

Benefits of Quality Management System (QMS) Application in the South African Manufacturing Sectors

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Abstract

The lack of a QMS will affect the manufacturing sector which leads to a complete failure because there will be a lot of wastage, rework, time wastage and loss of money. Quality assurance's main aim is to do regular and continuous assessment of the general project to meet quality standards. The quality management system ISO 9001 also helps manufacturing companies to ensure that they comply with satisfactory production procedures and other relevant management measures. The study set out to put the theoretical concepts of QMS into practice in the context of manufacturing sector in South Africa. The research took place in Johannesburg, South Africa. The scope of this research was limited to quality management in the manufacturing sector (manufacturing plant and warehouses) and employee participation in the introduction of QMS. This research was conducted using a quantitative approach. Data was gathered and analyzed using descriptive analysis. This indicates that the data was collected using a well-designed questionnaire. The results showed that QMS helps South African manufacturing organizations stay in business, cuts down on wasted time, and boosts customer satisfaction.

Keywords

Quality Management, Quality Planning, Quality Assurance, MS, Manufacturing Sectors

1. Introduction

Mehrotra (2018) opined that implementation of quality management system helps manufacturing organisation ensure compliance with good manufacturing practices while continuing to effectively implement quality processes that will advance quality performance of the employees as a key factor to providing customer's satisfaction. The lack of a QMS will affect the manufacturing sector which leads to a complete failure because there will be a lot of wastage, rework, time wastage and loss of money (*Abbie, 2015*). In order for a QMS to be effective for QMS implementation to be effective it requires the involvement of the top management, workers training sessions, organisational commitment to quality, a strategic quality planning, workers participation, change of organizational culture, frequent review of measure performance and quality plan. In addition, *Tricker (2008)* stated that there are six principles that have to be followed in Quality Management System (QMS) in for the manufacturing sector to reap the full benefits of QMS. These tenets include a dedication to the customer, strong leadership, employee buy-in, a focus on process, the establishment of strong bonds, constant attention to quality, and the use of data to inform decisions. *Abbie et al. (2015)* stated that although there are also factors that the prevents the adoption of QMS in the manufacturing sector this include money shortage, support program shortage, lack of customer focus, lack of documentation, non-assistance from top management as well as quality cost misunderstanding. These issues have to be addressed in the manufacturing in order to always satisfy customers. Many industries use the ISO 9001 system to

make sure that they comply with the QMS standards to enhance quality improvement, customer satisfaction and productivity. ISO 9001 standard is a universal model of principles and beliefs dedicated to QMS that define the structure for quality improvement and performance. Additionally, the ISO 9001 includes designing quality principles to provide a structure for the organisation in creating and maintaining customer relationships by understanding the customer's expectation and needs. The quality management system ISO 9001 also helps manufacturing companies to ensure that they comply with satisfactory production procedures and other relevant management measures (ISO, 2014). It can be challenging to keep customers happy when you can't offer them the best product at the lowest possible price. As a result of increased competition from a wide range of individuals, businesses today are under increasing pressure to produce high-quality goods at lower prices. As a result, the purpose of this research is to assess the positive effects of implementing QMS in South African factories.

1.1 Research Objective

The objective of this research is to establish the benefits of the QMS in South African manufacturing organisations.

2. Literature Review

This section discusses the concept of quality management; quality planning, quality control and quality assurance, as well as theoretically analysing and establishing the benefits of the application of QMS in the South African manufacturing organizations in this section.

2.1 Quality Management

Quality is a well-known word from many people from different industries and areas of life and it is more used in today's people life than few years ago. Quality is defined as the ability of satisfying customer's needs by providing goods and services that are in concordance with their criteria (*Hoonakker et al. 2010*). Generally, the term quality refers to the standards that are based on expected consumption and expense. Furthermore, it was stressed that quality represents a great tool for the success of many industries in the world. Thus, the management of quality is a very crucial aspect that every organisation should take seriously. Quality management involves three stages or phases which are as Quality planning, Quality control and quality assurance. These phases are followed in reducing job errors during the production of various items (*Evans & Lindsay, 2000*).

2.2 Quality Planning

Batson and McGough (2006) asserted that Quality Planning (QP) is a phase of quality management system where the definition of the project applicable quality standards takes place, and the decision of how quality standards are to be achieved. In organisations, the idea of QP refers to guarantee efforts to achieve the necessary quality standard for the result that is well-coordinated and designed. The efficiency of QM is very crucial for all firms as its both provides the organisation's competitive advantage and customer satisfaction service boosting. QP is the first phase of Quality Management procedures. In order to achieve a good quality result, it requires the preparation of a quality plan in advance and continuous check, do and act on the project. Quality management helps the community with appropriate processes, methods and strategies that can be efficiently applied for satisfactory projects.

