QUALITY COST REPORTING AS A DETERMINANT OF QUALITY COSTING MATURITY

Rogošić, Andrijana

International Journal for Quality Research 15(4) 1233–1244
ISSN 1800-6450

Andrijana Rogošić[1]

Article info:
Received 08.06.2020
Accepted 10.12.2020

UDC – 005.6
DOI – 10.24874/IJQR15.04-13

QUALITY COST REPORTING AS A DETERMINANT OF QUALITY COSTING MATURITY

Abstract: *Quality Costing is one of contemporary accounting methods that can provide the most relevant information for the decision-making in quality management. This strategic management accounting method brings many benefits yet many companies hesitate to implement it. Those quality-oriented companies that use Quality Costing often do not deploy it properly. Some companies are at the first stage of collecting and measuring quality costs when the problem with cost identification occurs. During the time and depending on the knowledge of quality managers and accountants the quality costs become better followed-up. Thus, the scope of quality cost recording and the usage level of Quality Costing determines its maturity level. The aim of this study is to investigate the effect of the frequency of quality cost reporting on the level of Quality Costing maturity. Among the observed companies only 44.3% prepare quality cost reports. Findings indicate that if quality managers use accounting information more often, the more developed (matured) Quality Costing becomes.*

Keywords: *Quality costing; Quality management; Strategic management accounting; Quality reporting.*

1. Introduction

Companies have recognized the importance of quality management which has multidimensional aspects in theory but also in practice. Quality has become an absolute standard in business management in order to survive in a competitive market. Therefore, more and more companies are introducing a quality management system into their business practice. According to the International Organization for Standardization (ISO) there are over one million companies and organizations in over 170 countries certified to the ISO 9001 (ISO: 2020). The ISO 9001 is the most successful and widespread standard by the ISO in terms of numbers and geographical diffusion all over the world (Sampaio, Saraiva and Gomes, 2014). This standard is often considered as the first step in achieving business excellence since it has well-defined principles. Quality management principles according to ISO 9001:2015 are: 1) Customer focus, (2) Leadership, (3) Engagement of people, (4) Process approach, (5) Improvement, (6) Evidence-based decision-making, and (7) Relationship management. These quality management principles are revised. According to Anttila and Jussila (2017), the new ones differ slightly since the previous principles aimed at improved performance, and these new principles emphasise performance improvement and organisational excellence through the means of quality management.

[1] Corresponding author: Andrijana Rogošić
Email: arogosic@efst.hr

Evidence-based decision-making (previously known as factual approach to decision making) refers to the analysis and evaluation of data and relevant information that are more likely to produce desired results of quality management since the facts lead to a greater objectivity. Since accounting system provides these kind of data, implementation of Quality Costing (an accounting method that supports quality management) could enable more objective decision-making. Quality Costing is a strategic management accounting method that captures and measures quality-related costs providing quality reports with valuable information for quality improvement as well as quality management. These reports are read by quality managers but also all other managers in different positions of management hierarchy. In order to become relevant source of data in quality management Quality Costing should be properly implemented. Therefore, the scope of quality cost recording and the usage level of Quality Costing determines its maturity level. The more Quality Costing, as an accounting subsystem, is developed the more beneficial it is to its users (all kind of managers).

When the quality costs are properly captured and recorded, reporting is the next step. Measuring and reporting the cost of quality (CoQ) should be considered an important matter for achieving organisational performance improvement (Hwang, and Aspinwall, 1996; Lari and Asllani, 2013).

This study aims to determine if the frequency of quality cost reporting affects the level of Quality Costing maturity. More frequent quality cost reporting indicate that quality managers find accounting information quite useful. By using accounting information frequently, quality managers could induce improvement of Quality Costing that may result in higher level of maturity.

The reminder of the paper is structured as follows. The next section consists of the literature review on quality management system maturity and Quality Costing as an accounting method used in quality management. Based on the literature review the main hypothesis and the auxiliary hypothesis were formulated and elaborated in the third section. The research methodology is explained in the fourth section followed by the results. The empirical research results are discussed in the fifth section. Finally, concluding remarks are presented in the fifth section.

