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Quality Management Systems (QMS) and Organizational Performance

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Abstract

This article analyzes the impacts and benefits generated by the implementation of quality management systems (QMS) on the performance of organizations worldwide. The research carried out was of a bibliographic nature, since it analyzes specific literature on the subject. The data record sheet applied to books, articles, newsletters and magazines was used. This instrument allowed the registration and identification of information sources, as well as the collection of data or evidence. As a result, organizational impacts such as efficiency, consumer satisfaction, employee performance, profitability, internal improvement, market share, image improvement, competitive advantage, supplier relationships and quality of products and services can be highlighted.

Keywords: Quality management systems, impacts, organizational performance.

Resumen

Este artículo analiza los impactos y beneficios generados por la implementación de sistemas de gestión de la calidad (SGC) sobre el desempeño de las organizaciones a nivel mundial. La investigación realizada fue de carácter bibliográfico, puesto que analiza literatura específica sobre la materia. Se utilizó la hoja de registro de datos aplicada a libros, artículos, boletines y revistas. Este instrumento permitió el registro e identificación de fuentes de información, así como la recolección de datos o evidencias. Como resultado, se pueden destacar impactos organizacionales como eficiencia, satisfacción del consumidor, desempeño de los empleados, rentabilidad, mejora interna, participación de mercado, mejora de imagen, ventaja competitiva, relaciones con proveedores y calidad de productos y servicios.

Palabras clave: Sistemas de gestión de la calidad, impactos, desempeño organizacional.

INTRODUCTION

Public sector services can be debated, not only regarding their correctness and affordability, but also regarding the determination of their efficiency and effectiveness. A significant number of public services are facing the challenge of maintaining the current level of services, while at the same time they must reduce the resources invested. These developments have forced public sector organizations to seek solutions from the private sector (Pekkanen & Niemi, 2013).

Impact measurement allows feedback on public policies for decision-making. According to Frannie Leautier, the reason why impact evaluations are a primary way of monitoring that a project, program or policy is working and under what conditions is because these can compare the direct effects between the people who have and those who have not been reached by the intervention. The foregoing statement takes into consideration that a policy, program or project works to the extent that it fulfills the purpose for which it was developed.

Dorado (2012) states that, since the new Constitution in 1991, Colombia began to view monitoring and evaluation of projects, programs and policies as a mandatory act expressed directly in the constitution, delegating to these processes the quality, accountability and feedback that the actions of the State carry out in order to achieve the defined objectives.

Two concepts emerge from the foregoing: impact measurement and performance measurement. On the one hand, the problem or the approach of impact evaluation consists of establishing the difference between the outcome variable of the individual participating in the program and the outcome variable of that same individual in the absence of the program. This difference is what is known as the effect of the treatment or program (Vanclay, 2003).

On the other hand, the evaluation of the performance of the public sector is a measure of the situation in which the established goals are achieved, including the efficiency in the transformation of resources into public goods and services

("outputs"), the quality of the outputs (the quality of consumers and the satisfaction they perceive from them), the results (the current effect on behaviors compared to those desired) and the efficiency of the government's operation during the process to achieve the set goals (Matei & Matei, 2008).

The complexity of the public sector in defining the elements for measuring performance and impact translates into two basic characteristics in the implementation and improvement of the measurement. Firstly, the multidimensional nature of the measurement objectives, since governments not only focus their attention on economic attributes but also on the social and environmental benefits of their actions. The second characteristic is the lack of data for measurement, which is due in large part to the absence of a not very robust information system and the lack of continuity in the data (Zhonghua & Ye, 2012).

Hence, in general, current programs that increase public sector productivity have focused on measuring efficiency in the production of outputs. This has led to their inappropriate measurement in terms of quantity and efficiency when obtaining them, ignoring the causes and effects of other aspects in organizational performance (Pekkanen & Niemi, 2013). Such is the case of the impacts on their target social groups and the way they affect the sustainability of the entities' value offer in the long term. According to Pekkanen & Niemi (2013) this implies that measurement should be understood as an effective tool to communicate what is expected (the promise of value) and what the organization is (essential ideology or the purposes of the State to create it).

