THE IMPACT OF TOTAL QUALITY MANAGEMENT ON OPERATIONAL PERFORMANCE

Ilir Bytyçi *, Arberesha Qerimi **, Fidan Qerimi *

* AAB College, Pristina, the Republic of Kosovo
** *Corresponding author*, AAB College, Pristina, the Republic of Kosovo
Contact details: AAB College, Elez Berisha No. 65, Pristina 10000, the Republic of Kosovo

OPEN ACCESS

How to cite this paper: Bytyçi, I., Qerimi, A., & Qerimi, F. (2023). The impact of total quality management on operational performance. *Journal of Governance & Regulation, 12*(1), 171–184. https://doi.org/10.22495/jgrv12i1art16

ISSN Print: 2220-9352
ISSN Online: 2306-6784

Received: 11.07.2022
Accepted: 13.02.2023

JEL Classification: M11, M15, O32, L25
DOI: 10.22495/jgrv12i1art16

Abstract

Recent studies have highlighted the positive correlation between total quality management (TQM) and the performance of manufacturing companies (Sahoo & Yadav, 2018), which has been proven, specifically that the achievement of better operational performance is enabled by the application of TQM. This research aims to measure the impact of TQM through the components: organizational leadership, customer relationship, human resource management, strategic planning development, and supplier management in the operational performance of manufacturing enterprises in Kosovo. The research was carried out using the quantitative method, where 308 managers were part of the sample. Referring to the ordinary least squares (OLS) model, it turned out that organizational leadership and supplier management had the greatest impact on operational performance, while strategic planning development had the least impact. Also, based on the Mann–Whitney U test, it was found that there is a difference in the operational performance of manufacturing enterprises by categorizing them according to the implementation of ISO standards, where the enterprises that implement ISO standards had better operational performance.

Keywords: TQM, Operational Performance, Manufacturing Enterprises, ISO Standards

Authors' individual contribution: Conceptualization — I.B., A.Q., and F.Q.; Methodology — A.Q.; Software — A.Q.; Validation — I.B.; Formal Analysis — A.Q. and I.B.; Investigation — F.Q.; Resources — I.B.; Writing — Original Draft — I.B., A.Q., and F.Q.; Writing — Review & Editing — I.B.; Visualization — F.Q.; Project Administration — I.B.; Funding Acquisition — I.B.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

Acknowledgements: Many thanks to AAB College, the Republic of Kosovo, for financing the publication and covering the costs of conducting research.

1. INTRODUCTION

In today's business development environment, competition has a greater upward trend than it has in recent decades. As international competition is fierce and customers tend to be more demanding, in today's business environment only those companies that provide quality can succeed (Bajaj et al., 2018). So, for an organization to achieve organizational success, it must possess operational performance, which is considered one of the most important aspects of organizational performance.

One of the most important elements for quality improvement is total quality management (TQM) (Zu et al., 2010), as a system that facilitates performance that is justified through operational

excellence (Vasantharayalu & Pal, 2016; Jimoh et al., 2019). Recent studies have highlighted the positive correlation between TQM and the performance of manufacturing companies (Sahoo & Yadav, 2018), which has been specifically proven, that the achievement of better operational performance is enabled by the application of TQM (Truong et al., 2014). The findings from research with 50 companies showed that components such as strategy and planning, leadership, human resource management, analysis and information, and customer focus have statistically significant relationships with operational performance (Adem & Virdi, 2021). Likewise, there is a significant relationship between quality management and operational performance in 950 manufacturing plants, in terms of quality, cost, and flexibility (Adem & Virdi, 2021). However, not all findings brought a significant correlation between these two variables, some researchers identified non-significant relationships between TQM and operational performance (Prajogo & Sohal, 2006; Martinez-Costa & Martinez-Lorente, 2008).

Based on the literature, a positive but also a negative relationship was identified between TQM and operational performance, so with this in mind, this research aims to measure the impact of TQM on operational performance through components such as organizational leadership (OL), customer relationship (CR), human resource management (HRM), strategic planning development (SPD), supplier management (SM).

Through the quantitative method, using a structured questionnaire created through the Likert scale, we conclude that organizational leadership and supplier management had the greatest impact on operational performance, while strategic planning development had the least impact. Also, based on the Mann–Whitney U test, we conclude that there is a difference in the operational performance of manufacturing enterprises by categorizing them according to the implementation of ISO standards, whereas enterprises that implement ISO standards had a better operational performance.

This research expresses great importance since it enables the identification of the most influential TQM component in operational performance, thus filling the gap between the current situation and the research results and recommending manufacturing companies strengthen the TQM components depending on the results.

This paper presents the following objectives:

Objective 1: To measure the impact of total quality management on operational performance.

Objective 2: To identify if there is a significant difference in the operational performance of manufacturing enterprises according to ISO standards.

The structure of this paper is as follows. Section 1 addresses the correlation between the theoretical aspect of TQM and operational performance and the purpose of research by relating them to hypotheses, and describes the importance of research and contribution. Section 2 addresses the theoretical aspect of the TQM components and how the model relates to operational performance. Section 3 deals with the methodology used to answer research questions, defines the variables and samples included in the study, describes the research instrument and its reliability, and explains the data collection procedure and statistical tests used to verify research hypotheses. Section 4 describes the results obtained from the descriptive analysis, frequency in percentage. Discussion of the results of Pearson's correlation, multiple linear regression, ordinary least squares regression (OLS) model, and Mann–Whitney U test is presented in Section 5. Section 6 summarized all the conclusions that were drawn from the research results and provided the necessary recommendations to improve operational performance by strengthening TQM components.

2. LITERATURE REVIEW

As a result of economic, environmental, and technological globalization, competitiveness among firms has increased significantly. This influences these enterprises to take initiatives in search of a quality management concept by facing the challenges brought by the competition and improving their performance. In the literature, there are many quality concepts such as Six Sigma, business process re-engineering, lean manufacturing, Lean Six Sigma, TQM, and others, where the goal is always to ensure quality competition (Faeq et al., 2021). It is worth noting that this study focuses on total quality management as an applicable concept within quality assurance. Quality improvement involves a popular approach, which in the long term, continuously improves the quality of the organization, this is achieved by all team members being active to achieve customer expectations (Ahmad, 2022). Total quality management is defined as a belief system with a focus on meeting customer needs, which obliges organizations to create operational techniques where the customer is at the center by donating assets, which contribute to the positioning of customers and the fulfillment of needs and desires. Some researchers evaluate TQM as a system, which contributes to the improvement of employees in the formation of a multiple organization between personnel, customers, and managers, using information appropriately. The implementation of TQM in the performance of an organization is considered a competitive advantage, affecting the effectiveness and competitive sustainability of the organization (Trang & Do, 2020; Tsou et al., 2021).

Flynn et al. (1995) have identified the most influential components on company performance, such as human resource focus, customer focus and leadership as soft variables, but the most comprehensive literature review carried out by some other researchers have described TQM through six components, such as leadership, strategic planning, information and analysis, human resource management, customer focus, and process management (Terziovski & Samson, 1999). The study carried out by Curkovic et al. (2010) estimated that the most successful elements of TQM were: employee empowerment, customer focus, and top management support (as cited in Mehmood et al., 2014). Talib (2013) emphasized that previous research did not explain the key elements of TQM highlighting that the identification of the right elements of TQM is difficult to achieve, based on the above criteria. Since there were many views from different authors on the construction of TQM

components, most studies evaluated these components based on the quality criteria, according to Malcom Baldrige National Award Criteria (1995), such as leadership, human resource management, customer focus, information analysis, process management, and strategy (as cited in Senarath et al., 2020).

The increase in production quality has an impact on the improvement of product quality, but also wider spectrum improvements in competitive priorities, which are fast delivery and reduced costs. The benefit of continuous improvement of processes and product quality affects the reduction of the need for rework, waste of resources, and reduction of errors, thereby increasing productivity, meeting customer requirements, and impacting operational performance (Anil & Satish, 2019).