2. Literature review

2.1 Quality management system maturity

Being certified by ISO 9001 or applying some other quality management framework is not enough to achieve the full potential of the established quality management system. Kundid Novokmet and Rogošić (2017) revealed that quality management system maturity is a driver of beneficial long-term financial performance. Quality management system maturity refers to the depth of the organisation's experience with quality management. In order to determine the level of quality management implementation several authors presented their categorisations. One of those classifications (often cited among many authors) is according to Dale and Lascelles (1997) who suggested six levels of quality management maturity as follows:

Level 1: Uncommitted. Companies in this level are often beginners on quality management path and they merely hold an ISO 9001 certificate. Their management do not find quality as their priority Quality improvement is seen as an external requirement entailing an added cost.

Level 2: Drifters. Here belong all those companies that are more committed to the ISO 9000 standard, have started a quality improvement programme and receive information on Total Quality Management (TQM). These organisations are termed "the drifters" because they drift, without a clearly defined baseline, from one programme to another in a stop-start fashion, with concepts,

ideas and initiatives being reborn and relaunched under different guises.

Level 3: Tool-pushers. Organisations in this level are more experienced regarding quality improvement than the previous ones, and usually deploy a number of quality techniques. These companies may have started to use the European Foundation for Quality Management (EFQM) model to direct their improvement process, but they are not entirely committed to quality management.

Level 4: Improvers. Companies that have been developing their quality improvement process for many years resulting with the important progress are included in the fourth level. They understand that total quality implies a long-term cultural change, and recognise the importance of continued improvement. Therefore, they implement an advanced planning scheme, setting the objectives and actions at all levels, and are aware of the importance of employee involvement through work teams and other recognition instruments (training, information, incentives, etc).

Level 5: Award winners. This does not imply that companies have won quality awards, but that a level of maturity has been attained concerning quality management, for they have developed the culture, values, trust, capabilities, employee involvement and other elements required in order to win awards. Thus, these organisations see quality management as a way to manage their business to their internal and external customers' satisfaction and meeting and exceeding customer expectations, with all employees participating in the improvement.

Level 6: World class. This is the highest level of quality management maturity. The defining feature of this level is the total integration of quality improvement within the firm's business strategy, to the customers' delight. These companies are continuously searching for ways to increase customer satisfaction by anticipating their needs and expectations.

Claver and Tari (2003) pointed out that these levels do not necessarily indicate the stages a firm must go through in the development of quality management, for it is normal that firms should possess characteristics belonging to different levels.

The sophistication of the quality management systems is seen through Crosby's Maturity Matrix which identifies the stages of sophistication from: (1) uncertainty, with no organised activities; (2) awakening; (3) enlightenment; (4) wisdom; and (5) certainty, with quality improvement as a normal and continued activity and with a good cost of quality quantification system in which prevention is the main concern (Van der Wiele et al., 1996).

According to Sower, Quarles and Broussard (2007) the most widely accepted maturity model is the one promoted by American Society for Quality (ANSI/ISO/ASQ Q9004-2000 standard) which classifies quality management systems based on performance maturity levels. The first level organisations have no formal approach to quality management. On the second level are companies with problem-based or corrective based systematic approach with minimum data or improvement results available. Stable formal system approach is the main feature of the companies in the level three, which means that they are to the early stage of systematic improvements. Continual improvement is emphasized in organisations belonging to the fourth level while the highest level is reserved for the best-in-class performance companies with strongly integrated improvement processes.

Patti, Hartman and Fok (2001) explored the depth of quality management implementation in US companies and related it with the quality management maturity. Their findings indicated that the increase of quality management maturity is positively related to the perception of more dynamic and collegial organisational culture, greater employee empowerment and better organisational performance. Hendricks and Singhal (2001)

stated that investing to achieve a broader, deeper, and more mature TQM implementation (possibly by targeting an independent TQM award) should also result in higher benefits from TQM implementation. Therefore, insisting on the depth of implementation of quality management principles should lead to the increased performances.

