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The implementation of total quality management in order to improve production performance and enhancing the level of customer satisfaction

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Abstract

Doing business in a competitive and dynamic environment requires companies to continually improve and enhance their business performance and capabilities. One of the key determinants of the survival of the company in such circumstances is the application of total quality management. In recent years, the company management is more focused on total quality management, which leads to maximizing customer satisfaction and loyalty. The aim of this study is focused at examining the attitudes of corporate clients on a variety of elements implemented TQM process, provided by bank. For the study, data were collected using the survey method and the statistical analysis such as correlation and multiple regression analysis. Results of the research point out that top management commitment, courtesy and responsibility towards our customers as significant factors of satisfaction. Study results help bank managers to identify quality elements that need to be improved, to increase the level of customer satisfaction and enhance their business.

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1. Introduction

In recent years, modern-oriented companies are subjected to numerous economic, political, technological and social changes. Increasing competitive struggle, the appearance of new knowledge and technology, information and communication capabilities, constantly increasing needs and demands of consumers, the new regulations and the likewise, influenced the emergence of a new philosophy of business companies. During the '80s, in the business world, appeared a new management concept-quality management (QM). Total Quality involves the implementation of total quality management (TQM) that is used to integrate business operations to create products /services with maximum quality. Quality has become a key element in the survival of the companies in the competitive market [1]. Delivering high quality products and services leads to achieving and maintaining competitive advantage [2]. Because business success lies in its ability to effectively implement total quality system that will maintain a high level of quality products and / or services at a relatively minimal cost.

TQM has emerged as a response of successful companies to rapid and significant changes in the environment. Over the years, there have been altered needs and demands of customers primarily in terms of a higher level of quality products and services at lower prices. To be able to identify the requirements and expectations of customers and respond quickly to identified requirements, it is necessary to systematize and develop a set of approaches and methods that are commonly referred to as TQM.

According to the study by Mehra et al. [3], TQM concept should be seen as a consumer-oriented concept. It is a system that starts with consumers and ends with them. The basis of TQM lies in creating value for customers, continuous improvement and quality advancement, accurate and precise measurement of the performance of each business process, as well as the teamwork of human resources. Successful implementation of TQM improves organizational performance of companies and leads to a high degree of satisfaction to consumers and employees.

TQM system refers not only to the quality of products, but also includes the quality of the services sector [4]. For the successful implementation of TQM practices, in addition to identifying the key dimensions of TQM, of great importance is performance measurement [5]. Based on a study [6], consumer satisfaction is a key dimension of determining the quality of services provided by the organization and, as such, is a key feature of TQM [7]. Although there are a number of scientific research dealing with the study of the relationship of TQM, business performance and customer satisfaction in the services sector [4, 8, 9], this study aims to effectively contribute to and support the importance of the implementation of total quality management on customers' satisfaction and improve performance in the banking sector. The aim of this study was to investigate the nature of the practice of total quality management (TQM) and its relationship to customer satisfaction. Empirical research was conducted on a sample of 124 respondents, who are managers of small and medium enterprises that operate through banks in the Republic of Serbia. The results of this research will help bank management to improve the performance of their service offers to the ultimate aim to improve and enhance the overall organizational performance of companies.

2. Literature review

2.1. *The essence and characteristics of TQM*

In order to achieve business success, many companies implement TQM as one of the important techniques of quality improvement. TQM has been applied in a variety of sectors around the world. Although he found wide application in many organizations, there is no generally accepted definition of TQM, but as a concept is interpreted in different ways. According to ISO standards, TQM is defined as an approach to organizational management that is focused on quality and based on the activities of all members of the organization, in order to achieve long-term success through customer satisfaction, and benefits all members of the organization and the community. Total quality can be seen as a way to manage business processes in order to ensure total customer satisfaction at every level [10]. It is a concept that enables efficient operation of enterprises and increase competitiveness. Stevenson defines Total Quality as a business philosophy based on the involvement of all stakeholders in the company in order to achieve adequate quality [11]. The contributions of Deming, Juran, and Crosby to improving total quality management have had a most important impact on managers and organizations around the world [12].

The key elements of the concept of TQM are [13]:

- Focus on Consumers
- Continually increasing customer satisfaction
- Continuous reduction of real costs
- A systematic approach
- Horizontal integration of functions and classes
- Participation of all employees
- Inclusion of supply chain and customer chain

Agus and Hassan [14] have identified four important elements of TQM practices namely:

- Supplier Relations
- Benchmarking
- Quality
- Measurement
- Continuous Process Improvement.