According to the relevant literature, the principles used to measure TQM differ between studies. Faeq et al. (2021) identified eight factors to measure TQM in manufacturing companies, such as employee relations, quality data and reporting, product/service design, training, process management, supplier quality management, management leadership, and the role of quality department (Faeq et al., 2021). Kaynak (2003), in a study carried out in the manufacturing industry in the USA, used seven elements to measure TQM, such as management-leadership, employee relations, supplier quality management, product/service design, training, quality data and reporting, and process management. Koh and Low (2010), in the study carried out in the construction sector, used these elements to measure quality management: people management, senior management-leadership, information quality management, supplier management, organization and learning, continuous improvement and customer management, process management (as cited in Faeq et al., 2021). The aforementioned studies were the reference base to build the principles of TQM used in this study.

The components used to address TQM and their impact on operational performance in this research are organizational leadership (OL), customer relationship (CR), human resource management (HRM), strategic planning development (SPD), supplier management (SM), from which the research hypotheses were derived. Many previous studies have identified positive relationships between TQM and operational performance, organizational performance, competitive advantage, employee satisfaction, and financial performance (Sadikoglu & Zehir, 2010; Fuentes et al., 2006; Agus & Sagir, 2001). However, other authors in their studies have brought different findings, where the relationship between TQM and performance is negative. In accordance with the reviewed literature, the following main hypothesis was raised:

H1: Total quality management positively affects operational performance.

The development of the sub-hypotheses for the TQM components is presented below.

Organizational leadership (OL): Organizational leadership is an important component of TQM, which is actively involved in the communication and planning of organizational goals in increasing quality (Singh et al., 2018).

Given that in the TQM system, leaders see the organization as a system that creates support and development of employees, creates a genuine communication between stakeholders (managers, employees, and customers), users of information effectively and efficiently, are regarded as one of the most important practices in the success of TQM (Sadikoglu & Olcay, 2014). In this form, OL contributes to the improvement of operational, financial, organizational, and employee performance (Zehir & Sadikoglu, 2012). In accordance with the reviewed literature, the following sub-hypothesis was raised:

H1a: Organizational leadership positively affects operational performance.

Human resource management (HRM): Human resources are important factors in TQM construction, including a large number of organizational development practices, such as recruitment and selection procedures, training, inclusion, health and safety practices, teamwork, etc. Trained, satisfied and motivated human resources influence increased performance (Singh et al., 2018). TQM and HRM are considered important conditions for the continuous development of manufacturing industries and the way to face competition and globalization (Palo & Padhi, 2005; Reza, 2020). In accordance with the reviewed literature, the next sub-hypothesis was raised:

H1b: Human resource management positively affects operational performance.

Customer relationship (CR): Customer relations are an important factor for any organization, but within TQM it is considered one of the factors that brings the best results in business (Keinan & Karugu, 2018; Singh et al., 2018). Customer relationship within TQM identifies customer requirements and builds strategies oriented from the customer's perspective, for further improvement (Sweis et al., 2016). Since the relationship with customers as a component in TQM is considered so important to improve the performance of the organization, the following sub-hypothesis was raised:

H1c: Customer relationship positively affects operational performance.

Strategic planning development (SPD): This component of TQM has a major role in achieving quality and increasing performance. Enhancing performance through SPD includes mission statements, quality, improvement, quality control processes, and other management functions (Al-Dhaafri, 2016; Singh et al., 2018; Pradhan et al., 2017). Some researchers have found that strategic planning development has a positive relationship with performance (Lai, 2003; Al-Dhaafri et al., 2016; Singh et al., 2018), therefore, in accordance with this, the following sub-hypothesis was raised:

H1d: Strategic planning development positively affects operational performance.

Supplier management (SM): The last component treated within TQM is supplier management, where its purpose is to create long and cooperative relationships with suppliers, giving the possibility of involvement in the creation of the product and production processes, as well as improving performance. Some authors who have studied the impact of supplier management on performance have identified positive correlations between supplier management and performance (Aquilani

et al., 2017; Ebrahimi & Rad, 2017). Also, it has been identified that supplier quality is positively related to operational performance (Phan et al., 2011). Therefore, in accordance with this, the following sub-hypothesis was raised:

H1e: Supplier management positively affects operational performance.

H2: There is a significant difference in the operational performance of manufacturing enterprises according to ISO standards.

3. RESEARCH METHODOLOGY

A quantitative method was used to achieve the objectives of the research. According to the Kosovo Agency of Statistics (KAS), from the Statistical Repertory on Economic Enterprises in Kosovo of 2021, 1328 manufacturing enterprises are registered (KAS, 2021).

To determine the sample participating in the research, Slovin's formula was used. For more information refer to the following equation:

$$n = \frac{N}{1 + N * (e)^2} = \frac{1328}{1 + 1328 * (0.05)^2} = 308 \qquad (1)$$

According to Slovin's formula, the sample in this research was 308 managers of manufacturing enterprises, where their categorization was completed according to the implementation of ISO standards, where 90 enterprises were implementers of ISO standards and 218 were not implementers of ISO standards. The realization of the research was completed through a structured questionnaire, which was divided into three sections.

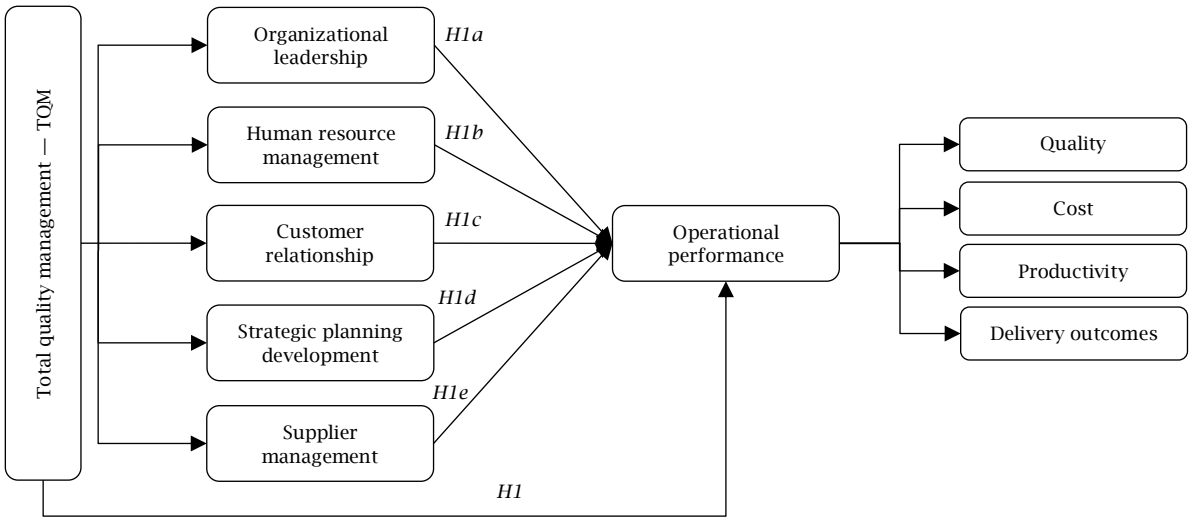
The first section consists of demographic questions for managers of manufacturing enterprises in Kosovo: gender, age, level of education and application of ISO standards. The second section comprises the components of TQM: OL, CR, HRM, SPD, SM, created through the Likert compliance scale, where 1 = "Strongly disagree" to 5 = "Strongly agree". Part of the third section were questions that measured operational performance (OP) through a Likert scale of agreement, where 1 = "Strongly disagree" to 5 = "Strongly agree".

Questionnaires were physically distributed in the manufacturing enterprise in Kosovo and their processing was completed through Statistical Package for the Social Sciences (SPSS), version 26. To complete the questionnaire, 10 minutes of time were needed, and the time interval for conducting the research was from the end of 2021 to March 2022. In order to increase the response rate and improve the reliability of the questionnaires, the questionnaires were anonymous and were not collected by any third party, but by the researchers themselves.

Figure 1 below presents the chronological flow of the research. The relationship between the variables is presented in Figure 2.