2.2 Quality Costing – an accounting method for quality management

The quality cost is one of the most essential segment on the development of a quality management system (Dahlgaard, Kristensen and Kanji, 1992). In order to improve quality an organisation must take into account the quality-related costs since the objective of continual improvement is not only to meet customer requirements, but also to do it at the lowest cost (Kanji, 1990). Quality costs are often described as the monetary expression of the efforts undertaken by the organization to ensure the intended levels of quality (Pires, Novas, Saraiva and Coelho, 2017). Quality costs are in relation with productivity so it is important to follow up these costs. Although various accounting methods can be used in quality management such as Activity-based Costing and Balanced Scorecard, the most commonly implemented is Quality Costing.

Quality Costing is a strategic management accounting method developed for quality management systems in order to measure, record and report the quality-related costs. Quality Costing can be also considered as a measurement system that translates quality-related activities into a monetary language in order to be used by managers (Srivastava, 2008). The follow up of the quality costs, often classified into two main groups: costs of conformance (prevention and appraisal costs) and costs on non-conformance (internal and external failure costs), is the main task of Quality Costing. Albright & Roth (1992) recognised five categories of quality costs which can be defined as:

- Prevention Costs: The costs of all activities specifically designed to prevent poor quality in products or services.
- Appraisal Costs: The cost associated to assure conformance to quality and performance standards.
- Internal Failure Costs: All costs resulting from products or services not conforming to requirements which occur before product or the service is delivered to customer.
- External Failure Costs: Cost incurred when customer finds failure.
- Opportunity or Hidden Costs

This categorisation is an extent of the popular prevention-appraisal-failure (PAF) model. Unlike all other quality costs, Hidden Costs cannot be tracked in the accounting system. Therefore, the costs and losses that are not recorded in the accounting system cannot be controlled.

Earlier studies suggested that optimal total cost of quality should be between 2 to 4 percent of sales revenue but more recent research (Ramdeen, Santos and Chatfield, 2007) revealed that according to their empirical results the range of total cost of quality is between 12 and 16 percent of sales revenue. Researchers reported mostly similar empirical results regarding the implementation of Quality Costing. Tye, Halim and Ramayah (2011) investigated manufacturing firms in Malaysia and reported that from the 63 responses received, 82.5% have implemented a cost of quality system, and the other 17.5% of respondents had not implemented a cost of quality system at all. Of those 52 respondents who had implemented a cost of quality system, 44.2% of them tracked all four categories of cost of quality (prevention, appraisal, and internal and external failure costs). According to the findings of Šatanová et al. (2015), who conducted a survey in Slovakia, 67% of respondents have monitored the external failure costs in their organizations while 39%

monitored internal failure costs. On the other hand, prevention costs were calculated in 30% of observed Slovak small and medium enterprises while only 26% of companies were monitoring appraisal costs. Tarí and Sabater (2004) noticed that of cost of quality methodology or its adoption is not wide spread comparing to some of the other quality engineering tools and techniques. Pursglove and Dale (1995) noted that the main problem related to the quality costs is the low level of applicability in practice regardless of the relevance given in theory.

Quality Costing brings many benefits such as: evaluating quality programme success and revealing to the strengths and weaknesses of a quality system, alerting about the potential impact of poor quality on the financial performance, helping to reduce reworks and thus reduces claims, and motivating employees to work towards pursuing quality goals (Jafari and Rodchua, 2014). Priede (2012) argued profitability and strategic benefits of measuring costs of quality.

Critical issues for effective Quality Costing implementations are: to categorize various quality costs and make sure that all costs are captured; to collect and analyse data and quantify all quality costs accurately; to identify areas of poor performance on basis of the data analysis; to allocate responsibility for the overall cost (Mantri and Jaju, 2017). The research of Schiffauerova and Thomson (2006) has also discovered that the companies apply different cost of quality models and use variety of the selected bases for quality cost calculation. They noticed that companies most frequently use a calculation of quality costs as a percentage of total manufacturing costs and percentage of operating costs. These authors pointed out that quality cost recording is adjusted according to every company's specific needs so the different elements are included while irrelevant are left out of calculations.

