
MEASURING THE LEVEL OF QUALITY MATURITY IN ORGANIZATIONS

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Abstract

Due to the growing importance for achieving better quality in products and services, many organisations have adopted quality Standards into their everyday practice. Some authors stated decades ago that quality is free, and today many organizations are trying to sustain competitiveness by raising quality in every aspect of their organizations. The paper presents a literature review on quality maturity and how it can be measured.

Key Words

Quality maturity; total quality management.

INTRODUCTION

The first results of the introduction of the quality system in Japan are beginning to appear in the 1950s and the next twenty years the Japanese economy is experiencing flourishing, while the American economy, which was "the leading" in quality, increasingly understands that it loses a large market share because of its low quality of products and then Deming at the beginning of the 80s introduced quality to American organizations by educating management. Many US organizations introduced quality management in 1985, and in 1987 the US Senate introduced the Malcolm Baldrige national quality award. All these steps have led to today's degree of quality development that can and must be measured in companies through specific indicators if organizations want to be efficient and effective and thus achieve sustainable success.

ABOUT THE QUALITY AND MANAGING IT

Vallin Feingebaum is the key person in quality development because he has created a concept of total quality control (TQC) and contributed to the development of production processes. His contribution is that a low level of quality should be prevented and observed in time before the production itself. The goal is to avoid the preventive. He defines full quality control as an efficient system for integrating various groups within organizations, responsible for developing, maintaining and improving quality. To effectively manage quality, it is necessary to: set quality standards, assess compliance with these standards, act when standards are not met, and plan improvements to these standards (Feigenbaum 1960). According to Goetsch and Davis (2010), the underlying philosophy of total quality is to continually improve processes, people and products. For this it may also be necessary to mention the concept of continuous improvement. Continuous improvement (CI) or kaizen for decades has its beginnings in quality and lean management. Study from Alič (2014) shows that over a certain time this concept stagnates or disappears in organizations due to numerous reasons. However, a harsh market rivalry and economic crisis where cycles of crisis periods are shorter than in the past have led to a growing interest in the field of CI (Singh and Singh, 2015).

Quality management is defined as "an integrated approach to achieving and maintaining high-quality results aimed at maintaining and continually improving the process and preventing disadvantages at all levels and in all functions of the organization in order to meet or exceed customer expectations (Flynn et al 1994: 342)." According to Iso Norm 9001: 2008, the quality management of a company is defined as a "management system that a company establishes, documents, implements and maintains in order to continuously improve the company's efficiency in accordance with the requirements of the prescribed standard (ISO 9001: 2008, p.10)". The best can be described through the ten principles of Armand Feigenbaum, which he set out in his 1990 book "Full Quality Control". Feigenbaum, already in

the first principle, "Quality is a Comprehensive Process in the Company" emphasizes that achieving quality is not the responsibility of a single function, department or project, but it is "a way of thinking and practice implemented in all the pores and processes of company's life that require constant support, analysis and improvement" (Injac, 2001, p. 102).

In 1979, Philip Crosby defined a framework for measuring the success of company's quality management in his book, "Quality is Free," using the framework called "maturity grid". The idea of a network or frame for measuring maturity consisted of the specific behavior of a company that it shows at different levels of so-called "maturity" levels that are analyzed or measured for one or more areas in the company (Fraser et al., 2002). Crosby's maturity network consists of six key areas that were scaled and evaluated according to Likert's scale. Each area was benchmarked through five levels, each level representing the specific behavior of the company and how many company employees successfully adopted these specific behaviors and their application. The areas included: understanding and attitude of management, quality position in the company, problem solving, cost of quality as a percentage of sales, quality improvement procedures, the general attitude of the company on quality (Crosby, 1979, p. 23). The company managed the mentioned categories to achieve different degree of development of individual categories by measuring them from 1 to 5, with category one being insecurity in knowing, for example, how manager's attitude about quality is unknown or it is unknown what is the cost of quality measured in percentages of sales. While on the other hand, level 5 is a complete knowledge of information about the cost of quality in total sales or the attitude of quality management.