Figure 1. Flowchart of the methodology

Figure 2. Framework of the research



Initially, the presentation of the results was completed through descriptive analysis, specifically through the mean as the most frequent measure of the central tendency. The calculation of the average is made possible through the following equation:

$$Mean = A\ (or\ \bar{x}) = \frac{x_1 f_1 + x_2 f_2 + x_3 f_3 + \cdots + x_n f_n}{f_1 + f_2 + f_3 + \cdots + f_n} \tag{2}$$

To present the relationship between the variables, TQM and OP, Pearson's correlation was used, which is marked with the symbol r and takes values from -1 to 1. When r = -1, the relationship between the variables is negative, where increasing one decreases the other and vice versa. When r = 1, we say that the relationship between the variables is positive linear, where the increase of one variable increases the other variable and vice versa. When r = 0 we say that there is no relationship between the two variables. The calculation of Pearson's coefficient is made possible through the following equation:

$$r = \frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{[N\sum x^2 - (\sum x)^2][N\sum y^2 - (\sum y)^2]}} \tag{3}$$

To test autocorrelation, the Durbin–Watson coefficient was used, which takes values from 0 to 4. When values are close to 0, they indicate an extremely positive correlation, values close to 4 indicate an extremely negative correlation, and values close to 2 indicate the absence of autocorrelation. The preferred Durbin–Watson test value is 1.5 to 2.5. The calculation of the Durbin–Watson coefficient is made possible through the following equation:

$$d = \frac{\sum_{t=2}^{T}(e_t - e_{t-1})^2}{\sum_{t=1}^{T} e_t^2} \tag{4}$$

Equation (5) represents the value of R-squared through which it was calculated what percentage of the dependent variable (OP) is described by the independent variables (TQM components).

$$R^2 = 1 - \frac{Sum\ squared\ regression\ (SSR)}{Total\ sum\ of\ squares\ (SST)} = 1 - \frac{\sum(y_i - \hat{y}_i)^2}{\sum(y_i - \bar{y})^2} \tag{5}$$

The impact of TQM through its components on operational performance is realized through equation (6) (OLS model) and equation (7) (multiple linear regression) and equation (8) representing $\hat{\beta}$.

$$Y_i = \beta_0 + \beta_1 X_i \tag{6}$$

$$y = \beta_0 + \beta_1 * x_1 + \beta_2 * x_2 + \beta_3 * x_3 + \beta_4 * x_4 + \beta_5 * x_5 + \varepsilon \tag{7}$$

$$\hat{\beta} = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sum_{i=1}^{n}(x_i - \bar{x})^2} \tag{8}$$

The following equation represents the standard error by which the precision of the representative sample in the population is measured through the use of the standard deviation. So, the sample mean that deviates from the population mean represents the standard error of the mean.

$$Standard\ error\ (\bar{X}) = \sqrt{\frac{S_X^2 + \bar{X}^2}{n}} \tag{9}$$

Levene's test was used to assess the homogeneity of variances. Through this test, the null hypothesis was tested, to prove that the variances are equal. When the significance value is $p < 0.05$, it is concluded that there is a significant difference in the difference between the variances in the population.

$$F_{Levene} = \frac{\frac{\sum_{i=1}^{t} n_i(\bar{D}_i - \bar{D})^2}{(t-1)}}{\frac{\sum_{i=1}^{t}\sum_{j=1}^{n_i}(D_{ij} - \bar{D}_i)^2}{(N-t)}} \tag{10}$$

To test the difference between two independent groups measured with non-interval data, the Mann–Whitney U test was used through equation (11). This test was applied to independent samples as a non-parametric test that compares the medians of groups by identifying the difference between the ranking of the two groups.

$$U_1 = n_1 n_2 + \frac{n_1(n_1+1)}{2} - R_1$$
$$U_2 = n_1 n_2 + \frac{n_2(n_2+1)}{2} - R_2 \quad (11)$$
$$U_1 + U_2 = n_1 n_2 + \frac{n_1(n_1+1)}{2} - R_1 + n_1 n_2 + \frac{n_2(n_2+1)}{2} - R_2$$

The quantitative method can be considered as another alternative to investigate operational performance through TQM components. Combining the two methods involving more stakeholders would increase the scientific value of the paper.

4. RESULTS

Participants in the research were 308 managers of manufacturing enterprises in Kosovo, of which 25.9% (N = 80) were female and 74.02% (N = 228) were male. The age distribution of managers was different between the alternatives, where 3.24% (N = 10) were 18–25 years old, 24.02% (N = 74) were 26–33 years old, 39.93% (N = 123) were 34–41 years old and 32.79% (N = 101) 42–49 years old. Regarding the level of education, there was diversity between the alternatives, where 57.46% (N = 177) were with Bachelor's education, 42.20% (N = 130) with Master's level, and only 0.32% (N = 1) with a Ph.D. Of these 308 manufacturing enterprises surveyed, 29.22% (N = 90) implement ISO standards and 70.77% (N = 218) are not applicants of ISO standards.

Table 1. Demographics of managers of manufacturing enterprises

Variable	*Variable segmentation*	*N*	*Percent (%)*
Gender	Female	80	25.97
	Male	228	74.02
Age	18–25 years old	10	3.24
	26–33 years old	74	24.02
	34–41 years old	123	39.93
	42–49 years old	101	32.79
Level of education	Bachelor	177	57.46
	Master	130	42.20
	Ph.D.	1	0.32
Application of ISO standards	Yes	90	29.22
	No	218	70.77

4.1. Descriptive analysis results

Table 2 presents descriptive analyzes according to the Likert scale, 1 = "Strongly disagree" to 5 = "Strongly agree" for the variables, i.e., the elements of TQM: OL, CR, HRM, SPD, SM, and OP measured through quality, cost, productivity, and delivery outcomes. The presentation of the results was completed by categorizing the enterprises according to the implementation of ISO standards.

According to the results, the mean of OL for manufacturing enterprises implementing ISO standards is $x = 3.92$ and SD = 0.706, which means the level of compliance is above average. According to this result, management is involved in the communication and planning of organizational goals, provides important resources for quality improvement and maintenance, evaluates quality more important than production, and interacts routinely with relevant departments to increase quality. The average OL for manufacturing enterprises that do not implement ISO standards is $x = 3.07$ and SD = 0.381. On average, the difference between the two categories is significantly large, where the highest score was shown by manufacturing companies that implement ISO standards.

The second element is CR, the average of which for manufacturing companies implementing ISO standards is $x = 3.84$ and SD = 0.680. According to the results, companies identify customer requirements, customer-oriented strategies are built and reviewed for improvements, product design, and delivery is completed in accordance with customer requirements, and customer complaints are handled professionally while maintaining that form. The average CR for manufacturing companies that do not implement ISO standards is $x = 3.12$ and SD = 0.412, a result lower than manufacturing companies that implement ISO standards.

The third element is HRM, where the average for manufacturing companies that implement ISO standards is $x = 3.93$ and SD = 0.808. According to this result, managers have stated above the average level that during the recruitment process the right person is always selected for the right job, that the staff is provided with proper and efficient training, that health and safety practices in the workplace are at the level of senior and provides employees with professional development training both inside and outside the company. The average HRM for manufacturing companies that do not implement ISO standards is $x = 3.06$ and SD = 0.524. Even in this element, these enterprises showed low results, so they are less oriented toward the focus on human resources.

The fourth element of TQM is SPD, where the mean, $x = 3.46$ and SD = 0.969, show that manufacturing companies that implement ISO standards, encourage the study and improvement planning of all products and processes, and inspection is performed. The company uses quality tools for process planning and control and ultimately collects data and makes decisions about process improvements. The mean of SPD for manufacturing enterprises that do not implement ISO standards is $x = 2.84$ and SD = 0.558, which indicates below average level of compliance.