To sum up, quality cost system has a potential to become an excellent tool in overall management of a business (Moen, 1998). A research findings suggested that investment in prevention activities led to a reduction in failure costs (both internal and external) and appraisal costs. Hence, the most profitable investment within the PAF model is on prevention activities because they influence the reduction in failure costs and prevention costs (Barber, Graves, Hall, Sheath and Tomkins, 2000)

Following Crosby's Maturity Matrix, Sansalvador and Brotons (2015) analysed the evolution of quality costs in relation to the development of quality management. It is expected that companies at the first stage of quality management system maturity make no quality cost estimations, while as they strengthen quality functions and advances along the Maturity Grid stages, they perfect the quality cost quantification system, and so the values reported become ever nearer to the real.

As explained above, Quality Costing has many purposes since the quality cost reporting provides a large scope of quality-related accounting information very valuable for decision-making. According to Vaxevanidis, Petropoulos, Avakumovic and Mourlas (2009) quality cost reporting is beneficial at both the corporate and operational level. At the corporate level it gets management's attention and provides a benchmark against which financial improvement can be measured over time. At the operational level it helps to identify, prioritize, and select projects; provide financial benefits of process improvement and monitor project improvements.

3. Hypotheses

Maturity of quality management system differs among quality-oriented companies (Dale and Smith, 1997). Some companies remain uncommitted but if quality management is taken seriously, their level of quality management system maturity rises with time. Many authors studied the role of Quality Costing in achieving better quality of

processes and output. Glogovac and Filipovic (2018) found out that the level of companies' quality management system maturity is shown to be significantly related to the organisational level of managing quality costs. They defined quality cost management levels as follows:

- a low level of management means that the observed costs are not identified, or are identified but not analysed,
- a medium level implies that the observed costs are identified and analysed, but not always adequately, and
- a high level of cost management means that they are properly identified and analysed, and used for the purpose of continuous improvements.

Decision making is an essential part of every managerial activity and it is done better if it leans on relevant information. Accounting information generated from Quality Costing should form an important share in managerial decision making regarding quality improvement. Those managers that rely on accounting information in their decision making processes tend to use more frequently various accounting reports. Thus, it is reasonable to assume that:

H1: Frequency of quality reporting determines the level of Quality Costing maturity.

The literature review of Kumar, Shah and Fitzroy (1998) has shown that quality costs are used as an instrument for permanent control in larger enterprises (from about 500 employees upward). On the other hand, Desai (2008) argued that quality costing can prove to be one of the simplest and most effective techniques for improving quality whilst at the same time cutting costs. It can also be one of the most effective performance measures for SMEs as well as for larger organisations. Since the recent studies indicate that even small and medium companies have implemented Quality Costing it can be assumed that:

H1.1: Company size is irrelevant for Quality Costing maturity and quality reporting.

4. Methodology and results

The design of the measurement instrument was based on the literature review. The items were adopted from similar survey (Alglawe, Schiffauerova and Kuzgunkaya, 2019) and adjusted to the ISO 9001 framework. The five points Likert-type scale was used to determine the level of implementation of quality management practices, Quality Costing and quality reporting where 1 was "insufficient" and 5 was "excellent".

Since many companies in Croatia use ISO 9001 as a framework for quality management much more than TQM or other quality-related programmes and initiatives (Bakotić and Rogošić, 2017), the target population of this study was the ISO 9001 certified companies. The link to the online survey using Google Docs was sent to e-mail addresses of 945 quality-oriented companies in Croatia where it was indicated that the targeted informants were quality managers. The questionnaire was filled out by 106 quality managers during July 2019.

Research data analysis was performed in January 2020 using Statistical Package for the Social Sciences (17.0). Descriptive statistic was used for explaining the features of quality management and Quality Costing as well as quality reporting in the observed companies. The Kruskal-Wallis test was performed to validate the main and the auxiliary hypothesis.