Malina & Selto (2004) identified eight attributes of the most appropriate measurements on the performance of an organization: diversity and complementarity, objectivity and precision, informative, that is, that they allow the improvement of decision-making, more beneficial than costly, quantifying of the organization's cause and effect relationships, focused on the need for improvement and in turn promoters of continuous improvement, and supportive of improvement decisions.

Although the studies to measure the impact of the implementation of a quality management system are limited, Sumaedi & Yarmen (2015) described the main studies and the dimensions they used to measure the impact of said system.

Authors	Sector / target population	Dimensions or factors used to measure impact
Psomas et al. (2013)	Food production sector	Continuous improvement, prevention of non-conformities and focus on customer satisfaction
Van Der Spiegel et al. (2004)	Agriculture and food production	Quality management, quality performance, and contextual factors (for example, the complexity of the organization, the production process and the variety of products)
Lewis et al. (2006)	SMEs	Focus on the customer, people participation, process approach, management system approach, continuous improvement, fact-based approach to decision-making, and mutual benefit interrelationships
To et al. (2011)	Public sector	Focus on the customer, people participation, process approach, management system approach, fact-based approach to decision-making, and mutual benefit interrelationships
Prajogo (2011)	Manufacturing and non-manufacturing sector	Implementation process
Singh (2008)	Manufacturing sector	Management policies, plans and actions, customer focus, qualified employees, reliable suppliers, communication system, and stable processes
Psomas & Fotopoulos (2010)	Food companies	Market benefits, customer satisfaction and quality improvement

Source: Sumaedi & Yarmen (2015).

Based on the above, this study reviews the impacts and benefits of the implementation of a quality management system (QMS) in organizational performance.

MATERIALS AND METHODS

Design

Based on the proposed objective and considering the depth of the approach to the phenomenon, this research is considered descriptive and analytical. Likewise, it is bibliographic in nature, as it analyzes specific literature on the subject.

Instruments

The information collection instrument was the data record sheet applied to scientific articles in the most important databases in the world (for example, Scopus and ScienceDirect), used as sources to collect data on the categories of interest. This instrument allowed the registration and identification of information sources, as well as the collection of data or evidence.

RESULTS AND DISCUSSION

Tarí, Molina-Azorín & Heras (2012) classify the benefits of implementing a QMS as internal and external. Internal benefits are related to job satisfaction and safety, absenteeism rate, worker salary, reliability of operations, on-time deliveries, order fulfillment, error reduction, turnover inventory and cost savings. On the other hand, external ones are associated with customer satisfaction, the number of complaints and claims, repeat purchases, market share, sales per employee, and the performance of sales and assets. Some internal and external aspects considered in the review will be analyzed below.

By way of illustration, prior to the review, it should be mentioned that some studies that relate the benefits and success factors generated from the practices of quality management. Thus, Hietschold, Reinhardt & Gurtner (2014) identified 145 articles and Aquilani, Silvestri, Ruggieri a& Gatti (2017) found 103 articles related to this topic.

Efficiency

Among the aspects that stand out the most in the implementation of quality assurance systems is the reduction of internal inefficiencies of the organization, reduction of development times for new products, production and costs in general (Gotzamani & Tsiotras, 2002; Santos & Escanciano, 2002).

Taking the above into account, a quality management system generates benefits, such as the reduction of inefficiency, especially managerial inefficiency, which encourages organizations to adopt the principles of employee engagement and participation, teamwork, training and organizational culture (Tzelepis, Tsekouras, Skuras & Dirimas, 2006). Likewise, efficiency is related to the costs incurred in the design, implementation, operation and maintenance of continuous improvement processes. Moreover, producing or serving with quality generates important expenses in the management process, which require the introduction of important changes in the cost behavior patterns, as well as in their planning, measurement and control processes (Holleran, Bredahl, & Zaibet, 1999; Reincheld & Sasser, 1990).

The purpose of reducing costs associated with the manufacture and provision of services is to improve productivity and efficiency, as mentioned by Arauz & Suzuki (2004). This situation largely depends on the degree of motivation of human talent, and according to this cost criterion, an increase in profitability is generated from fewer reprocesses, customer complaints or material losses, as well as the minimization of times in work cycles, through the effective and efficient use of resources. This perspective is shared by Martinez-Costa et al. (2008). Lo & Chang (2007) propose that this decrease in costs is also due to the elimination of errors and the reduction of reworking (reprocessing).