The mean of SM for manufacturing companies implementing ISO standards is $x = 3.92$ and SD = 0.840. Companies consider the quality of products more important than the price of

the supplier and provide certification to suppliers and conduct frequent audits to maintain quality standards. The mean of supplier management for manufacturing companies that do not implement ISO standards is $x = 2.92$ and SD = 0.621, which is significantly lower than companies that have ISO standards.

Regarding the dependent variable, i.e., OP, the average for manufacturing companies that implement ISO standards is $x = 3.74$ and SD = 0.696. Managers decelerate that the quality of products and production processes are at a high level, that product defects are small, that the rate of return of products is low, that the cost of production is constantly reduced, that production wastes have been significantly reduced, which have flexibility in production and improved efficiency. The average OP of manufacturing companies that do not implement ISO standards is $x = 2.75$ and SD = 0.711, which is significantly lower than companies that implement ISO standards.

Table 2. Descriptive analysis for variables according to ISO standards

With ISO				*Without ISO*				*Total*			
	N	*Mean*	*Std. deviation*		*N*	*Mean*	*Std. deviation*		*N*	*Mean*	*Std. deviation*
OL	90	3.9237	0.70610	*OL*	218	3.0785	0.38113	*OL*	308	3.3046	0.61569
CR	90	3.8427	0.68022	*CR*	218	3.1223	0.41233	*CR*	308	3.3150	0.59101
HRM	90	3.9315	0.80842	*HRM*	218	3.0626	0.52440	*HRM*	308	3.2950	0.72331
SPD	90	3.4603	0.96955	*SPD*	218	2.8456	0.55886	*SPD*	308	3.0100	0.74332
SM	90	3.9234	0.84077	*SM*	218	2.9229	0.62147	*SM*	308	3.1905	0.81675
OP	90	3.7492	0.69642	*OP*	218	2.7573	0.71125	*OP*	308	3.1692	0.78882

Note: OL = Organizational leadership; CR = Customer relationship; HRM = Human resource management; SPD = Strategic planning development; SM = Supplier management; OP = Operational performance.

Figure 3 shows the percentage of compliance expressed in percentage for OL by comparing manufacturing companies that implement ISO standards and those that do not implement ISO standards. According to the following results, there is a big difference between the two categories, where the highest level of compliance for OL was shown by manufacturing companies that implement ISO standards, where over 70% of managers agreed to be involved in communication and planning. goals, provide significant resources to improve and maintain quality, and interact routinely with other departments, with over 13% disagreeing with the above. However, the situation in manufacturing companies that do not implement ISO standards is different, where the compliance rate is only 25.65%, i.e., with a large difference between the two categories of companies.

Figure 4 shows the percentage of compliance expressed in percentage for CR by comparing manufacturing companies that implement ISO standards and those that do not implement ISO standards. According to the results, even in the second component of TQM, there is a significant difference between the two categories of manufacturing companies, where the highest compliance was shown by manufacturing companies that implement ISO standards. The majority of managers (64.18%) agreed to identify customer requirements, have customer-oriented strategies, encourage partnerships with customers to improve relationships and pay attention to customer complaints and strive to maintain quality standards, and 10.89% disagreed. The level of compliance among manufacturing companies that do not implement ISO standards is different, with only 27.99% agreeing that their orientation is in a CR.

Figure 3. Organizational leadership

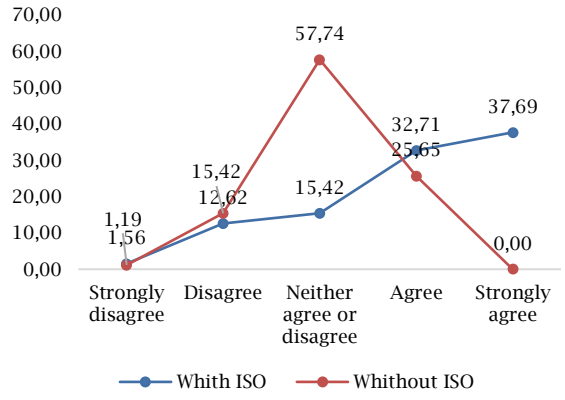


Figure 4. Customer relationship

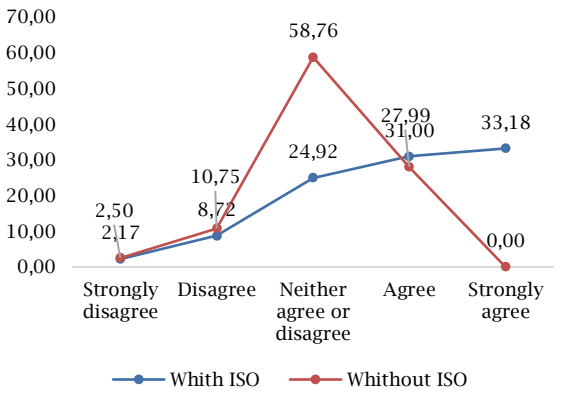


Figure 5 shows the percentage of compliance expressed in percentage for focus on HRM by comparing manufacturing companies that implement ISO standards and those that do not implement ISO standards. According to the curves, in manufacturing companies that implement ISO standards, the trend is increasing, where 66.97% of respondents agreed that they have regular recruitment procedures, proper and efficient training for selected staff, and career development training for employees, and only 10.59% disagreed. The situation is different in manufacturing companies that do not implement ISO standards, where the trend is downward. The maximum score

reaches 58.48% where respondents remained neutral and only 25.48% agreed with the focus on human resources.

Figure 6 shows the percentage of compliance expressed in percentage for SPD by comparing manufacturing companies that implement ISO standards and those that do not implement ISO standards. According to the results, even in this component of TQM, the trend was increasing in manufacturing companies that implement ISO standards, 52.57% of respondents agreed that the company encourages the improvement of all products and processes, product quality inspection, control, and process improvement, but the compliance rate for SPD of manufacturing companies that do not implement ISO standards is 22.78%, so the orientation in planning and strategic development is low.

Figure 5. Human resource management

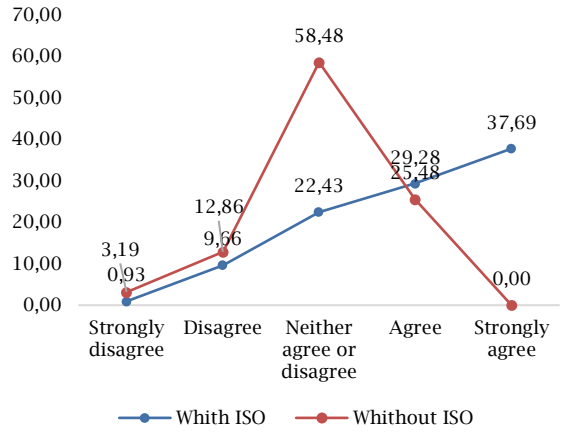


Figure 6. Strategic planning development

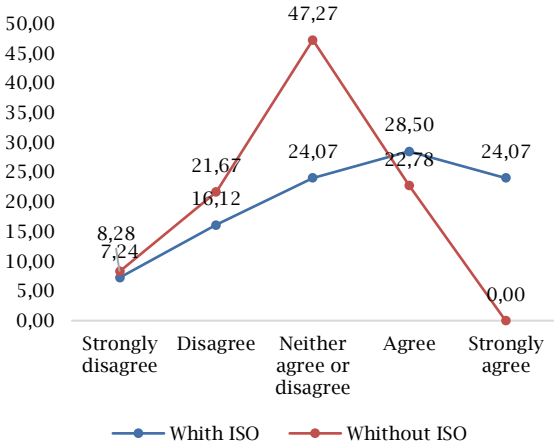
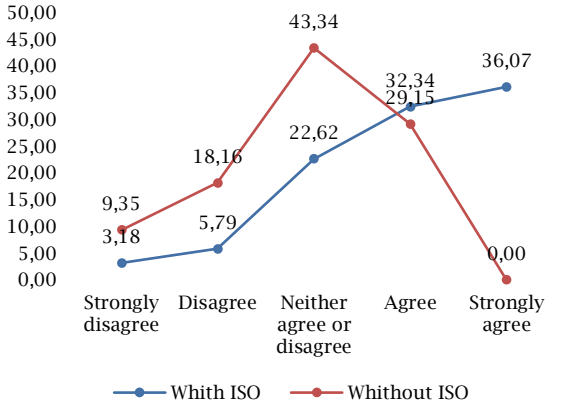


Figure 5 shows the percentage of compliance expressed in percentage for SM by comparing manufacturing companies that implement ISO standards and those that do not implement ISO standards. The following results show that the orientation of manufacturing enterprises that implement ISO standards in SM is greater than that of enterprises that do not implement ISO standards, where the figure below shows the upward trend in enterprises with ISO standards and a decline in enterprises without ISO standards. The majority of surveyed managers (68.41%) of manufacturing companies that implement ISO standards, stated that the company where they work, gives more importance to product quality than supplier price, provides certification to suppliers, and performs routine audits of quality standards. The compliance rate of manufacturing companies that do not implement ISO standards is 29.15%, which is significantly lower than the other category.