Most of the observed companies used to have ISO 9001 but nowadays the number of ISO 9001 certified companies in Croatia is declining (Figure 1 and Figure 2).

Most of the observed companies were ISO 9001 certified sometime in the past (Figure 1). All the observed large-sized companies remained certified but 3 among 32 medium

companies cancelled or lost their ISO 9001 certification during the time. The decline in certification is more evident in small companies since 38 out of 40 (95%) observed companies had this certificate but in 2019 only 29 (72.5%) still hold it. According to the results (Figure 2) most of quality-oriented micro companies are without the ISO 9001 certification in 2019. This finding indicates that companies in Croatia are still using ISO 9001 standard as a framework in their quality management although some of them are losing interest in the certification.

Figure 1. Companies that were ISO 9001 certified in the past

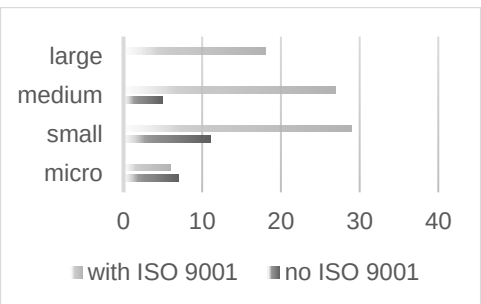

Figure 2. ISO 9001 certified companies in 2019

Quality managers were asked to evaluate the maturity of Quality Costing system they use on the five-point Likert-type scale and only 49.1% assessed the use of this accounting method. As expected, many quality managers in Croatia have not that opportunity to use the accounting information generated from Quality Costing. The proportion of companies that report on quality costs in Croatia is even lesser (44.3%). The lowest level of Quality Costing maturity means that the quality costs are not identified, while the highest level means that these costs are identified, analysed, and properly used for the purpose of improvement. The lowest level also indicates that the company manages quality costs only in the basic process of the production/service provision, while the highest level suggests that the company manages these costs in all, or almost all processes. The mean value of the assessed maturity level of Quality Costing is 3.38 so it can be concluded that the usage of this accounting method form the perspective of quality managers is rather mediocre. Companies included in this empirical research were in different industries so the variation in implementation methodologies is possible.

In order to achieve a higher level of Quality Costing companies need to appreciate accounting as well as accountants and bear in mind that strategic management accounting can greatly help managers to make better decisions. When used properly, Quality Costing can become a valuable tool in quality management. The frequency of quality cost reporting (as a final output of Quality Costing) is presented in table 1.

According to the results presented in the Table 1, most of the companies create their quality cost reports quarterly (32.6%). Many quality-oriented companies prepare only one quality cost report per year (26.1%). On a monthly level, 23.9% companies prepare a quality cost report while 13% do it two times a year (semi-annually). Only two respondents (4.3%) acknowledged that the company they work for provides quality cost report on weekly basis. The mean value of quality cost reporting is 2.70 which means that these reports are rarely prepared (few times a year) in general.

Table 1. The frequency of quality cost reporting regarding the company size

		Size of company				Total
		micro	small	medium	large	
QC reporting	1 (annually)	2	5	3	2	12
	2 (semi-annually)	0	1	4	1	6
	3 (quarterly)	2	7	3	3	15
	4 (monthly)	1	3	4	3	11
	5 (weekly)	0	0	1	1	2
Total		5	16	15	10	46

The maturity of Quality Costing and frequency of quality cost reporting are not influenced by company size according to the results of the non-parametrical statistical test (Table 2). The results shown in Table 2 indicate that there is not statistically significant connection between company size and the level of Quality Costing maturity nor quality cost reporting. Whether the company is micro-sized or large-sized becomes irrelevant when Quality Costing is concerned. Therefore, the auxiliary hypothesis is accepted.

Table 2. Results of Kruskal Wallis test – company size on Quality Costing maturity and quality cost reporting

Test Statistics[a,b]		
	QC maturity	QC reporting
Chi-Square	1,890	1,247
df	3	3
Asymp. Sig.	,596	,742
a. Kruskal Wallis Test		
b. Grouping Variable: size		

In order to test the main hypothesis, Kruskal Wallis test was performed using Quality Costing as an independent (grouping) variable (Table 3 and Table 4).