According to *Lee et al. (1998)*, QP is divided into two methods categories which are preventive and design of parameters methods. The preventive method consists of preventing noncompliance happenings and exploitation or unpleasant later project phases' surprises from the design stage already. The design and parameter method mainly consist of at the same maintaining the expected product quality degree and obtaining the finest existing economic effects and methods. For the achievement of a pleasant project's result, it is very crucial to pay more attention and choose the appropriate way determining the controllable parameters that have more effects on the quality of the service or product. Quality planning analysis involves determining the quality plan's task and goals that must be established, developing general quality planning activities guidelines, determining how to prepare and assign the individuals responsible for the quality planning phase, evaluating the number of resources available to be provided for the quality planning' execution, and elaborating on the various planning operational procedures needed for a successful quality planning phase. *Nicolay et al. (2012)* stated that to plan effectively two techniques and tools are used which are cost benefit analysis and cost of quality. The first techniques imply the comparison of quality cost against planned benefits. The second technique includes all costs incurred by expenditure over the product's lifespan in avoiding non-compliance with requirements, determining the consistency of the product to satisfy requirements (*Nicolay et al. 2012*).

2.3 Quality Assurance

Quality assurance consist of organizing and structuring activities that have to be carried out within the quality framework and furthermore demonstrate, when appropriate, the organization can meet the quality requirements according to *Evans & Lindsay (2007)*. *Wingate (2014)* stressed that QA involves conducting an assessment of the overall project on a regular basis to ensure that the project meets the applicable quality requirements. Quality assurance represents a best way to fulfil the client requirements. QA begins with customers fulfilling their needs. QA also begins with defining customer needs and ends only when customer satisfaction is complete. Quality assurance is a very important aspect of quality management that has to be carried delicately because the client is going to use the products after production. In addition, *Evans & Lindsay (2010)* stated the various techniques used in quality assurance are quality audits as well as all the quality control tools and techniques.

2.4 Quality Control

According to *Evans and Lindsay (2007)*, quality control is the analysis of particular project outcomes to assess if they adhere to the applicable quality standards and to find possible means of removing the causes of unpleasant output. Quality control (QC) is a mechanism used in quality management to ensure that a service or product has a certain degree of quality. It incorporates the company's behaviour that is considered as appropriate for the inspection and verification of the service and product characteristics. The QC main objective is to ensure that the goods, services or processes given meet particular requirements and are reliable; fiscally sound and efficient (*Cao, 2010*). The QC involves the monitoring of a particular project outcomes to assess if they meet applicable quality requirements and determine ways of removing the cause of unsatisfactory performance. Furthermore, *Wingate (2014)* put forward that the different techniques used when undertaking quality control are inspection, Statistical sampling, Pareto diagrams, Control charts, flowcharting.

2.5 Benefits of Quality Management System (QMS) application on the South African Manufacturing Sectors

Quality management system is acknowledging to be a good weapon to the manufacturing industry because it promotes customer satisfaction, continuous improvement of products quality, improved performance and efficiency, improved teamwork and increased profit (*Abbie et al., 2015*). Thus, every SAMS should make of quality management to be successful, stable as well as productive. The different benefits are discussed as follow:

Enables the Company to Remain in Business

An appropriate QMS performance helps to reduce the cost of the process, thereby reducing the quantity rate or cost of the goods, thereby sequentially improving and restoring equity and helping the company to keep business normal (Pavadavardini et al., 2015). Quality management system allow the organisation to remain constant by providing procedures and processes required to satisfy customers by producing or achieving good quality products (Auckland, 2000). Therefore, the manufacturing organisation has to take into consideration QMS to remain active in business.

Enhances Operation Performance

According to Samson & Terziovski (2013) argues that quality management system enhances the operation performance indicators to measure the quality and cost of their goods and services and provides continuous improvement in the company. These measures incorporate timeliness and reliability of delivery, production defects, inventory turnover among others. In addition, a well implemented QMS also gives all the stakeholders the confidence that the organization will have consistency in product quality and improve over time (Samson & Terziovski, 2013). This will definitely help the SAMS to have control on their customers and operation activities. Additionally, a good QMS enables continuous improvement's cycle going on, the organizations will make progressive performance, which clearly reflects the time it took to gain market share, increase sales and profits. Meet all applicable legal and regulatory standards, maintain a distinct advantage over the competition, enjoy a stellar reputation amongst their clientele, and return a healthy profit to their investors on a global scale (Pavadavardini et al., 2015).