Figure 7. Supplier management



4.2. Verification of the first hypothesis (*H1*)

Through the Kolmogorov–Smirnov test, the normal distribution was confirmed, given that $p > 0.05$, because only in this case we can calculate that there is a direct relationship between TQM and OP.

The reliability of the questionnaire is also of great importance, as a necessary test for each measurement made because reliability expresses consistency through the questions that participate in the questionnaire and to what extent the used reflects the question. So, reliability analysis is a method developed for evaluating the characteristics and reliability of tests or meters used during measurement. Referring to Table 3, the reliability of the questionnaire is $\alpha = 0.954$, a result that determines the acceptable reliability of the study instrument.

Apart from the above conditions to use the lower tests, the Durbin–Watson test is in the middle of the acceptable values, that is between 1.5 and 2.5, and the model has no problem with autocorrelation.

Table 3. Questionnaire reliability

Variables	*Cronbach alpha coefficients*
OL	0.969
CR	0.913
HRM	0.988
SPD	0.970
SM	0.911
OP	0.977
Total	0.954

Through Pearson's correlation analysis, the relationship between the components of TQM is presented: *OL, CR, HRM, SPD, SM,* and *OP.*

Referring to the value of the correlation coefficient $r = 0.520$ and $p = 0.000$, there is a moderate positive relationship between *OL* and *OP*. Referring to the value of the correlation coefficient $r = 0.491$ and $p = 0.000$, between *CR* and *OP* there is a weak positive relationship. Referring to the value of the correlation coefficient $r = 0.314$ and $p = 0.000$, between *HRM* and *OP* there is a weak positive relationship. Referring to the value of the correlation coefficient $r = 0.298$ and $p = 0.000$, between *SPD* and *OP*, there is a weak positive relationship. Referring to the value of the correlation coefficient $r = 0.632$ and $p = 0.000$, between *SM* and *OP*, there is a moderate positive relationship.

The positive relationship between independent and dependent variables shows that they are in direct proportion to each other, where the increase in TQM affects the increase in operational performance and vice versa.

Table 4. Correlation matrix

Variable	*OP*	*OL*	*CR*	*HRM*	*SPD*	*SM*
OP	1					
OL	0.520**	1				
	0.000					
CR	0.491**	0.745**	1			
	0.000	0.000				
HRM	0.314**	0.629**	0.668**	1		
	0.000	0.000	0.000			
SPD	0.298**	0.525**	0.496**	0.550**	1	
	0.000	0.000	0.000	0.000		
SM	0.632**	0.563**	0.486**	0.441**	0.526**	1
	0.000	0.000	0.000	0.000	0.000	

Note: OL = Organizational leadership; CR = Customer relationship; HRM = Human resource management; SPD = Strategic planning development; SM = Supplier management; OP = Operational performance.
***. Correlation is significant at the 0.01 level (2-tailed).*

Through the OLS model, we express the impact of each TQM component on operational performance. According to the value of $R^2 = 0.270$ ($\beta = 0.666$; $t = 12.138$; Sig. = 0.000), it results that 27% of *OP* is explained by *OL*, while F (1,398) = 147.32 and Sig. = 0.000, we conclude that the model is statistically fully significant. According to the value of $R^2 = 0.241$ ($\beta = 0.655$; $t = 11.238$; Sig. = 0.000), it results that 24% of *OP* is explained by *CR*, while F (1,398) = 126.297 and Sig. = 0.000, we conclude that the model is statistically fully significant. According to the value of $R^2 = 0.099$ ($\beta = 0.342$; $t = 6.598$; Sig. = 0.000), it results that 9% of *OP* is explained by *HRM*, while F (1,398) = 43.533 and Sig. = 0.000, we conclude that the model is statistically completely significant. According to the value of $R^2 = 0.089$ ($\beta = 0.316$; $t = 6.222$; Sig. = 0.000), it results that 8% of *OP* is explained by *SPD*, while F (1,398) = 38.713 and Sig. = 0.000, we conclude that the model is statistically completely significant. According to the value of $R^2 = 0.399$ ($\beta = 0.610$; $t = 16.260$; Sig. = 0.000), it results that 39% of *OP* is explained by *SM*, while F (1,398) = 264.399 and Sig. = 0.000, we conclude that the model is statistically completely significant. According to OLS, operational performance depends more on supplier management and less on strategic planning development.

Table 5. OLS model

Variable	*β*	*R*	*R-squared*	*Adj. R-squared*	*t*	*F*	*Sig.*	*Durbin–Watson*
OL	0.666	0.520a	0.270	0.268	12.138	147.326	0.000	1.502
CR	0.655	0.491a	0.241	0.239	11.238	126.297	0.000	1.732
HRM	0.342	0.314a	0.099	0.096	6.598	43.533	0.000	1.561
SPD	0.316	0.298a	0.089	0.086	6.222	38.713	0.000	1.502
SM	0.610	0.632a	0.399	0.398	16.260	264.399	0.000	1.564

Note: OL = Organizational leadership; CR = Customer relationship; HRM = Human resource management; SPD = Strategic planning development; SM = Supplier management.

According to the value of $R^2 = 0.475$, results that 47.5% of *OP* is explained by TQM, while F (5,394) = 71.220 and Sig. = 0.000, we conclude that the model is statistically completely significant. From the Durbin–Watson test, the model has no problem with autocorrelation.

Table 6. Model summary[a]

Model	*R*	*R-squared*	*Adj. R-squared*	*Std. error of the estimate*	*Change Statistics*					*Durbin–Watson*
					R-squared change	*F change*	*df1*	*df2*	*Sig. F change*	
1	0.689[b]	0.475	0.468	0.57532	0.475	71.220	5	394	0.000	1.596

Note: a. Dependent variable: Operational performance. b. Predictors: (Constant), Supplier management, Human resource management, Strategic planning development, Customer relationship, Organizational leadership.

According to the model below, ($\beta_0 = 0.537$; Sig. = 0.000), even if there is no application of TQM components, operational performance will be 0.537 units, and any increase in TQM will positively affect the growth of *OP*. Components such as *HRM* and *SPD* are excluded from the model since Sig. > 0.05.

Model 1

$$y = \beta_0 + \beta_1 * x_1 + \beta_2 * x_2 + \beta_3 * x_3 + \beta_4 * x_4 + \beta_5 * x_5 + \varepsilon \quad (12)$$

$$y_{(OP)} = 0.537 + 0.242 * x_{(OL)} + 0.324 * x_{(CR)} + 0.516 * x_{(SM)} \quad (13)$$

Table 7. Multiple linear regression

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta		
1	(Constant)	0.537	0.175		3.062	0.002
	Organizational leadership	0.242	0.077	0.189	3.146	0.002
	Customer relationship	0.324	0.080	0.243	4.075	0.000
	Supplier management	0.516	0.045	0.534	11.392	0.000

Note: a. Dependent variable: Operational performance.

According to the above results, we confirm the *H1*, since there are statistically significant relationships, that total quality management affects operational performance in manufacturing enterprises.