The main hypothesis is accepted. It can be confirmed that that the level of Quality Costing maturity differs based on the frequency of quality cost reporting (sig. = 0.026). This finding can be interpreted in a way that quality managers who request quality-related accounting information more often (and use it wisely for quality improvement) also have a positive impact on better deployment of Quality Costing.

Table 3. Ranks of Quality Costing maturity regarding the frequency reporting

	QC reporting	N	Mean Rank
QC maturity	1	11	19,55
	2	6	33,00
	3	15	19,47
	4	12	24,17
	5	2	43,00
	Total	46	

Table 4. Testing the hypothesis

Test Statistics[a,b]	
	QC maturity
Chi-Square	11,033
df	4
Asymp. Sig.	,026
a. Kruskal Wallis Test	
b. Grouping Variable: QC reporting	

Since Quality Costing brings many benefits to those who understand it and use it properly, it is clear that frequent quality cost reporting enhances the improvement of Quality Costing. Consequently, Quality Costing becomes even better and more useful. On its

highest level of maturity, Quality Costing provides wide scope of quality-related information that becomes a great compass for quality improvement of processes and outputs.

5. Discussion

Quality-oriented companies in Croatia use ISO 9001 standard as a framework for quality management. When asked if the company they work for ever had the ISO 9001 certificate, the majority of quality managers (92.5 %) responded affirmatively. Then again, 83 (78.3%) respondents answered affirmatively when asked do they hold the ISO 9001 certificate at the moment. This decline in the number of certified organisations is in line with research findings of Mastrogiacomo, Carrozza, Maisano and Franceschini (2020). The loss of interest in ISO 9001 certification is detected in some EU countries. They explained this phenomenon and stated that the trend of constant growth can be noticed (for several EU counties including Croatia) over the period 1993–2017, eventually reaching a saturation level during the last five to eight years.

Many observed companies (50.9%) have not adopted Quality Costing as a method for systematic follow up of quality costs. This finding is similar to the results of a prior study where authors (Chopra and Garg, 2012) noticed that there is a significant number of quality-oriented companies that still do not have implemented Quality Costing even though it has many benefits. Quality cost reports are therefore not often prepared. Those reports provide valuable information to quality managers and should be used more frequently in order to improve quality. Quality-related accounting information are relevant in decision-making only to those who understand it. Thus, quality-oriented companies should create awareness about benefits of Quality Costing and give proper knowledge and training to the employees and managers so this method could be used properly.

This paper sheds light on a Quality Costing maturity. The effect of company size was excluded since it has not statistically significant impact on level of Quality costing maturity nor quality cost reporting. This means that Quality Costing is not implemented only in large-sized companies. Nowadays we can find it even in micro companies. This accounting method can be developed and quite useful to quality managers if quality costs are properly identified, recorded and summarized in quality reports. Thus, frequency of quality cost reporting implies the level of the use of accounting information in quality management. More frequent use of quality cost information leads to further development of Quality Costing.

6. Concluding remarks

Multidimensional aspects of quality management have intrigued academics as well as experts. On their path to improve quality of processes and outputs organisations use various instruments and one of these is Quality Costing. Quality Costing is a strategic management accounting method specially designed to support quality management. Although scholars have stressed out many benefits that application of this accounting method brings, many quality-oriented companies still do not use it. Reasons for this situation are many (lack of awareness but also lack of accounting knowledge). On the other hand, companies with implemented Quality Costing use it differently so the full potential of this method remains sometimes unachieved. Measuring quality costs and providing quality reports should be according to the requirements of quality managers but also properly done by accountants. Therefore, the continual cooperation between quality managers and accountants can result in Quality Costing development. In other words, preparing quality cost reports that are quite

useful to quality managers can induce more frequent use of this accounting information that becomes wider in scope. Since the scope of quality cost recording and the usage level of Quality Costing determines its maturity level, it is important to determine the frequency of quality cost reporting. The findings indicate that only 44.3% of the observed quality-oriented companies report on quality costs. Among those that prepare quality cost reports regularly, most of them create their quality cost reports quarterly (32.6%) followed by companies that prepare this report annually (26.1%). In only 23.9% of companies a quality cost report is prepared monthly while 13% do it semi-annually (two times a year). On the weekly basis quality reporting is done in 4.3% quality-oriented companies in Croatia.