Reduce Wastage and Rework

Bewoor and Pawar (2010) transferred that the rework of goods always has negative impact on time, quality and cost. This imply that rework will take additional time (delays) to make or repair the product which can affect the targeted number of products to produce in the South African manufacturing sector (SAMS). The quality of the product is affected if it is not manufactured based on customers' needs which will lead to goods rejection or even loss of clients. Additionally, reworking a product may require rawer materials which will either increase the cost of the product or make the company lose money as the raw material added could have been used to produce another item. Based on the findings of previous studies on the positive influence of quality management on both the effectiveness and efficiency of processes, it is suggested that manufacturing companies should adopt quality management because it allows less wastage, less rework, less finished goods repairing and scrap production as the manufacturing of products will be done according to the specific requirements and framework given in the QMS (Pavadavardini et al., 2015).

Enables Continuous Improvement

According to Oakland, (2000), Continual improvement guarantees consumer's satisfaction by obtaining goods or system that reach their demand or precondition, and that conveys appropriate performance. Essentially, the company will benefit from a higher level of business, enhanced teamwork, and enhanced operational results (reducing dispersion and increasing productivity), while meeting legalization, and the government's needs for the community (Oakland, 2000). Therefore, quality management system should be used to obtain appropriate results and continuously improve the system of the SAMS.

Improves Communication

The manufacturing sector requires constant communication among stakeholders to enable understanding of the work that has to be done. The lack of good communication will lead to errors, goods reworks, misunderstanding, time wastage as well as customer dissatisfaction (Bewoor and Pawar, 2010). Therefore, the manufacturing industry can use QMS in the SAMS to improve communication and interaction between various sections, departments, and management levels (Bewoor and Pawar, 2010).

Increases Competitive Advantage

Quality management system will enable customer's satisfaction and also company 'good reputation by helping the company meet their needs (Antony, 2016). QMS also allow insignificant rework, time gain and low cost products delivery which will result in high products sales, business growth and increase profits (Anthony, 2016). This is explained by the fact that customers prefer goods of great quality at lesser costs which will draw near many customers to the company and make the company's competitive advantage stronger than rival manufacturing companies in South Africa.

Create Faithful Clients

Satisfying customers' needs will lead to client's contentment and SAMS preference. The QMS adoption is capable of helping the manufacturing industry to attain client satisfaction, trust as well as solid relationship. This is achieved through the delivery of expected goods at a very reasonable cost. Once clients trust is obtained it is very difficult for them to go see else (other companies) because they have what they are always looking for (Ali, 2013).

Good Organisational Communication and Teamwork

The implementation of QMS requires constant communication between works for a successful, better operation production as well as teamwork in SAMSs. Ali (2013) stressed that this is justified by the fact that it practically binds all workers together if the organisation want to succeed. Poor communication between the parties involved in the manufacturing will result in a complete failure because no proper communication promotes inadequate operation procedures, misunderstanding, poor product quality, waste of energy. Good communication will enable all works from all levels to be on the same line on what to do for good operation success (Ali, 2013).

Promotes Employee's Work Motivation and Satisfaction

Most of manufacturing industries that are using QMS benefit of its advantage among which appropriated attitudinal alterations and employee's performance improvement, a platform for individual worker development as well as the workers' concentration and interest in production operations (Kain, 2011). Furthermore, QMS also promotes customer focus, recognition and reward, trust among workers, teamwork, organisational trust, and also positive impact on worker's job satisfaction. These benefits boost employees to work and involve themselves in operations that will lead the SAMS to success.

Prevents New Entrants in the Manufacturing Sector

The entrance of new manufacturing companies comes with disadvantages and risks among which low profit generation, competitive rivalry as well as negative impacts on the competitive position. This is a risk for especially big companies. With the use of QMS, organisations are able offer to customers' very good quality products at a low or affordable cost which will enable the existing company products preference (CFI, 2021). This will therefore help to prevent new entrance to the SAMS because it will be very difficult to offer better or greater quality at a low price to beat existing companies.

