

Evaluating the impact of Quality Assurance and Control on the Performance of South African Food Manufacturing Industry

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Abstract

Quality assurance and control are designed to enhance organizational performance and earned considerable attention from industrial practitioners and scholars during the current decade. The reason is due the ever-growing universal pressures from consumers expecting superior quality of goods and services. As a result, the competition in the global market environment has been increasing at fast pace. Since organizations are developing innovative strategy to satisfy the consumers demand. To this end, the present paper aims at examining the extent to which both quality assurance and control and performance of different business organizational scales (small-scale, medium-scale, and large-scale) are linked and how both quality assurance and control influence the business corporations' performance in a highly competitive environment. The scope is on South African food manufacturing industries. This paper is expected to assist determining and discovering the impact of quality assurance and control at manufacturing companies level, whether the quality assurance and control systems of South African food manufacturing industry enable a smooth inter-company relationship, enhanced supply chain management activities, determining whether the quality of food produced are recognized by the Food and Agriculture Organization.

Keywords

Quality assurance, Quality control, small-scale, medium-scale, large-scale, South African food manufacturing industry.

I. Introduction

Within the arena of food business, there are two critical factors that ensure a smooth running of business, these are: quality and safety. The reason is that, no diet generation, processing, delivery firm or business corporation would be able to self-upheld without acknowledging and addressing correctly the issues surrounding food quality and safety. In South Africa, the food processing sector is made of more than 1,500 companies, accounted roughly 11% of the overall manufacturing production. Industrial key players include both the local and international firms, for example, Nestle and Unilever. Nevertheless, the South African food sector remains outweighed by the small and medium scale business organizations, estimated at 13 % of the overall SME manufacturing companies. Main subsectors concerning the food processing establishments consist of seafood, cattle and livestock, fruits, vegetables goods etc. The food worldwide market of food still very competitive and hard to grab. Taking the nowadays challenges into account, the South African food processing sector must make sure of becoming and remaining competitive within both local and global market. One potential strategy in achieving this goal is through the implementation of the quality assurance practices. Since those practices have the potential to offer and increase trust of customers and end-users towards the players of this industry. Simultaneously, enhance end-users satisfaction and establishment competitiveness within the market. To this end, this paper aims at investigating quality assurance practices in the South African food manufacturing industry. The motivation behind this paper is because various papers have focused on evaluating the quality management practices in other manufacturing companies over the last decades. Therefore, the current study seeks to fill this gap.

II. Literature review

II.1 Contextual Literature

Concerning both industrial and service establishments, the journey of quality has come a long way. This section aims at discussing on the synopsis of quality assurance. It covers the history behind quality and its present status within the industrial sector. To this end, the main regularly employed quality programs, ISO 9001 and Total Quality Management (TQM) are subjected to a discussion in this paper as addressed by Casadesus, & Karapetrovic (2005).

II.2 Quality as a Tool

Nowadays, quality is being considered as a key strategy, which various business corporations are adopting and implementing in their business in order for them to become and remain competitive in the current highly competitive market. An establishment with an unswerving quality tends to rule over its competitors in the market by attracting more customers. Since quality assist in boosting customers trust and confidence towards the product manufacturer. Despite this, nowadays there is no an accepted worldwide description concerning quality. Some individuals view quality as performance booster to benchmarks; whilst others perceive it as satisfying customer tool that help the manufacturer in meeting the consumers' needs (Lamport et al, 2014). To guarantee absolute quality within industrial sector, the description of quality ought to be described in the context of end-users' views. ISO describes quality as the extent to which a set of essential features achieves requirements. In order to achieve those requirements denotes meeting end-users' needs and regulatory requirements. Currently, the weight of quality is bigger than it was two decades ago. The difference between different establishments is based on the product or service quality. The questions that many are trying to answer to, is knowing what is quality and what types of benefits does it bring to the company (Talib, et al 2010; Goeff, 2001). Within industrial sector, quality is best described from conformance, performance, reliability, features, durability and serviceability of a goods. Conformance is the extent at which a goods' appearances meet and set of standards, whereas performance indicates by what means a product operates effectively. Alternatively, reliability is the ability of a product to perform its expected functions under circumstances concerning a precise period of time. Furthermore, it is crucial to ensure that the manufactured goods have attributes and functions that can allow their effective usage and to have durability and be easily repaired.