The basic assumption of this study was that frequency of quality cost reporting determines the level of Quality Costing maturity and it was statistically supported. More frequent quality cost reporting induces the improvement of Quality Costing which results in higher level of maturity. The more mature Quality Costing is, the more useful its information is to quality managers. This quality-related but also accounting-based (thus, quantitative) information can be used as a compass for quality improvement and management.

References:

Albright, T. L., & Roth, H. P. (1992). The measurement of quality costs: an alternative paradigm. *Accounting Horizons, 6*(2), 15-27.

Alglawe, A., Schiffauerova, A., & Kuzgunkaya, O. (2019). Analysing the cost of quality within a supply chain using system dynamics approach. *Total Quality Management & Business Excellence, 30*(15-16), 1630-1653.

Anttila, J., & Jussila, K. (2017). ISO 9001:2015 – a questionable reform. What should the implementing organisations understand and do? *Total Quality Management & Business Excellence, 28*(9-10), 1090-1105.

Bakotić, D., & Rogošić, A. (2017). Employee involvement as a key determinant of core quality management practices. *Total Quality Management & Business Excellence, 28*(11-12), 1209-1226.

Barber, P., Graves, A., Hall, M., Sheath, D., & Tomkins, C. (2000). Quality failure costs in civil engineering projects. *International Journal of Quality & Reliability Management.*

Chopra, A., & Garg, D. (2012). Cost of quality practices among Indian industries. *International Journal for Quality Research, 6*(2), 109-112.

Claver, E., & Tarí, J. J. (2003). Levels of Quality Management in Certified Firms. *Total Quality Management & Business Excellence, 14*(9), 981-998.

Dahlgaard, J. J., Kristensen, K., & Kanji, G. K. (1992). Quality costs and total quality management. *Total Quality Management, 3*(3), 211-222.

Dale, B. G., & Lascelles, D. M. (1997). Total quality management adoption: revisiting the levels. *The TQM Magazine, 9*(6), 418–428.

Dale, B. G., & Smith, M. (1997). Spectrum of quality management implementation grid: development and use. *Managing Service Quality: An International Journal, 7*(6), 307-311.

Desai, D. A. (2008). Cost of quality in small-and medium-sized enterprises: case of an Indian engineering company. *Production planning and control, 19*(1), 25-34.

Glogovac, M. & Filipovic, J. (2018). Quality costs in practice and an analysis of the factors affecting quality cost management. *Total Quality Management & Business Excellence, 29*(13-14), 1521-1544.

Hendricks, K. B., & Singhal, V. R. (2001). Firm characteristics, total quality management, and financial performance. Journal of Operations Management, 19, 269-285.

Hwang, G. H., & Aspinwall, E. M. (1996). Quality cost models and their application: A review. *Total Quality Management, 7*(3), 267-282.

ISO (2020): ISO 9000 Family Quality Management https://www.iso.org/iso-9001-quality-management.html (Retrieved 10/03/2020)

Jafari, A., & Rodchua, S. (2014). Survey research on quality costs and problems in the construction environment. *Total Quality Management & Business Excellence, 25*(3-4).

Kanji, G. K. (1990). Total quality management: the second industrial revolution. *Total quality management, 1*(1), 3-12.

Kumar, K., Shah, R., & Fitzroy, P. T. (1998). A review of quality cost surveys. *Total Quality Management, 9*(6), 479-486.

Kundid Novokmet, A., & Rogošić, A. (2017). Long-term financial effects of quality management system maturity based on ISO 9001 principles. *Amfiteatru Economic, 19*(Special No. 11), 1003-1016.