3. Research Methodology

Research design is a plan that specifies how the research will be conducted, what data will be collected, and where it will be located (Cooper & Schindler, 2011). The research design is the overarching strategy that a researcher uses to answer research questions; it describes how the questions themselves can be clearly defined as the research design, which should include objectives that specify the sources from which data will be collected (Saunders, Lewis & Thomhil 2012). The researchers chose a quantitative approach because it provides the most accurate and thorough data for gauging the value of implementing a quality management system in South African factories. Because of its central location in South Africa and the proximity of suitable manufacturing facilities, Johannesburg, Gauteng was chosen as the site for this study of the practical implementation and empirical testing of the theoretical concepts underlying QMS in the manufacturing sectors. In addition, Gauteng is home to the highest concentration of both people and factories in South Africa. In addition, both public and private sector employees from crucial manufacturing sectors are included in this analysis. Workers in the South African manufacturing sector who are assemblers, general laborers, processors, material handlers, supervisors, managers, QM directors, and operators are the focus of this study. This is because of the depth of their expertise and the potential contribution they could make to achieving this research aim. Professionals in the manufacturing sector in the province are the focus of this study, which aims to improve the empirical testing and practical applicability of theoretical concepts of Quality Management Systems (QMS) using a manufacturing sectors as an example for the purpose of primary data,

establishing a before-and-after time period for the implementation of QMS in the organization, and using a thoughtful stratified random sampling technique because of general constraints in covering the entire population. A sample size of 150, including 90 managers and 60 employees working in the organizations during the study period; the second stage of this research study focused on the perceptions of employee respondents on the practice, taking into account the views of those respondents identified in the first stage. In addition to reading a wide range of periodicals, newsletters, circulars, manuals, and other documents produced by the aforementioned repurposed manufacturing sectors, secondary data was collected from a variety of publications. The questionnaire was the study's primary data collection tool. The questionnaire is split into two parts: Part A focuses on demographic data about the participants and their respective organizations, and Part B discusses the advantages of implementing a quality management system in South African factories. In order to establish the degree of association between the variables proposed in the research question, a pilot study was carried out. This helped pinpoint some of the unclear factors. The research questionnaire was modified by eliminating the ambiguous variables. Statistical Package for the Social Sciences, Version 27 was used to analyze the study's retrieved data (SPSS V27). The analyses yielded the standard deviation (SD) and mean item score (MIS). Similar MIS factors were ranked according to their standard deviations, with a lower standard deviation receiving a higher position. The Cronbach's alpha value for the reliability of the research instrument is 0.946, indicating high levels of internal consistency (Tavakol & Dennick, 2011).

4. Result of Findings

4.1 Demographic Information Result

From an analysis of 150 responses to a questionnaire, we learn that 27.6% of respondents hold a Bachelor's degree, 18.1% hold a Master's degree, 16.2% hold an Honours' degree, 14.3% hold a Post-Matric certificate, 10.5% hold a Doctoral degree, and 10.5% hold a Professional degree; 1% are Field Technicians, Maintenance Experts, or Maintenance Officers. The data shows that the median educational level of respondents is a Bachelor's degree. This shows that the respondents have the necessary literacy skills to comprehend the survey instrument and provide reliable data necessary to accomplish the research goals. The oldest group of respondents aged 35–49, make up 35.2% of the total, followed by the youngest, aged 25–34, at 26.7%, and the oldest, aged 50–70, at 26.7%. Only 11% of the population falls in the youngest age bracket of 18–24. According to the respondents' distribution by occupation, 17.1% are managers, 12.4% are assemblers and operators, and 13.3% are supervisors. Both general laborers and processing workers have an identically high unemployment rate of 11.4%. 8.6 percent are material handlers/QM directors, 1.9 percent are field technicians/maintenance officers/self-employed, and 3 percent are administrative/maintenance/self-employed professionals/other. Most respondents hold managerial or supervisory positions, according to the data. These are the most senior management roles, where one can make a significant impact on quality assurance. This shows that the information provided by the respondents is reliable and can be used to accomplish the goals of the study. When respondents' years of experience were broken down, 24.8% of them were found to have had only one to five years' worth of manufacturing experience. Of the respondents, 22.9% have between 6 and 10 years' experience in manufacturing, 21.9% have between 11 and 15 years' experience, 12.4% have between 16 and 20 years' experience, and 10.5% have more than 20 years' experience. Experience levels below one year are the lowest, at 3.0 percent. From this, we can infer that 67.6% of respondents have worked in manufacturing for at least 11 years. This is sufficient enough to meet the needs of this investigation.