According to Injac (2001, p.169), Crosby, unlike his predecessors, differed by "dropping the entire issue from the general level of philosophy and certain activities into a rounded recipe". That is why Crosby contributed to quality management from the aspect of the whole organization and the need to involve all levels of a company in improving overall quality. In addition, Injac argues that this approach has "indicated the need for an unification and standardization that will emerge eight years later in 1987 in the form of the ISO 9000ff Series" (Injac, 2001, p. 169). The ISO 9000ff standard series emphasized the importance of quality management at all levels of the company, not just the quality upgrading of production processes that were an imperative in the companies by that point. The fact is that maturity models are now widespread and applied in quality management, software development, supplier relationships, product development, innovation, product design, collaboration, product reliability and knowledge management (Fraser et al., 2002). The success of quality management should certainly be explored from the aspect of implementation and sustainability of the continuous improvement system as a quality management success generator.

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At the end of the 80's of the last century, in practice, the quality management of the company, according to Saraph et al. (1989) was not possible due to the lack of measures to determine the success of the company's quality management. Therefore, the authors have defined eight areas of importance in terms of quality of management and the operational measures that managers can use to "evaluate quality management status and to manage improvements in all areas of quality" (Saraph et al., 1989, p. 810).

Hammer (2007) in his article published at the Harvard Business Review describes two models of maturity, on the one hand, the process of maturity and on the other hand, the maturity model of companies that are key to achieving business excellence. He further argues that the company must be mature enough for processes to increase efficiency over time. Hammer defines the maturity of the process as the ability of a process to ensure greater efficiency through time (Hammer 2007: 3). For processes to generate success and maturity through time, the company needs to provide leadership, culture, expertise and good management (Hammer 2007). Ravichandran and Rai (2000) proposed a model for measuring quality improvements in system development. This model consists of five theoretical constructs that can be seen in Table 1 with its literature background.

Table 1. Literature background

Theoretical Constructs	Saraph et al. (1989)	Flynn et al. (1994)	Ahire et al. (1996)	Authors Study
Top Management Leadership	Top management leadership and quality policy	Top management support	Top management commitment	IS management support for quality
Management Infrastructure Sophistication		Quality policy not explicitly considered	Not considered	Quality policy and goals
	Training	Included under work force management	Employee training	Commitment to skill development
	Nature of reward schemes included under employee relations	Considered under top management support	Considered under employee involvement but dropped from the validated scale	Quality orientation of reward schemes
Process Management Efficacy	Product/service design	Product design	SPC usage	Formalization of reusability in systems development
	Process management	Process management	Internal quality information usage	Process control

	Quality data and reporting	Quality information	Benchmarking	Fact based management
Stakeholder Participation	Employee relations	Work force management	Employee empowerment and involvement	Empowerment of programmer/analyst
	Supplier quality management	Supplier involvement	Supplier performance	Vendor/consultant participation
	Customer involvement not explicitly considered	Customer involvement	Customer focus	User participation
Quality Performance	Not explicitly considered	Product quality in terms of scrap rate	Product quality	Product quality
	Process quality not explicitly considered as a performance measure	Process quality not explicitly considered as a performance measure	Process quality not explicitly considered as a performance measure	Process efficiency

Source: Ravichandran and Rai, 2000, p. 389.

Laosirihongthong et al. (2013) investigated the relationship between companies quality management and the impact on the performance of 149 companies in the car industry. Research findings show that top management is not sufficiently committed to managing people in the company, which is evident through inadequate employee involvement in enterprise management processes. They further argue that these "soft" factors of quality management are key to the application of best quality practices and the achievement of a developed company quality system.

Tang (2013) published an extensive research on the performance of companies quality management on a sample of 1490 companies in Shanghai. The results of the research showed that the overall maturity index of the quality management of the Shanghai companies at the level of development was 3.30 out of the possible 5 degrees. The author emphasizes the importance of top management responsibility through the "leadership through quality" strategy in promoting accountability and quality assurance, socially responsible business, increasing service quality, and further investment in the development of "soft" skills. According to Tang (2013) five constructs need to be investigated to determine the state of quality management in companies (Table 2). In the latest construct called quality performance, and it consists of variables: physical quality, market success and financial performance, another variable is added: "Innovation and Learning". Innovation and learning today are key to achieving business

differentiation in a competitive market. In the quality management of a company variables of "innovation and learning" is important for achieving business excellence. Kuratko et al. (2014) in their research claim that successful implementation of the innovation strategy in many companies is unattainable, although everyone is aware of how it represents a competitive advantage. Without innovation and learning, there is no added value to a company, and if the company does not apply its business policy to continuous improvement, which is crucial in collecting new knowledge, then there is no innovation.