Lari, A., & Asllani, A. (2013). Quality cost management support system: An effective tool for organisational performance improvement. *Total Quality Management & Business Excellence, 24*(3-4), 432-451.

Mantri, S., & Jaju, S. (2017). Cost of quality management in Indian industries: a practical insight. *International Journal for Quality Research, 11*(3), 419-506.

Mastrogiacomo, L., Carrozza, A, Maisano, D. A., & Franceschini, F. (2020). Is 'post-decline' the next phase of the diffusion of ISO 9001 certifications? New empirical evidence from European countries. *Total Quality Management & Business Excellence*, doi: 10.1080/14783363.2020.1724508

Moen, R. M. (1998). New quality cost model used as a top management tool. *The TQM Magazine, 10*(5), 334-341.

Patti, A. L., Hartman, S. J., & Fok, L. Y. (2001). Investigating organizational quality management maturity: an instrument validation study. *International Journal of Quality & Reliability Management, 18*(9), 882-899.

Pires, A.R., Novas, J., Saraiva, M. & Coelho, A. (2017). How companies use the information about quality-related costs. *Total Quality Management & Business Excellence, 28*(5-6), 501-521.

Pursglove, A. B., & Dale, B. G. (1995). Developing a quality costing system: key features and outcomes. *Omega, 23*(5), 567-575.

Priede, J. (2012). Implementation of quality management system ISO 9001 in the world and its strategic necessity. *Procedia*-Social and Behavioral Sciences, 58, 1466-1475.

Ramdeen, C., Santos, J., & Chatfield, H. K. (2007). Measuring the cost of quality in a hotel restaurant operation. *International Journal of Contemporary Hospitality Management, 19*(4), 286-295.

Sampaio, P. A. C. A., Saraiva, P. M. T. L. A., & Gomes, A. C. R. (2014). ISO 9001 European Scoreboard: an instrument to measure *macroquality. Total Quality Management & Business Excellence, 25*(4), 309 – 318.

Sansalvador, M. E., & Brotons, J. M. (2015). Valuation of the option of abandoning ISO 9001 certification: An empirical study in Spain. Total Quality Management & Business Excellence, 26(12), 1255–1268.

Schiffauerova, A., & Thomson, V. (2006). A review of research on cost of quality models and best practices. *International Journal of Quality & Reliability Management, 23*(6), 647-669.

Šatanová, A., Závadský, J., Sedliačiková, M., Potkány, M., Závadská, Z., & Holíková, M. (2015). How Slovak small and medium manufacturing enterprises maintain quality costs: an empirical study and proposal for a suitable model. *Total quality management & business excellence, 26*(11-12), 1146-1160.

Sower, V. E., Quarles, R., & Broussard, E. (2007). Cost of quality usage and its relationship to quality system maturity. *International Journal of Quality & Reliability Management, 24*(2), 121-140.

Srivastava, S.K. (2008). Towards estimating Cost of Quality in supply chains. *Total Quality Management & Business Excellence, 19*(3), 193-208.

Tarí, J. J., & Sabater, V. (2004). Quality tools and techniques: are they necessary for quality management? *International journal of production economics, 92*(3), 267-280.

Tye, L. H., Halim, H. A., & Ramayah, T. (2011). An exploratory study on cost of quality implementation in Malaysia: The case of Penang manufacturing firms. *Total Quality Management & Business Excellence, 22*(12), 1299-1315.

Van der Wiele, A., Williams, A. R. T., Dale, B. G., Carter, G., Kolb, F., Luzon, D. M., Schmidt, A., & Wallace, M. (1996). Self-assessment: a study of progress in Europe's leading organizations in quality management practices. *International Journal of Quality & Reliability Management, 13*(1), 84-104.

Vaxevanidis, N. M., Petropoulos, G., Avakumovic, J., & Mourlas, A. (2009). Cost of quality models and their implementation in manufacturing firms. *International Journal for Quality Research, 3*(1), 27-36.

Andrijana Rogošić
University of Split, Faculty of
Economics, Business and Tourism
arogosic@efst.hr