4.2 Descriptive Analysis for the benefits to the application of quality management system in the South African manufacturing organizations

The respondents ranked the variables using a Five-point Likert scale where: 1= Strongly Disagree; 2= Disagree; 3= Neutral; 4= Agree; 5= Strongly Agree. 'Enables the company to remain in business' was ranked first with a mean value of 4.714 and SD of 0.4746; 'Reduce time wastage' was ranked second with a mean value of 4.695 and SD of 0.5024; 'Promotes customer satisfaction' was ranked third with a mean value of 4.676 and SD of 0.4902; 'Reduce cost' was ranked first with a mean value of 4.619 and SD of 0.5439; 'Enables continuous improvement' was ranked fifth with a mean value of 4.600 and SD of 0.5114; 'Enables finance savings' was ranked sixth with a mean value of 4.581 and SD of 0.5148; 'Promotes teamwork' was ranked seventh with a mean value of 4.543 and SD of 0.5194; 'Eradicates loss of customers' was ranked eighth with a mean value of 4.486 and SD of 0.5210; 'Reduce wastage and rework' was ranked ninth with a mean value of 4.476 and SD of 0.5206. Table 1 further shows that 'Reduces goods and services rejection' and 'Promote the company's productivity and efficiency' were both tied at tenth position with a mean value of 4.467 and SD of 0.5201, 'Enables cooperation' was ranked twelfth with a mean value of 4.381 and SD of 0.5073; 'Enhances operation performance indicators to measure the quality and cost of goods' was ranked thirteenth with a mean value of 4.362 and SD of 0.5024; 'Create faithful clients' was ranked fourteenth with a mean

value of 4.295 and SD of 0.4789. ‘Improves communication among’ and ‘Increases competitive advantage workers’ were tied at the same mean of 4.286 but with SD of 0.4746 and 0.4945 respectively and was ranked fifteenth and sixteenth accordingly.

Table 1. Benefits of the Application of Quality Management System in the South African Manufacturing Organizations

Benefits of the Application of Quality Management System	Mean	Std. Deviation	Rank
Enables the company to remain in business	4.714	0.4746	1
Reduce time wastage	4.695	0.5024	2
Promotes customer satisfaction	4.676	0.4902	3
Reduce cost	4.619	0.5439	4
Enables continuous improvement	4.600	0.5114	5
Enables finance savings	4.581	0.5148	6
Promotes teamwork	4.543	0.5194	7
Eradicates loss of customers	4.486	0.5210	8
Reduce wastage and rework	4.476	0.5206	9
Reduces goods and services rejection	4.467	0.5201	10
Promote the company’s productivity and efficiency	4.467	0.5201	10
Enables cooperation	4.381	0.5073	12
Enhances operation performance indicators to measure the quality and cost of goods	4.362	0.5024	13
Create faithful clients	4.295	0.4789	14
Improves communication among workers	4.286	0.4746	15
Increases competitive advantage	4.286	0.4945	16

4.3 Discussion of Findings

The reviewed literature revealed the beneficial factors of the application of QMS in South African manufacturing sectors. Based on the analyses of the survey instrument (Questionnaire), enables the company to remain in business, reduce time wastage, promotes customer satisfaction, reduce cost, and enables continuous improvement are the major benefits of derived from the application of quality management system in South African manufacturing sectors. This finding is in line with the study of Abbie et al (2015) who argued that the application of QMS promotes customer satisfaction which in turn enable the business to remain in the competitive market because clients/customers are the determinants of every business. The remaining benefits derived from the application of quality management system in the South African manufacturing sectors are as follow in the order of hierarchy: enables finance savings, promotes teamwork, eradicates loss of customers, reduce wastage and rework, reduces goods and services rejection, promote the company’s productivity and efficiency, enables cooperation, enhances operation performance indicators to measure the quality and cost of goods, create faithful clients, improves communication among workers, and increases competitive advantage

The findings also indicated that the lowest mean value was 4.286. This implies that the identified benefits in the reviewed literatures are all applicable to South African manufacturing industry.

6. Conclusion and Recommendations

The objective of this study was to establish the benefits of the quality management system in South African manufacturing sectors. Based on the findings from the questionnaire survey administered the qualified target

population, the benefits of quality management system in South African manufacturing sectors in the order of hierarchy are: enables the company to remain in business, reduce time wastage, promotes customer satisfaction, reduce cost, enables continuous improvement, enables finance savings, promotes teamwork, eradicates loss of customers, reduce wastage and rework, reduces goods and services rejection, promote the company's productivity and efficiency, enables cooperation, enhances operation performance indicators to measure the quality and cost of goods, create faithful clients, improves communication among workers, and increases competitive advantage. This result is paramount as it will help the manufacturing industry to appreciate quality management system. Based on this submission, it is recommended that the South African manufacturing industry should have a body in form of compliance officers who will be checking the activities and commitments of the workers towards quality management. This proactive measure will definitely mitigate the barriers of low management commitment. Future research using a larger sample size and expanding the research location is required in light of the fact that this study was only conducted in the Gauteng province of South Africa. Additionally, other sectors can be researched to see if the findings hold true.

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