Orientation to customers is the foundation of TQM system. This means that companies create products and services in accordance with the needs and demands of consumers. The customers' needs should be fully integrated into the design and development of products and services [15]. In fact, all business activities in companies are starting to research and identifying the needs and desires of consumers, and ending by delivering value products and services that are appropriate to their expectations [16]. Additionally, of great importance is the involvement of all stakeholders in the process of creating products and services, so products / services could with its quality, fully met or exceeded the needs of consumers.

The businesses must become highly effective through understanding their customers' needs through training of employees to develop specific skills [17]. The customer satisfaction is effective in quality management and it has the most important role while implementing TQM [18]. Agus et al. [19] points out to the fact that implementing TQM strengthens a company's customer satisfaction and improves its financial performance.

However, it is not enough to provide a high quality of products / services, but also a proof that it is the quality that is internationally recognized. In the world there are over a million companies in different areas whose quality is maintained and improved through the ISO 9000. In other words, in order to effectively implement the quality management system (QMS) in a variety of organizations, it is understood its compliance with ISO 9000 standards. Application of ISO 9000 series is a function of the integrated quality assurance and is the base for TQM (Total Quality Management), which provides the highest domain of enterprise management. The standards prescribe the basic principles for the functioning of the company and are aimed at forming the basis for quality improvement. ISO 9000 aims to establish methods of preventive action in work processes and thus to make decisions in a rational manner with relatively minimal cost [20, 21].

If a company wants to prove and demonstrate that it provides the products in accordance with customers requirements and certain regulations, to increase customer satisfaction by successful implementation and continuous improvement of the system, then it applies standard ISO 9001: 2008, in order to achieve specification requirements for a quality management system [22].

Numerous organizations which are formed on the model of TQM strive to meet the expectations and needs of many stakeholders: customers, shareholders, owners, investors, employees, partners and suppliers [23]. However, the central figure is consumer. In order to meet consumer demands, it is necessary to implement the quality management system (QMS) that complies with the requirements of ISO 9001.

2.2. The relationship of TQM and customer satisfaction

In the marketing and management literature, the concept of customer satisfaction attracts the attention of many authors. Customer satisfaction is the relation between expectations and perceived performance of their products/services [24]. Consumer satisfaction towards the product/service is measured by the performances of the products/services, given that the satisfaction of such a variable that is not a precise measurement. Therefore, many researchers, by measuring satisfaction, endeavor to quantitatively and objectively express their perception of consumers. The concept of satisfaction is inextricably linked to the loyalty of consumers. A loyal customer is one

who will be interested in the company and its products and/or services over a long period of time, and who will be willing to recommend the company to other potential customers. It is believed that customer satisfaction is the necessary condition for their loyalty and retention, leading to the achievement of long-term financial results.

The concept of total quality management is seen as a consumer-oriented concept being implemented with the aim of building a high level of customer satisfaction and loyalty. One of the key aims of TQM is to maximize customer satisfaction. Satisfied customers are the ones who will eventually become loyal, and willing to share the good impression of the company and the purchase will be repeated in the future.

In this context, companies need to develop and deliver products/services to consumers with the features and performance that are appropriate to their expectations. Quality of products/services can be assessed by measuring satisfaction and loyalty. Therefore, the quality of the products and/or services, which is expressed through satisfaction, can be seen as a relationship between objective performance and consumer expectations [25].

Each company is focused on satisfying and overcoming the expected needs and desires of consumers, leading to their loyalty. Ensuring loyalty means the realization of long-term profitability. In order to achieve this, it is necessary for a business process, which are generated in the products and / or services, to be contained in the elemental model TQM. The first step in this model involves researching and identifying consumer needs and wants. After that, it is necessary that a company with its product (features, performance, technical specifications, plans, etc.). Adapt the established expectations of potential consumers. The last step of this set of TQM is the delivery of the products leads to higher customer satisfaction [23].

In modern literature, one can find numerous studies that indicate the existence of a high degree of positive correlation between consumer satisfaction, performance improvement and TQM models [6, 26, 27, 28]. The positive linkage between total quality management and customer satisfaction leads to the ultimate goal- the improvement of organizational performance.