This is re-defined by Goedhuys & Sleuwaegen (2013), who explain that this situation is caused by improvements in the internal processes, which arise when all the components of an organization not only know what they have to do but are also oriented to do it, framed in a greater economic use. Singels et al. (2001) suggest indicators to measure the performance of production processes through the improvement of productivity, this being one of the criteria to establish the impact obtained by implementing a quality management system. This is achieved mainly through the improvement of procedures (Pan, 2003; Kaplinsky, 2010).

Likewise, efficiency is impacted by the improvement of the internal organization, which is achieved through more fluid communication, with defined responsibilities and objectives (Gotzanami & Tsiotras, 2002; Singh, 2008).

According to Hooshang & Lollar (2003), quality management is successful if it provides benefits to the organization, such as fewer defects, reduction of rework and waste, lower inventories, employee satisfaction, situations that will lead to the efficiency of the system. In this same sense, Demuner (2009) concludes that efficiency results from the formality that is given through the reports that allow to follow up the procedures in order to generate order and cleanliness, which is evidenced in cost reduction. Goedhuys & Sleuwaegen (2013) highlight how quality management systems have had an impact in countries where the institutional framework is especially weak, being evidenced mainly in the reduction of operating costs.

In accordance with the above, Martínez-Costa et al. (2008) state that conditions such as internal motivation positively impact performance results, both for internal and external factors, generating, among other aspects, increased productivity.

Improvement in consumer satisfaction

Aquilani et al. (2017) show that the customer approach has gained importance in recent times in quality management studies, in their different proposals. In general, quality management systems are customer-oriented, since it relates to the objective of identifying and satisfying the current and

emerging needs of consumers.

Customer satisfaction as a result of the implementation of a quality management system is positively impacted in aspects such as the handling and reduction of complaints and claims (Puerto, 2009; Zaramdini, 2007). On the other hand, Singels et al. (2001) concentrate this impact on the quality of the products. Palacios (2015) suggests that responding to the customer's need for quality is in itself a contribution generated from the application of a system. Other studies such as those of McAdam & Mckown (1999), Gotzanami & Tsiotras (2002), Singh (2008), and Casadesús & Karapetrovic (2005) have focused on this perspective.

According to Arauz & Suzuki (2004), customer satisfaction is related to the purposes of Six Sigma, which among other aspects highlights the timeliness and quality of the delivery of products and services. Likewise, Lo & Chang (2007) state that some of the external benefits, associated with customers, are evidenced in compliance with the principles of total quality and correspond to the understanding of current and future needs, meeting their requirements and exceeding their expectations (see Martínez - Costa et al., 2008).

Finally, Fanny et al. (2011) find that customer satisfaction is obtained if there is satisfaction on the part of the employees, and it is evidenced in aspects such as friendliness, understanding and good service.

Improvement in employee results

Result is synonymous with the words product, performance or achievement. In the latter case, results in employees should be understood as the improvement of job performance. In this regard, job performance is the value that is expected to contribute to the organization from the different behavioral episodes that an individual carries out in a period of time. Likewise, Syr (2012) defines it as the behavior or actual conduct of workers, both in the professional and technical order and in interpersonal relationships.

Arauz & Suzuki (2004) establish that one of the main impacts generated by the implementation of a quality management system is related to the improvement of work performance, one of the main aspects being the motivational nature. In this sense, they classify organizations according to their size and conclude that this motivation is an approach adopted during construction by both small, medium and large corporations.

On the other hand, Kaziliunas (2010) states that the main benefit of the quality management system is concentrated internally and is given by the degree of motivation of human talent, which influences operational processes. This idea is shared by Martínez-Costa et al. (2008), Lo & Chang (2007), Rodríguez- Escobar et al. (2006) and Zaramdini (2007). In the case of the latter, and in addition to the motivational aspect, the impact is evidenced through the retention of the workforce and a better work environment. Likewise, a quality management system promotes a greater experience for the people involved in its implementation and maintenance than those who are not involved, which means that labor competencies are strengthened. Casadesús & Karapetrovic (2005) identify that organizational communication is another of the aspects positively impacted.