II.3 Growth of Quality tool in Industrial sector.

The concept of quality management systems has existed for several years. In the 1930s, Walter Shewhart at Bell Laboratories introduced the employment of statistics in order to determine the best 14 practices in the United States. This breakthrough has been evolving during several past decades into control charts and in the United States, was implemented in the industrial sector before 1950. Throughout the World War II in the 1940s, quality control charts and statistical techniques were being used with the objective of monitoring production process and assess quality, respectively (Goeff, 2001). From the 1950s to 1960s, W. Edwards Deming and Joseph Juran saw the necessity of practicing perfection through the application of quality principles and techniques to processes and management of establishments. With the U.S leading global industrial sector, there was no practical interest in quality practices. Deming and Juran were invited to Japan to lecture on statistical quality control (Gosnik, & Vujica-Herzog,2010). In the 1970s and 1980s, numerous firms in the United States lost market share to external competitors. Foreign manufacturing firms were generating goods that were cheaper and were of good quality. As the European countries carried on adding luxury to goods with the aim of selling them at important prices and augmented benefits, the East was busy improving the quality of products generate goods items that were also inexpensive (Li et al, 2006; Goetsch & Davis, 2006).

To upsurge quality recognition, the ISO family standards and Malcolm Baldrige National Quality Award were founded in 1987. The Malcolm Baldrige National Quality Award was founded in order to acknowledge the merit of the United States firms concerning their achievements in quality and performance, and also to upsurge recognition regarding the significance of quality and performance distinction as a competitive advantage. The ISO family of 9001 benchmarks representing a global agreement on good quality management practices (Brown et al, 2004; ISO, 2011). At that time, different firms also begun with the implementation of the TQM program and important improvements were achieved. Not every company that implemented the program thrived, other failed as there was no willingness to change. Alternatively, the Six Sigma technique is the modern quality program that is under implementation in various big manufacturing firms across the world (Martinez- Costa & Martinez Lorente,2008). For example, in 1992 Motorola developed initial six sigma tools to assist in reducing outlays and ameliorate quality. About food processing companies, quality assurance practices are generally associated with the quality systems such as the Good Manufacturing Practices (GMP) for food, the Hazard Analysis Critical Control Points (HACCP) system, ISO 9000 and the Total Quality Management (TQM) program. As demonstrated by the figure 1 below:

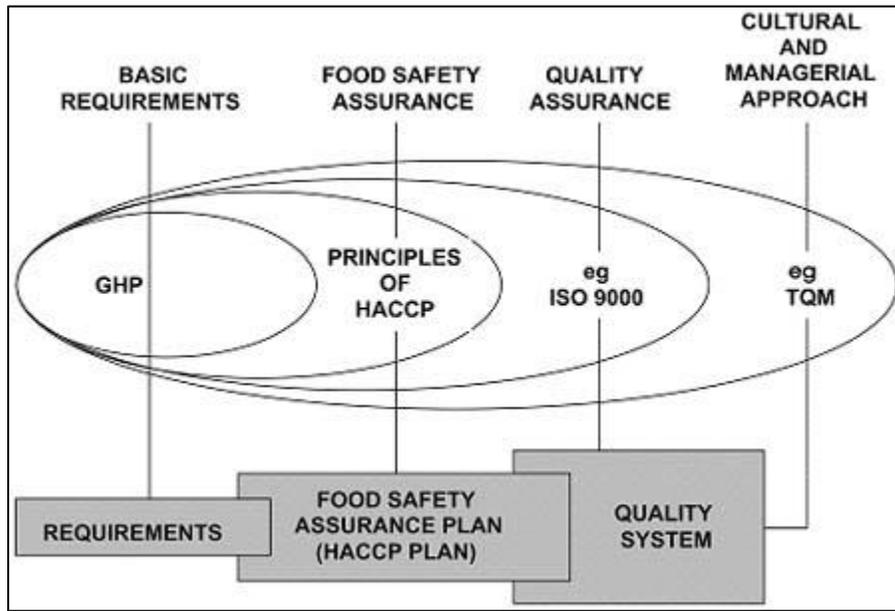


Fig 1. total food safety management chart

In this figure we notice the presence of ISO 9000 system that aims at emphasizing on consumers focus, leadership, participation of public, process approach, system approach to management, constant enhancement, accurate line to decision making process, and equally benefit of supplier relationship. These systems are practiced and adopted worldwide.