3. Research methodology

In order to investigate the degree of customer satisfaction by key variables implemented in TQM process, empirical research is conducted. The primary data for the analysis were collected using surveys. The questionnaire included 14 conclusions relating to the quality of the different variables in the banking service, and the three statements related to the measurement of the degree of satisfaction. Variables were selected and adapted from relevant studies [6, 29, 30]. Surveyed respondents level of agreement with the given conclusions expressed in 7-level scale (1-strongly disagree with the statement and 7 - absolutely agree with the statement).

The field survey included 124 companies, where managers of companies rated bank which conducted its business transactions, based on the quality of the services it provides. These are corporate clients of banks that are among the small and medium-sized enterprises operating in the territory of the Republic of Serbia. Data were collected in the period from 25. 02. - 10. 05. 2014. Before field research was performed, preliminary test on a small sample of 10 subjects, made of students, was carried out. The main purpose of the testing, prior to the implementation of field research, involved the examination of whether there is some ambiguity in the formulation of the claim, and shall be corrected.

In this study, the analysis of the collected data was conducted by the two statistical techniques: correlation and multiple regression analysis. To determine the degree of reliability of the identified variables and the internal consistency of their statements, we used Cronbach's coefficient alpha. Correlation analysis was performed in order to establish the degree of correlation between the variables of TQM and customer satisfaction. Finally, by implementation of multiple regression, statistical significance of the impact of the identified variable quality of service banks offer, on the satisfaction of corporate clients, was determined. The problem of multicollinearity is examined by value Variance inflation factor (VIF). The analysis of primary data was done in Statistical Package for Social Sciences SPSS (The Statistical Package for the Social Sciences).

4. Results and discussion

Through the statistical package SPSS, were first calculated the value of the coefficient of reliability- Cronbach's alpha [31], to check the internal consistency of the statements that were formed around the same variables. The

values of the alpha coefficient range and interval from 0 to 1, where it is recommended that the values are greater than 0.7 [32]. In this study, the variables implemented TQM (commitment of top management, courtesy, responsibility, tangible elements) and satisfaction show a high degree of reliability (Table 1), because the resulting high levels of alpha coefficients ranging in the interval from 0.715 to 0.905, and therefore confirmed the internal consistency of their associated statements.

Table 1. Reliability of variable- value of Cronbach's alpha

Variables	Cronbach's alpha
Commitment of top management	0.804
Courtesy	0.849
Responsibility	0.735
Tangible elements	0.715
Satisfaction	0.905

The first step was performed by correlation analysis of the variables of TQM and customer satisfaction, in order to determine the extent of their interdependence. The obtained values of Pearson's correlation coefficient showed that all variables generate significant positive correlation with customer satisfaction banks. "Commitment of top management" and "Responsibility" demonstrate a high degree of correlation between "Courtesy" and customer satisfaction appears moderate correlation, while "Tangible elements" show poor correlation with customer satisfaction (Table 2).

Table 2. Correlation between variables of TQM and customer satisfaction in banking

TQM variables	Correlation coefficients with customer satisfaction
Commitment of top management	0.602**
Courtesy	0.387**
Responsibility	0.623**
Tangible elements	0.243**

**Correlation is significant at the 0.01 level (2-tailed)

Table 3. Results of the multiple regression analysis (dependent variable: satisfaction)

TQM variables	β	t	VIF
Commitment of top management	0.473**	5.772	1.473
Courtesy	0.159*	2.105	1.250
Responsibility	0.254*	3.403	1.225
Tangible elements	- 0.037 ^{ns}	- 0.468	1.336

Results are significant at the level: $p < 0.01$ (**); Results are significant at the level: $p < 0.05$ (*);

Results are not significant at the level: $p > 0.05$ (ns); $R^2 = 0.457$

Finally, the implementation of multiple regression determined the effect of four independent variables (commitment of top management, courtesy, responsibility, tangible elements) in satisfaction as the dependent variable. Located regressions are presented in Table 3 indicate a significant effect of three independent variables: "Commitment of top management" ($\beta = 0.473$, $t = 5.772$), "Courtesy" ($\beta = 0.159$, $t = 2.105$) and Responsibility ($\beta = 0.254$, $t = 3.403$). In the case of Tangible elements ($\beta = - 0.037$, $t = - 0.468$) no statistically significant effect. Independent variables explain about 46% of the variability of the dependent variable. Through the VIF values, the tested and the problem of multicollinearity. If the given coefficient value to be greater than 5 [33], multicollinearity occurs as a problem. In this study were obtained by appropriate values of the VIF coefficient in the range of 1.250 to 1.473.