4.3. Verification of the second hypothesis (*H2*)

Before performing the Mann–Whitney U test, the homogeneity of variance was not confirmed (Levene's test: Sig. of $p < 0.05$) and the data distribution is not normal. According to the ranking of means, it turned out that the average operational performance for manufacturing companies that implement the ISO standard is higher (Mean rank = 287.19) than that of manufacturing companies that do not implement the ISO standard (Mean rank = 168.84). To identify that this difference is significant, the Mann–Whitney U test was performed.

Table 8. The mean rank of operational performance according to ISO standards

ISO		N	Mean rank	Sum of ranks
OP	Yes	90	287.19	30729.50
	No	218	168.84	49470.50
	Total	308		

The Mann–Whitney U test was used to test the difference between two independent groups, i.e., the difference in the operational performance of companies that implement the ISO standard and those that do not implement the ISO standard. According to the value $U = 6399.500$ ($Z = -9.388$ and Asymp. Sig. = 0.000), the result is significant and there is a difference in the operational performance between the manufacturing companies that implement the ISO standard and those that do not implement the ISO standard, where the performance is more manufacturing companies that implement ISO standards have good operational performance.

Table 9. Mann–Whitney U test

Test statistics[a]	
	OP
Mann–Whitney U	6399.500
Wilcoxon W	49470.500
Z	-9.388
Asymp. Sig. (2-tailed)	0.000

Note: a. Grouping variable: ISO.

According to the above results, we confirm the *H2*, since there is a significant difference in the operational performance of manufacturing enterprises according to the application of ISO standards.

5. DISCUSSION

According to the results of this research, it turned out that TQM positively affects the operational performance of manufacturing enterprises, where the same findings were brought by Zehir and Sadikoglu (2012) where, the implementation of TQM components resulted in increased operational performance. According to a study carried out in African countries, it was found that the implementation of TQM has influenced the improvement of their competitiveness and is related to their performance results (Arumugam et al., 2008).

If we specify the components of TQM, concretizing their impact on operational performance, this research brought significant positive relationships between leadership and operational performance, different findings from Qasrawi et al. (2017) and Sadikoglu and Olcay's (2014) — according to them, leadership has no significant impact on any performance measurement. As for supply chain management, the findings of this research are consistent with the findings of Baird et al. (2011) and Saleh and Sweis (2017); according to them, chain management has a positive effect on operational performance, through establishing stable and long-term relationships with suppliers as well as improving quality through their commitment.

In the study conducted by Mohammed et al. (2019), the impact of TQM on operational performance was analyzed, where through correlation and regression analysis it was found that there is a strong relationship between TQM practices and operational performance in manufacturing companies (as cited in Kurukwar, 2021), whose findings are completely compatible with the findings of this study, where through the same tests the same results have been brought. The results showed a positive relationship between TQM and operational performance as in the research of Rat et al. (2020) and Kurukwar (2021).

The findings of this research carried out in the manufacturing enterprises in Kosovo have contributed in terms of enriching the literature on the connection of TQM with operational performance. Initially, based on the implementation of TQM, five

factors were identified that enable total quality management, where according to the analysis it was found that the contributing factors of TQM in operational performance are: organizational leadership, customer relationship, supplier management, excluding the human resource management model and strategic planning development due to the high level of significance. But despite this, as a whole, the model turned out to have an impact on operational performance. In accordance with the results of this research, Sila (2020) in research carried out in 229 Turkish firms, reported that TQM has a substantial impact on increasing performance. In addition, Abbas (2020) conducted research in an economy in transition where he brought up some important arguments, that TQM has a direct positive impact on operational performance (as cited in Do et al., 2021).

The findings brought some practical implications for managers of manufacturing enterprises in Kosovo. First, this research proved the possibility of implementing TQM in operational performance through the components: organizational leadership, customer relationship, human resource management, strategic planning development, and supplier management. In this way, improving the operational performance of manufacturing companies in Kosovo will be a motivating factor for other sectors to keep the focus on strengthening TQM components, especially in economies in transition such as Kosovo, where manufacturing has an important role. Second, identifying TQM components influencing operational performance would help managers of manufacturing enterprises to use appropriate TQM components to improve operational performance.

6. CONCLUSION

According to the results of the research, we conclude that manufacturing companies that implement ISO standards, have a greater tendency to be oriented towards the inclusion of TQM elements, having better operational performance.

Descriptive results show that the orientation of manufacturing enterprises that implement the ISO standard in OL is much greater than that of manufacturing enterprises that do not implement the ISO standard. In these companies, management involvement in communication and planning of organizational goals is above average, resources are provided for quality improvement and maintenance, and quality is considered more important than production schedules. Likewise, in the customer relationship, which is the second component dealt with within TQM, the manufacturing enterprises that are implementers of ISO standards have shown a higher result. According to them, customer requirements are identified, where customer-oriented strategies are built and reviewed for further improvements, the design, development, and distribution of products according to customer requirements are enabled, and customer complaints are given importance, which are reviewed in order to maintain quality. The third component addressed within TQM is the focus on human resources, where manufacturing companies that implement ISO standards have a greater orientation in this component than companies that do not implement ISO standards. Manufacturing companies that apply ISO standards place an above-average importance on recruitment procedures, always choosing the right person for the right job, training is offered to newly selected personnel, as well as to current staff, influencing career development. The orientation to SPD of manufacturing companies implementing ISO standards is also more pronounced than in companies that are not implementing ISO standards. These enterprises aim to encourage study and planning for the improvement of its products and processes, frequent quality inspections are carried out, processes are controlled and improved. Supply management is the last component treated within the elements of TQM, where this component also had a higher application result in manufacturing companies that implement ISO standards than in those that are not implementers of ISO standards. Manufacturing enterprises that implement ISO standards consider product quality more important than price for selecting a supplier, conduct supplier inspections to evaluate products to improve quality, and always provide feedback to suppliers in order to maintain quality standards.

If we categorize the results, a difference in TQM is identified between the two categories of companies, where the highest result in manufacturing companies that implement ISO standards was shown by the focus on human resources, while the lowest result was shown by strategic planning and development. Manufacturing companies that are not implementers of ISO standards, their main orientation is on customer relationships, and less on strategic planning and development.

Based on multiple linear regression, it turned out that 47.5% of operational performance depends on TQM, where the SM component had the greatest impact on performance, followed by CR and OL. Components such as HRM and SPD are excluded from the model since Sig. > 0.05.

Also, based on Pearson's correlation analysis, we conclude that TQM and operational performance are in direct proportion to each other, given that the correlation coefficient was positive. This means that strengthening the components of TQM will affect the increase in the operational performance of manufacturing enterprises.

In addition to measuring the impact of TQM on operational performance, this paper also aimed to identify the difference in operational performance between manufacturing enterprises that are implementers of ISO standards and those that are not implementers of ISO standards. Referring to the Mann–Whitney U test, we conclude that the result is significant and there is a difference in the operational performance between the manufacturing companies that implement the ISO standard and those that do not implement the ISO standard, where the performance is more manufacturing companies that implement ISO standards have good operational performance.

Since there is a gap between the TQM components applicable to manufacturing enterprises and those components that showed greater impact on operational performance, it is recommended that the two categories of manufacturing enterprises strengthen supplier management, strategic planning

development, and organizational leadership by impacting better operational performance.

Likewise, it is recommended that manufacturing companies that are not implementers of ISO standards, start the procedures for incorporating the standards into the production process, in order to further improve their operational performance.

The positive relationship between TQM and operational performance indicates the importance of each component of TQM to improve operational performance. The components within TQM and the certification of manufacturing enterprises with ISO standards can guide managers on the strategies used in order to improve operational performance. The discovery of barriers to TQM can be used for firms that are in the planning or early stages of TQM practices to improve awareness and understanding of its principles. They can also be used for firms that have already been using TQM for some time to assess progress and improve their organizations.