Finally, Martín et al. (2010) evidenced that improvement could result from the behavior of the staff, which shows a greater feeling of belonging to the organization, a greater participation in the establishment of objectives, and is more active when it comes to promoting teamwork.

Profitability

According to Fuentes, Montes & Fernández (2006) and Fuentes & Torres (2012), the implementation of a quality management system has a positive impact on the profitability of companies. It should be noted that profitability is understood as the relative measure of profits. It is the comparison of the net profits obtained in the company with the sales, with the investment made, and with the funds contributed by their owners (Morillo, 2001). This is generated as a result of increased income and decreased costs (Falicoff, 1997).

Profitability requires, in part, the improvement of the internal operation and the control of costs and expenses of the operation. This is very important for the sustainability of companies since profitability per se provides information on the return on investments that have been made through the definition and use of liquidity and profitability indicators (Medina, 2006). This is consistent with financial theory, since if a company improves all its administrative management processes, it increases the aforementioned indicators, which means that the company has less risk of failing in financially difficult situations in the short term as it has a better capacity to meet its financial obligations, which guarantees a better scenario for the company (Herrera, Mendoza & Morelos, 2011). Faced with the issue of costs and their positive relationship resulting from the implementation of a quality management system, there are studies that share this type of benefit, among which the following stand out: Lo & Chang (2007), Goedhuys & Sleuwaegen (2013), Carballo (2010), Demuner (2009), Martinez-Costa (2008), Zaramdini (2007) and Benner & Veloso (2008). The authors, additionally, suggest that this cost reduction benefits from adequate process management that is positively affected by the use of technology.

Improving financial performance, as expressed by Corbett et al. (2005), is in fact an impact of the implementation of a quality management system, as it is the rigorous and comprehensive manner of its implementation that generates these contributions to the organization. Tari Guilló et al. (2012) and Fontalvo, de la Hoz & Vergara (2012) have established that certified companies present more sales, an aspect that affects the profitability of the company.

Likewise, O'Neill, Sohal & Teng (2016) demonstrated that the company's quality management orientation provides a statistically significant financial performance advantage (and by survival inference) over those that are not dedicated to quality management. The research is a significant addition to the financial performance-quality literature and provides a way forward for the use of two new financial indices as performance measures.

Finally, Kumala & Rosyidi (2020) and Busu (2019) revealed that TQM competency design, together with new products and the just-in-time inventory system, have been positively associated with the financial performance of manufacturing companies, in other words the practices of quality management added to other organizational aspects positively impact business profitability.

Internal improvement

For Hackman & Wageman (1995), quality management practices allow the permanent search for opportunities to develop better methods to carry out work in the company, that is, it allows internal improvement and adjustment of the respective processes.

Continuous improvement is the set of recurring activities to improve the performance of processes (NTC-GP 1000: 2009). As mentioned above, the main benefits and results derived from the implementation of a quality management system are of internal origin, especially those related to the improvement of processes (Singh, 2008; Pan, 2003; Kaplinsky, 2010; Gotzamani & Tsiotras, 2002; Simón Martín et al., 2010; Carmona-Calvo, 2016; Lo & Chang, 2007; Rodríguez-Escobar et al., 2006). Additionally, Simón Martín et al. (2010) establish that the improvement in the management of processes occurs especially in their coordination.

The attributes in the improvement of the processes, such as greater reliability of the processes, shorter response time, inventory reduction, improvement in processing. Other authors concentrate the improvement in the internal operation in the definition of responsibilities and the measurement of their performance (Michelena-Fernández, 2011; Fontalvo, de la Hoz & Vergara, 2012), as well as in their documentation (Fonseca, Muñoz & Cleves, 2015).

Yusr, Mokhtar, Othman & Sulaiman (2017) found empirical evidence that supports a positive and significant impact of the practice of TQM and internal innovations in organizational processes. García-Fernández (2016) highlights that the definition of responsibilities goes hand in hand with knowledge management, empowerment and teamwork, a situation that results in the improvement of processes through innovation.

