium-sized enterprises focus on the quality issues, suggesting that the voice of customer matters the most, and being large or small does not allow ignoring TQM practices.

## 5. CONCLUSION

This paper analyzes the TQM practices of companies in Bosnia and Herzegovina and conducts several tests in order to discover whether TQM practices differ between companies in various competitive intensity settings as well as between companies with different organizational contextual factors. Our results confirm that TQM practices differ between companies in different competitive settings, as well as between companies that acquired ISO certificates and the ones that did not. Statistically significant differences in TQM practices were not found between the companies that belong to different groups, based on the following criteria: age, location, export orientation, and the size. We contribute to the existing body of knowledge by analyzing organizational contextual factors that might matter in conducting research in more complex structural models. Such studies are especially not available for the developing country. As this paper presents a level of TQM implementation of the companies in Bosnia and Herzegovina, this research provides useful information for the managers in order to compare TQM practices with the industrial average.

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