Given that in order to measure the impact of TQM on operational performance we have based only on these components: organizational leadership, human resource management, customer relationship, strategic planning development, and supplier management, it has influenced that the results are limited only to these five components, not including other parameters. Therefore, future researchers who will research a similar issue are recommended to include in their study other TQM factors such as customer focus, information analysis, knowledge and process management, training, strategic quality planning, strategic planning management, quality information, and analysis. The inclusion of more factors, i.e., the creation of a more inclusive framework, would enrich the study and enable the easier identification of influencing factors in operational performance. Even more considering that in the current findings, the factors of human resource management and strategic planning development were removed from the model due to the elevated significance value.

REFERENCES

1. Abbas, J. (2020). Impact of total quality management on corporate green performance through the mediating role of corporate social responsibility. *Journal of Cleaner Production, 242,* Article 118458. https://doi.org/10.1016/j.jclepro.2019.118458
2. Adem, M. K., & Virdi, S. S. (2021). The effect of TQM practices on operational performance: An empirical analysis of ISO 9001:2008 certified manufacturing organizations in Ethiopia. *The TQM Journal, 33*(2), 407–440. https://doi.org/10.1108/TQM-03-2019-0076
3. Agus, A., & Sagir, R. M. (2001). The structural relationships between total quality management, competitive advantage and bottom line financial performance: An empirical study of Malaysian manufacturing companies. *Total Quality Management, 12*(7–8), 1018–1024. https://www.sciencegate.app/document/10.1080/09544120120096188
4. Ahire, S. L., & Dreyfus, P. (2000). The impact of design management and process management on quality: An empirical investigation. *Journal of Operations Management, 18*(5), 549–575. https://doi.org/10.1016/S0272-6963(00)00029-2
5. Ahmad, M. A. (2022). Impact of total quality management on the performance of organisations in the Nigerian service sector. *World Journal of Management and Business Studies, 2*(3), 489–502. https://www.wjomabs.com/wp-content/uploads/2022/05/IMPACT-OF-TOTAL-QUALITY-MANAGEMENT-ON-THE-PERFORMANCE-OF-ORGANISATIONS-IN-THE-NIGERIAN-SERVICE-SECTOR.pdf
6. Al-Dhaafri, H. S., Al-Swidi, A. K., & Yusoff, R. Z. (2016). The mediating role of total quality management between the entrepreneurial orientation and the organizational performance. *The TQM Journal, 28*(1), 89–111. https://doi.org/10.1108/TQM-03-2014-0033
7. Anil, A. P., & Satish, K. P. (2019). TQM practices and its performance effects — An integrated model. *International Journal of Quality & Reliability Management, 36*(8), 1318–1344. https://doi.org/10.1108/IJQRM-10-2018-0266
8. Aquilani, B., Silvestri, C., Ruggieri, A., & Gatti, C. (2017). A systematic literature review on total quality management critical success factors and the identification of new avenues of research. *The TQM Journal, 29*(1), 184–213. https://doi.org/10.1108/TQM-01-2016-0003
9. Arumugam, V., Ooi, K.-B., & Fong, T.-C. (2008). TQM practices and quality management performance: An investigation of their relationship using data from ISO 9001:2000 firms in Malaysia. *The TQM Journal, 20*(6), 636–650. https://doi.org/10.1108/17542730810909383
10. Baird, K., Hu, K. J., & Reeve, R. (2011). The relationships between organizational culture, total quality management practices and operational performance. *International Journal of Operations & Production Management, 31*(7), 789–814. https://doi.org/10.1108/01443571111144850
11. Bajaj, S., Garg, R., & Sethi, M. (2018). Total quality management: A critical literature review using Pareto analysis. *International Journal of Productivity and Performance Management, 67*(1), 128–154. https://doi.org/10.1108/IJPPM-07-2016-0146
12. Curkovic, S., Melnyk, S., Calantone, R., & Handfield, R. (2010). Validating the Malcolm Baldrige National Quality Award Framework through structural equation modelling. *International Journal of Production Research, 38*(4), 765–791. https://doi.org/10.1080/002075400189149
13. Do, M.-H., Huang, Y.-F., & Do, T.-N. (2021). The effect of total quality management-enabling factors on corporate social responsibility and business performance: Evidence from Vietnamese coffee firms. *Benchmarking: An International Journal, 28*(4), 1296–1318. https://doi.org/10.1108/BIJ-09-2020-0469
14. Ebrahimi, Z. F., & Rad, R. H. (2017). The relationship between TQM practices and role stressors. *International Journal of Management Practice, 10*(3), 295–325. https://doi.org/10.1504/IJMP.2017.084934
15. Faeq, D., Garanti, Z., & Sadq, Z. (2021). The effect of total quality management on organizational performance: Empirical evidence from the construction sector in Sulaymaniyah City, Kurdistan Region — Iraq. *UKH Journal of Social Sciences, 5*(1), 29–41. https://doi.org/10.25079/ukhjss.v5n1y2021.pp29-41
16. Flynn, B. B., Schroeder, R. G., & Sakakibara, S. (1995). The impact of quality management practices on performance and competitive advantage. *Decision Sciences, 26*(5), 659–691. https://doi.org/10.1111/j.1540-5915.1995.tb01445.x