Market share

As a result of their implementation, and especially when a certification of the system is obtained, quality management systems have allowed enhancing the capacities of organizations, and as a consequence, the certified companies have improved their business. Among other aspects, they have allowed expanding their participation in the market (Zaramdini, 2007). On the other hand, when a quality management system presents a high orientation to external factors such as customer satisfaction, inclusion of new products and improvement in distribution logistics, there is a higher impact in greater customer loyalty (Fikru, 2014; Singh, 2008; Rodríguez-Escobar et al., 2006; Lo & Chang, 2007). Additionally, these customers acquire greater trust towards companies (Formoso, 2011).

Other studies suggest that the implementation of a quality management system, the result of internal improvement through the processes, commitment and greater participation of employees, allows the fulfillment of the value promise, which achieves an increase in customer satisfaction, promoting more sales and consequently greater market share (Fonseca, 2015). This market share is backed by higher levels of trust on the part of suppliers, guaranteeing quality in the supply of inputs that have an impact on higher levels of products delivered to customers (Huertas, 2009).

Another aspect that stands out in greater participation in the market is the innovation evidenced in the generation of products, such as in the provision of services (García-Fernández, 2016).

Image improvement

By consensus, authors have established that the implementation of a quality management system improves the image of companies, although the mere implementation, if not accompanied by subsequent activities, can distort and dissipate the gains obtained in image Fa & Saizarbitoria (2005), making it more competitive and achieving business success by positively impacting the organizational image (Formoso, 2011).

When a quality management system is implemented in a proactive way, it can act as a "foundation" on which a quality institution is built, which is transmitted to stakeholders in accordance with what Terziovski, Samson & Dow stated (1997). On the other hand, the generation of trust in both suppliers and clients, in those cases where the sector demands it, is a sign of improvement of the business image (Lee, 1998; Magd & Curry, 2003; Lo & Chang, 2007; Zaramdini, 2007).

Although it has been identified that quality management systems seek a comprehensive improvement of companies, some studies have shown that the main cause of their implementation is the improvement of quality, which is the result of competition pressure (Rodríguez-Arnaldo, 2014).

An improvement in the provision of services, higher levels of customer service, exceeding expectations, guaranteeing their satisfaction and reducing the number of complaints are elements that influence the improvement of the institutional image, aspects that are highlighted by Brea (2015).

Improved competitive advantage

Vellojin (2006) argues that competitive advantage arises from the value that a company is capable of creating and offering its buyers and that exceeds the cost of that company to create it. In this sense, it is clear that the competitive advantage is an organizational capacity to satisfy the needs of their consumers. In this way, the competitive advantage comes from the ability to meet consumer needs more effectively, with products or services that are highly appreciated by consumers, or more effectively, at a lower cost (Chienwattanasook & Jermsittiparsert, 2019; Yanya & Mahamat, 2020; Tortorella, Giglio, Fogliatto & Sawhney, 2019).

Quality management systems allow companies to insert themselves in an increasingly globalized world. However, this occurs if there is awareness of its benefits and not the desire for certification. Abraham et al. (2000), in this sense, highlight that the implementation of a quality management system can become a competitive advantage, an idea also supported by Rodriguez-Escobar et al. (2006), Sigh et al. (2005), Lo & Chang (2007), Zaramdini (2007) and Michelena-Fernández (2011). Part of this competitive advantage is due to internal factors associated with the improvement of processes and the increase in productivity, as expressed by Carmona-Calvo (2016). Tarí (2000) identifies the integration of materials, machines, methods, human resources and organization as elements associated with competitive advantage, stating that although external factors can make the degree of competitiveness, it is not the same for all organizations. However, it is the internal factors stated and therefore the way of acting in the company that allows it to achieve a competitive advantage.

Another aspect in which the competitive advantage stands out occurs from the point of view of the clients when they perceive quality in the provision of services and products. Consequently, they prefer these to those of the competition. In this sense, the competitive advantage occurs at lower costs and lower value, as mentioned by Tarí-Guilló (2000).

Another factor that can make a management system an element of competitive advantage is the application and innovative integration of quality objectives to goals and processes and procedures, as well as actions that guarantee organizational sustainability (Rodríguez, 2009).

Improved relationships with suppliers

The relationship with suppliers is the phenomenon of strategically planning and managing the interactions of organizations with third parties that provide goods and / or services (products) to maximize the value of those interactions (Vermeulen, Jan-Harm, Sukdeo & Kruger, 2020).