Authors Santos-Vijande and A'varvar-Gonza'lez (2007) point out that innovation has the role of mediator between quality management and achievement of technical innovation. Lee et al. (2015) explore the mediating role of organizational learning between quality management and innovation. The task of management is to recognize the need for innovation, to provide the necessary resources, and to establish and maintain the effectiveness and efficiency of the innovation process (ISO 9001: 2009, point 9). Therefore, as a result of good quality management of enterprises, the aspect of innovation and learning has to be analyzed, and it can be examined through the number of new or improved products in relation to the average activity of the company (Soto-Acosta et al., 2016).

Table 2. Constructs for measuring organization quality

	Construct	Variables
1	leadership	leadership role and quality culture
2	design, process development and supplier management	design, process development, supplier management
3	production process and marketing process control, system	process control, management system, standardization, product testing, sales and services
4	Knowledge management	measurement, analysis and improvement, tools and methods of quality
5	quality performance	physical quality, market success, innovation and learning, financial success

Source: Authors according to Tang (2013).

CONCLUSION

Today, compared to 20 years ago, literature on quality provides many measures that are validated in practice and can be used to measure quality in organization. Every organization has to determine which set of measures fits their strategies. Once the measures are set managers can use the model to evaluate quality maturity and have a "feeling" about where they stand in the market from the aspect of 5 defined constructs. Introducing quality

principles and quality Standards just to have certificate in today's business environment is not the way to remain competitive advantage. Organizations have to evolve as market, people and needs evolve. In this context organization has to be dynamic and be aware where they stand on quality maturity from the aspect of every mentioned variable to be able to evolve, to grow and constantly improve. For future research it would be interesting to investigate what level of quality maturity organizations in Croatia have.

REFERENCES

- Crosby, P. B. (1979). *Quality is free. 1979. The Art of Making Quality Free*, New American Library.
- Feigenbaum, A. V. (1960) *Total Quality Control*, McGraw-Hill, New York, USA.
- Flynn B. B., Schroeder R. G., Sakakibara S. (1994). A framework for quality management research and an associated measurement instrument. *Journal of Operations Management* 11, 339–366.
- Goetsch D, Stanley D. (2010). *Quality management for organizational excellence: introduction to total quality*, 6 th.ed. Upper Sadle Rier: Pearson Education International.
- Hammer, M. (2007). The Process Audit, *Havard Business Review*, April 2007. Retrieved on <https://hbr.org/2007/04/the-process-audit>.
- Injac, N. (2001). *Mala enciklopedija kvalitete, III.*, Moderna povijest kvalitete, Oskar, Zagreb.
- Injac, N. (2002). *Mala enciklopedija kvalitete, I.*, Upoznajmo Normu ISO 9000, Oskar, Zagreb.
- Laosirihongthong, T., Adebanjo, D., Choon Tan, K. (2013). Green supply chain management practices and performance. *Industrial Management & Data Systems*, 113(8), 1088–1109.
- Ravichandran, T., Rai, A. (2000). Quality management in systems development: an organizational system perspective. *MIS quarterly*, 381-415.
- Saraph, J. V., Benson, P. G., & Schroeder, R. G. (1989). An instrument for measuring the critical factors of quality management. *Decision sciences*, 20(4), 810-829.
- Soto-Acosta, P., Popa, S., & Palacios-Marqués, D. (2016). E-business, organizational innovation and firm performance in manufacturing SMEs: an empirical study in Spain. *Technological and Economic Development of Economy*, 22(6), 885–904.
- Standard ISO 9001:2008.
- Standard ISO 9001:2015.
- Tang, X. (2013). Investigation on quality management maturity of Shanghai enterprises, *The TQM Journal*, 25(4), 417–430.
- Zhang, Z. (2000). Developing a model of quality management methods and evaluating their effects on business performance. *Total Quality Management*, 11(1), 129–137.