17. Fuentes, M. F., Montes, J. L., & Fernandez, L. M. (2006). Total quality management, strategic orientation and organizational performance: The case of Spanish companies. *Total Quality Management & Business Excellence, 17*(3), 303–323. https://doi.org/10.1080/14783360500451358
18. Herzallah, A. M., Gutierrez-Gutierrez, L., & Rosas, J. F. (2014). Total quality management practices, competitive strategies and financial performance: The case of the Palestinian industrial SMEs. *Total Quality Management & Business Excellence, 25*(5–6), 635–649. https://doi.org/10.1080/14783363.2013.824714
19. Jimoh, R., Oyewobi, L., Isa, R., & Waziri, I. (2019). Total quality management practices and organizational performance: The mediating roles of strategies for continuous improvement. *International Journal of Construction Management, 19*(2), 162–177. https://doi.org/10.1080/15623599.2017.1411456
20. Kaynak, H. (2003). The relationship between total quality management practices and their effects on firm performance. *Journal of Operations Management, 21*(4), 405–435. https://doi.org/10.1016/S0272-6963(03)00004-4
21. Kaynak, H., & Hartley, J. L. (2008). A replication and extension of quality management into the supply chain. *Journal of Operations Management, 26*(4), 468–489. https://doi.org/10.1016/j.jom.2007.06.002
22. Keinan, A. S., & Karugu, J. (2018). Total quality management practices and performance of manufacturing firms in Kenya: Case of Bamburi Cement Limited. *International Journal of Human Resource Management, 3*(1), 81–99. https://www.iajournals.org/articles/iajhrba_v3_i1_81_99.pdf
23. Koh, T. Y., & Low, S. P. (2010). Empiricist framework for TQM implementation in construction companies. *Journal of Management in Engineering, 26*(3), 133–143. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000014
24. Kosovo Agency of Statistics (KAS). (2021). *Series 3: Economic statistics. Statistical repertory on economic enterprises in Kosovo Q1 2021*. https://ask.rks-gov.net/media/6297/rep-stat-tm12021.pdf
25. Kurukwar, A. D. (2021). Effect of TQM practices on operational performance and operational efficiency in manufacturing sector. *Journal of the Asiatic Society of Mumbai, 44*(6), 134–141. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4001185
26. Lai, K.-H. (2003). Market orientation in quality-oriented organizations and its impact on their performance. *International Journal of Production Economics, 84*(1), 17–34. https://doi.org/10.1016/S0925-5273(02)00382-1
27. Lin, C., Chow, W. S., Madu, C. N., Kuei, C.-H., & Yu, P. P. (2005). A structural equation model of supply chain quality management and organizational performance. *International Journal of Production Economics, 96*(3), 355–365. https://doi.org/10.1016/j.ijpe.2004.05.009
28. Martinez-Costa, M., & Martinez-Lorente, A. R. (2008). Does quality management foster or hinder innovation? An empirical study of Spanish companies. *Total Quality Management & Business Excellence, 19*(3), 209–221. https://doi.org/10.1080/14783360701600639
29. Mehmood, S., Qadeer, F., & Ahmad, A. (2014). Relationship between TQM dimensions and organizational performance. *Pakistan Journal of Commerce and Social Sciences, 8*(3), 662–679. http://hdl.handle.net/10419/188162
30. Mohammed, S., Brahma, G. J., & Aderaw, S. (2019). Impact of total quality management (TQM) on operational performance of Ethiopian pharmaceutical manufacturing plants. *International Journal of Engineering and Management Research, 9*(4), 78–86. https://doi.org/10.31033/ijemr.9.4.13
31. Palo, S., & Padhi, N. (2005). How HR professionals drive TQM: A case study in an Indian organization. *The TQM Magazine, 17*(5), 467–485. https://doi.org/10.1108/09544780510615960
32. Parast, M. M., & Adams, S. G. (2012). Corporate social responsibility, benchmarking, and organizational performance in the petroleum industry: A quality management perspective. *International Journal of Production Economics, 139*(2), 447–458. https://doi.org/10.1016/j.ijpe.2011.11.033
33. Phan, A. C., Abdallah, A. B., & Matsui, Y. (2011). Quality management practices and competitive performance: Empirical evidence from Japanese manufacturing companies. *International Journal of Production Economics, 133*(2), 518–529. https://doi.org/10.1016/j.ijpe.2011.01.024
34. Pradhan, B. B., Shrestha, R. M., Hoa, N. T., & Matsuoka, Y. (2017). Carbon prices and greenhouse gases abatement from agriculture, forestry and land use in Nepal. *Global Environmental Change, 43,* 26–36. https://doi.org/10.1016/j.gloenvcha.2017.01.005
35. Prajogo, D. I., & Sohal, A. S. (2006). The relationship between organization strategy, total quality management (TQM), and organization performance — The mediating role of TQM. *European Journal of Operational Research, 168*(1), 35–50. https://doi.org/10.1016/j.ejor.2004.03.033
36. Qasrawi, B. T., Almahamid, S. M., & Qasrawi, S. T. (2017). The impact of TQM practices and KM processes on organisational performance: An empirical investigation. *International Journal of Quality & Reliability Management, 34*(7), 1034–1055. https://doi.org/10.1108/IJQRM-11-2015-0160
37. Rat, C., Toadere, C., & Gal, A. (2020). The impact of total quality management on organizational performance in SMEs. In *14th International Management Conference "Managing Sustainable Organizations"* (pp. 664–676). Editura ASE. https://doi.org/10.24818/IMC/2020/03.19
38. Reza, M. H. (2020). Relationship between human resource management and total quality management. *International Journal of Research in Human Resource Management, 2*(1), 32–37. https://www.humanresourcejournal.com/article/view/36/1-2-23
39. Sadikoglu, E., & Olcay, H. (2014). The effects of total quality management practices on performance and the reasons of and the barriers to TQM practices in Turkey. *Advances in Decidion Sciences, 2014,* Article 537605. https://doi.org/10.1155/2014/537605
40. Sadikoglu, E., & Zehir, C. (2010). Investigating the effects of innovation and employee performance on the relationship between total quality management practices and firm performance: An empirical study of Turkish firms. *International Journal of Production Economics, 127*(1), 13–26. https://doi.org/10.1016/j.ijpe.2010.02.013
41. Sahoo, S., & Yadav, S. (2018). Total quality management in Indian manufacturing SMEs. *Procedia Manifacturing, 21,* 541–548. https://doi.org/10.1016/j.promfg.2018.02.155
42. Saleh, R. A., & Sweis, R. J. (2017). The relationships between soft/hard total quality management practices and operational performance in Jordanian manufacturing organisations. *International Journal of Management and Decision Making, 10*(4), 345–377. https://doi.org/10.1504/IJMCP.2017.087261
43. Senarath, B., Gunarathne, G., & Fernando, T. (2020). Impact of total quality management on operational performance. *Peradeniya Management Review, 2*(1), 98–132. https://doi.org/10.4038/pmr.v2i1.36

44. Sila, I. (2007). Examining the effects of contextual factors on TQM and performance through the lens of organizational theories: An empirical study. *Journal of Operations Management, 25*(1), 83–109. https://doi.org/10.1016/j.jom.2006.02.003
45. Sila, I. (2020). Investigating changes in TQM's effects on corporate social performance and financial performance over time. *Total Quality Management & Business Excellence, 31*(1–2), 210–229. https://doi.org/10.1080/14783363.2018.1458609
46. Singh, V., Kumar, A., & Singh, T. (2018). Impact of TQM on organisational performance: The case of Indian manufacturing and service industry. *Operations Research Perspectives, 5,* 199–217. https://doi.org/10.1016/j.orp.2018.07.004
47. Sweis, R. J., Saleh, R. A., Al-Etayyem, R. H., Qasrawi, B. T., & Al Mahmoud, A. M. (2016). Total quality management practices and organisational performance in Jordanian courier services. *International Journal of Productivity and Quality Management, 19*(2), 258–276. https://doi.org/10.1504/IJPQM.2016.078889
48. Talib, F. (2013). An overview of total quality management: Understanding the fundamentals in service organization. *International Journal of Advanced Quality Management, 1*(1), 1-20. https://ssrn.com/abstract=2725107
49. Terziovski, M., & Samson, D. (1999). The link between total quality management practice and organisational performance. *International Journal of Quality & Reliability Management, 16*(3), 226–237. https://doi.org/10.1108/02656719910223728
50. Trang, T. V., & Do, Q. H. (2020). Critical success factors of TQM implementation in Vietnamese supporting industries. *The Journal of Asian Finance, Economics and Business, 7*(7), 391–401. https://doi.org/10.13106/jafeb.2020.vol7.no7.391
51. Truong, H., Sampaio, P., do Sameiro Carvalho, M., Fernandes, A. C., & An, D. T. B. (2014). The role of quality management practices in operational performance — An empirical study in a transitional economy. In *Proceedings of the 1st International Conference on Quality Engineering and Management* (pp. 717–733). http://blue.dps.uminho.pt/icqem/2014/abstracts/E2.1.pdf
52. Tsou, Y.-H., Huang, Y.-F., & Liu, S.-C. (2021). The effects of total quality management and corporate social responsibility on firm performance: A future research agenda. *The Journal of Asian Finance, Economics and Business, 8*(4), 277–287. https://www.kci.go.kr/kciportal/ci/sereArticleSearch/ciSereArtiView.kci?sereArticleSearchBean.artiId=ART002712419
53. Vasantharayalu, & Pal, S. (2016). An empirical study of total quality management (TQM) practices on operational performance of Indian manufacturing and service firms. *International Journal of Management, 7*(6), 192–202. https://iaeme.com/Home/article_id/IJM_07_06_022
54. Wagara, W. O. (2018). *Effect of total quality management practices on operational performance of food manufacturing firms in Nairobi County, Kenya* [Master's thesis, Egerton University]. Egerton University Institutional Repository. http://ir-library.egerton.ac.ke/jspui/bitstream/123456789/1359/1/Effect%20of%20total%20quality%20management%20practices%20on%20operational%20performance%20of%20food%20manufacturing%20firms%20in%20Nairobi%20County%2C%20Kenya.pdf
55. Zakuan, N. M., Yusof, S. M., Laosirihongthong, T., & Shaharoun, A. M. (2010). Proposed relationship of TQM and organisational performance using structured equation modelling. *Total Quality Management & Business Excellence, 21*(2), 185–203. https://doi.org/10.1080/14783360903550020
56. Zehir, C., & Sadikoglu, E. (2012). Relationships among total quality management practices: An empirical study in Turkish industry. *International Journal of Performability Engineering, 8*(6), 667–678. http://www.ijpe-online.com/EN/Y2012/V8/I6/667
57. Zu, X., Robbins, T. L., & Fredendall, L. D. (2010). Mapping the critical links between organizational culture and TQM/Six Sigma practices. *International Journal of Production Economics, 123*(1), 86–106. https://doi.org/10.1016/j.ijpe.2009.07.009