The Technical Standard of Quality in Public Management identified as NTCGP 1000: 2009 and ISO 9001: 2008 establishes that the entity must evaluate and select suppliers based on an objective selection and based on their ability to supply products and/or services, in accordance with the requirements previously defined by the entity. Precisely, these criteria generate certain complexity to the process since their nature in most cases is eminently subjective. Hence, there are significant differences in the qualification of a supplier, which depends on who is carrying out the evaluation (Umaña & Osorio, 2006).

Among the benefits identified as a result of the implementation of a quality management system in customer relations enunciated are: description and detailed documentation of the different steps and activities that involve suppliers, their integration with technology, and the consolidation of records of the evaluations carried out. Zaramdini (2007) considers the integration capacity as a good thing, as well as the tools within the system established to measure the performance of suppliers.

The search for suppliers within the management system gives information to the organization to learn more about the market and establish greater cooperation channels (Ros, 2001). Flores & Salgado (2010) identifies another benefit when establishing that a management system that generates awareness of external benefits is aimed at generating alliances with suppliers. In fact, in some countries, the integration of producers with suppliers has become a public policy that seeks benefits from both parties through the implementation of management systems. An example of this can be seen as the governments of Brazil and Chile have initiated and supported projects that aim to promote the use of quality management techniques in certain groups of companies that make up the production chain. For example, the Chilean Government projects aim to organize activities related to quality assurance in the network of suppliers and subcontractors of a large company, thus creating conditions that benefit both (Schuurman, 1998).

Finally, the implementation of a quality management system allows organizations to establish processes and procedures for the selection of suppliers, some of which are governmental. In this sense, the impact is given both from the documentary point of view, and from the compliance with legal provisions (Osorio, Arango & Ruales, 2013). In summary, quality management, within the production process, must develop closer relationships with suppliers (Park, Shin, Chong and Park, 2010) because, according to statistical data, about fifty percent of nonconformities in organization is due to faulty input materials and resources. In this logic, the relationship between supplier and buyer is one of the most important parts of the quality improvement process (Kannan & Tan, 2006; Vermeulen et al., 2020).

Improvement in the quality of products and services

Yusr et al. (2017) and Yusr (2016) evidence in manufacturing companies, the relationship between quality management systems, specifically in TQM practices, and innovative results in products especially. The improvement of the quality of products and services is benefited by innovation through research in those organizations where the impact of a quality management system is focused on external factors (Ortiz, 2013).

Another benefit in terms of improving the quality of products or services as stated by García, Brea & Del Rio (2013) and Van Trang & Do (2020) comes from a better knowledge of customer expectations, that is, the wishes of consumers since service quality is a relative concept, which is determined by the difference between the perceptions and expectations that the customer has and the level at which the company manages to satisfy them. Likewise, the improvement in the provision of services is caused by the fulfillment of previously documented standards, as well as in the timeliness and consistency in their provision (Aguirre-Gas, 2008) and in the levels of trust that services and products generate in customers (Rave & Mesa, 2014).

CONCLUSIONS

As a result of the literature review process, it is evident that the implementation of quality management systems has an impact on organizations and their performance in different aspects. In this regard, one of the most relevant is its impact on the efficiency of organizations because it allows the continuous improvement of processes, which reduces costs associated with reprocessing, customer complaints or loss of materials, as well as minimizes times in the work cycles. Likewise, the impact on customer satisfaction is defined as the customer's perception of the degree to which their requirements have been met. In that sense, customer satisfaction causes a decrease in complaints and claims.

On the other hand, profitability requires, in part, the improvement of the internal operation and the control of costs and expenses of the operation, which is largely influenced by a correctly implemented quality management system. And, as mentioned above, the main benefits and results derived from the implementation of a quality management system are of internal origin, especially those related to the improvement of processes. Finally, market share seems to be one of the consequences generated by actions resulting from the improvement of organizational management.

In that order of ideas, in accordance with the hypotheses raised for the Colombian context, it is expected that the situation of national organizations is framed in the theoretical and empirical evidence that was exposed from related literature from different countries. Indeed, it will be necessary to carry out research that addresses the hypotheses raised in order to verify them, and to take another step in that direction.

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