III. Methods

In this study, companies of different sizes were contacted irrespective of them having the quality assurance system certificate. At a total of 16 establishments were involved in the survey questionnaires that were sent by means of emails. Targeted participants concentrated over the senior and junior managers, quality and operation Managers. It should be noted that the questionnaires were designed by means of various step process. Foremost, through an in-depth critical appraisal concerning the existing literatures on quality assurance practices in order to produce the mechanisms and substances employed in this work. Afterward, experimental assessments were carried out on 4 establishments and reviewed therefore. Furthermore, we built the questionnaires of this study within two segments. The first one was constructed on a basis of 24 questions regarding demographic data in order to ascertain the demographic framework of firms and participants. While, the second one focused on key elements concerning quality assurance practices, which were: consumers focus, crew management, leadership, contractor management, process management, quality assurance, and unceasing development. Each element was committed to a various figure of substances with an overall of 90 substances determined. Participants were asked to demonstrate the level of quality assurance practices executed within their establishments employing a 5 units scale with unit 1 representing extremely low and unit 5 representing extremely high.

IV. Results

This section aims at addressing and analyzing the findings as collected and calculated. Therefore, the results will be presented in three sub-section, the first one is based on reliability analysis, while the second sub-section is based on demographic characteristic, and lastly is based on Descriptive assessment.

IV.1. Reliability

We tested the gathered information concerning internal reliability making use of Cronbach's alpha as illustrated by figure 2 below. It should be noted that alpha factor was in between 0.865 to 0.975 with an absolute alpha value estimated at 0.994 demonstrating that the findings was high reliability.

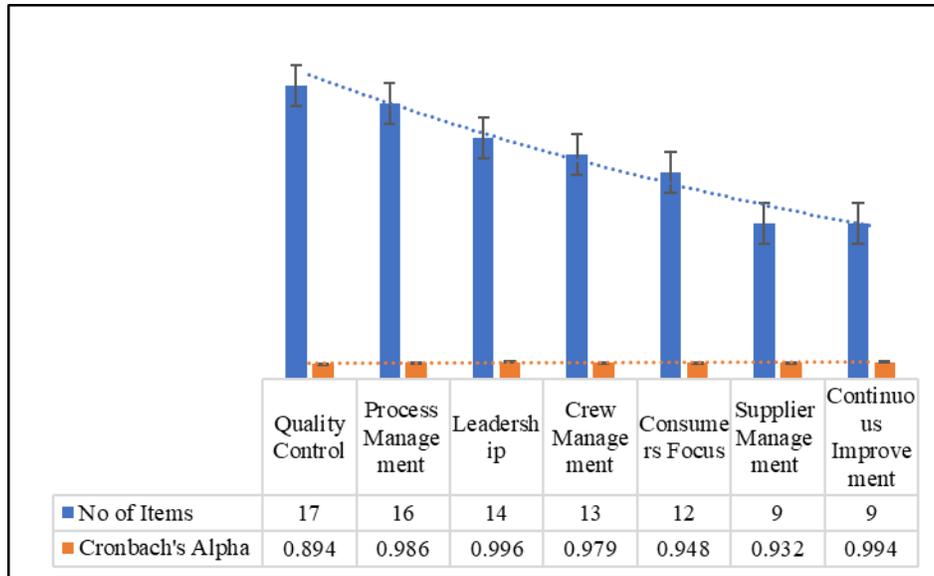


Fig 2. Reliability analysis

IV.2. Demographic characteristics

Most of the establishments that were involved in this study were comprised of bakery processing goods (37.8%), additional diet goods such as diet constituents (32.8%), sugar and salt manufacturing (28.4%), dairy goods (5.8%), scrap mill goods (1.5%), and potato and organism greases and blubbers (1.4%) respectively. These establishments have been branded within small (43.6%), medium (26.4%) and large (30%). Thus, the figure 3 below present the implementation and certification status of quality assurance practices in these companies.