5. Conclusion

The success of any organization is determined by the behavior of consumers, so they need to understand and realize the current and future needs and expectations of consumers, strive to meet their requirements, and even exceed their expectations. The primary purpose of any organization, in this study banking the institution, is to meet and exceed the expectations and demands of their customers, so customers were satisfied and eventually become loyal. Modern conditions of banking stress that the service offers high quality best way to achieve competitive advantage and achieving financial success. In order to achieve this, the business process in which the product is implemented and/or services must be based on the TQM approach. Banks must continuously work on improving and improving business processes within which to create financial services.

In this paper we implemented an empirical study to examine the relationship between TQM and customer satisfaction in the banking industry. Based on the findings of the correlation analysis, it was confirmed that there is a positive correlation between the four variables of TQM (commitment of top management, courtesy, responsibility, tangible elements) and customer satisfaction. Based on the obtained results of multiple regression analysis, it was confirmed that the strongest influence on the satisfaction of clients is realized variable “Commitment of top management”. The influence of variables “Courtesy” and “Responsibility” also showed statistically significant at the satisfaction of customers, but the strength of the impact of these variables are inferior to commitment of top management. The variable “Tangible elements” did not show a significant impact on customer satisfaction.

The results point out that the commitment of top management is crucial for the successful implementation of TQM. Without the support and understanding of TQM by management at the highest point, there is no effective implementation of a given system. Bank managers must constantly adapt to the wishes, needs and requirements of the clients. Also, employees should be polite and ready to help customers at all times. They must understand and respect their needs and expectations, as reflected in the high level of customer satisfaction to banks and improve the overall organizational performance of banks. The findings confirm that corporate clients do not give great importance to the physical elements of the banks, such as the uniform employees, computers’ equipment, decoration of interior, etc. It is the lack of business and means that bank managers presents considerable attention to improving the above elements. Based on the research of attitudes of clients, banking institutions can significantly improve and grow their business. Managers can get valuable information on how customers evaluate the quality of banks and on this basis to identify where the negative aspects of the quality of banking services. Improving the quality of service offerings, the bank increase the level of customer satisfaction and loyalty, and achieve higher levels of profitability.

Appendix A. Questionnaire items

Commitment of top management (1-7 Likert scale)

- Focus on the customer
- Focus on what is best for clients
- Understanding the financial needs of clients

Courtesy (1-7 Likert scale)

- Courtesy of bank employees
- Trust clients
- The sense of security clients

Responsibility (1-7 Likert scale)

- The willingness of the bank employees to help customers
- The willingness of the bank employees to respond to customer questions
- Speed of service to clients
- The accuracy of the services provided to clients
- Efforts to solve customer problems

Tangible elements (1-7 Likert scale)

- The interior of the bank is visually appealing

- Appearance of employees
- Modern equipment

References

- [1] Thiagaragan T, Zairi M, Dale BG. A proposed model of TQM implementation based on an empirical study of Malaysian industry. *International Journal of Quality & Reliability Management*, 2001; 18 (3): 289-306.
- [2] Sureshchandar GS, Rajendran C, Anantharaman RN. The relationship between service quality and customer satisfaction – a factor specific approach. *Journal of Service Marketing*, 2002; 16 (4): 363-79.
- [3] Mehra S, Hoffman JM, Sirias D. TQM as a management strategy for the next millennia. *International Journal of Operations and Production Management*, 2001; 21 (5/6): 855-76.
- [4] Samat N, Ramayah T, Saad NMJ. TQM practices, service quality, and market orientation: Some evidence from a developing country. *Management Research News*, 2006; 29 (11): 713-28.
- [5] Brah SA, Tee SSL. Relationship between TQM and performance of Singapore companies. *International Journal of Quality & Reliability Management*, 2002; 19 (4): 356-79.
- [6] Sakthivel PB, Rajendran G, Raju R. TQM implementation: TQ implementation and students' satisfaction of academic performance. *The TQM Magazine*, 2005; 17 (6): 573-89.
- [7] Kanji GK, Tambi AMBA, Wallace W. A comparative study of quality practices in higher education institutions in the US and Malaysia. *Total Quality Management*, 1999; 10 (3): 357-371.
- [8] Gupta A, Chen I. Service Quality: implications for management development. *International Journal of Quality & Reliability Management*, 1995; 12 (7): 28-35.
- [9] Ooi KB, Lin B, Chong AYL. Are TQM practices supporting customer satisfaction and service quality?. *Journal of Services Marketing*, 2011; 25 (6): 410-419.
- [10] Oakland S. *Total Quality Management – The route to improving performance*. Second Edition. Oxford: Butterworth – Henemann; 1993.
- [11] Stevenson J. *Production / Operations Management*. Fourth Edition. Boston: Irwin. Homewood; 1993.
- [12] Zairi M. The TQM legacy- Gurus' contributions and theoretical impact. *The TQM Journal*, 2013; 25 (6): 659-676.
- [13] Fotopoulos CV, Psomas EL. The structural relationships between total quality management factors and organizational performance. *The TQM Journal*, 2010; 22 (5): 539-52.
- [14] Agus A, Hassan Z. Enhancing Production Performance and Customer Performance Through Total Quality Management (TQM): Strategies For Competitive Advantage. *Procedia Social and Behavioral Sciences*, 2011; 24: 1650–1662.
- [15] Goldman H.H. The origins and development of quality initiatives in American business. *The TQM Magazine*, 2005; 17 (3): 217-25.
- [16] Johnson WW. *Superior customer value in the new economy: concepts and cases*. CRC Press, Boca Raton; 2004.
- [17] Mehra S, Ranganathan S. Implementing total quality management with a focus on enhancing customer satisfaction. *International Journal of Quality & Reliability Management*, 2008; 25 (9): 913-927.
- [18] Eklof JA, Westlund A. Customer satisfaction index and its role in quality management. *Total Quality Management*, 1998; 9 (4/5): 80-5.
- [19] Agus A, Krishnan S.K., Kadir SLSA. The structural impact of total quality management on financial performance relative to competitors through customer satisfaction: a study of Malaysian manufacturing companies. *Total Quality Management*, 2000; 11 (4-6): 808-19.
- [20] Dašić P, Stanojević M. Survey of international standards for quality management systems (QMS). *Modelling and Optimization in the Machines Building Fields (MOCM)*, 2010; 16 (1): 12-22.
- [21] Dašić P. Razvoj međunarodnih i nacionalnih standarda za sistem kvaliteta ISO 9000. *Kvalitet*, 2005; 15 (9-10): 89-95.
- [22] Standard ISO 9001:2008 - Quality management systems - Requirements. Institute for Standardization of Serbia (ISS); 2008.
- [23] Ross JE. *Total quality management*. Florida Atlantic University; 1994.
- [24] Oliver LR. A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 1980; 17 (4): 460 - 469.
- [25] EFQM. *Customer satisfaction- Quality Working*. Section Two. March- October; 1994.
- [26] Chien TK, Su CH, Su CT. Implementation of a customer satisfaction program: a case study. *Industrial Management & Data Systems*, 2002; 102 (5): 252-9.
- [27] Terziovski M. Quality management practices and their relationship with customer satisfaction and productivity improvement. *Management Research News*, 2006; 29 (7): 414-24.
- [28] Mehra S, Ranganathan S. Implementing total quality management with a focus on enhancing customer satisfaction. *International Journal of Quality & Reliability*, 2008; 25 (9): 914-921.
- [29] Parasuraman A, Zeithaml VA, Berry LL. SERVQUAL: a multiple-item scale for measuring consumer perception of service quality. *Journal of Retailing*, 1988; 64 (1): 12- 40.
- [30] Johnson MD, Gustafsson A, Andreassen TW, Lervik L, Cha J. The evolution and future of national customer satisfaction index models. *Journal of Economic Psychology*, 2001; 22 (2): 217-245.
- [31] Cronbach LJ. Coefficient alpha and the internal structure of test. *Psychometrika*, 1951; 16: 297-334.
- [32] Nunnally JC. *Introduction to psychological measurement*. New York. NY: McGraw-Hill; 1978.
- [33] Field A. *Discovering statistics using SPSS for Windows*. Thousand Oaks. USA: Sage Publication; 2000.