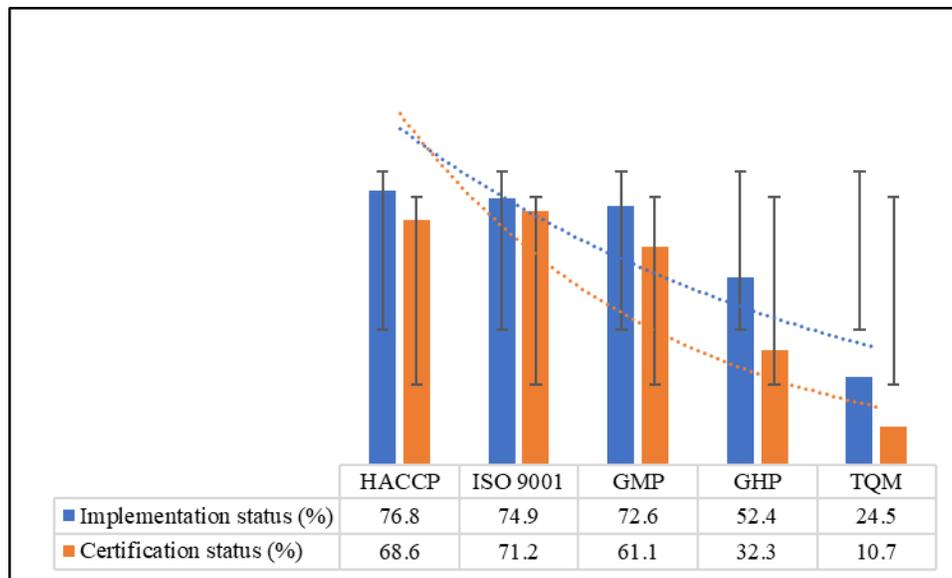


Fig 3. Quality assurance practices implementation and certification status

IV.3. Descriptive assessment

Here, we conducted descriptive assessment in order to calculate the mean score regarding each practice. As presented in the figure 4 below:

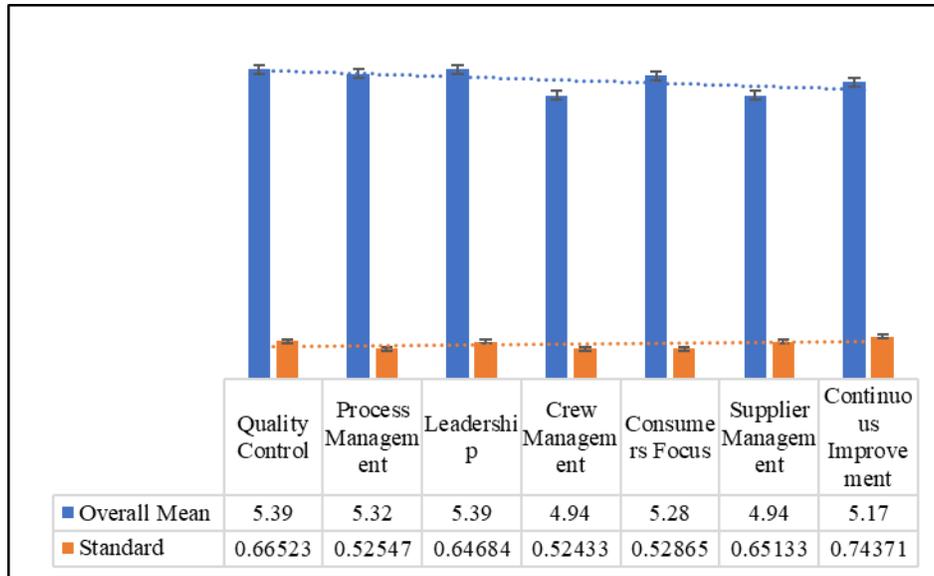


Fig 4. Mean value of seven factors concerning quality assurance practices and their particular items

It should be noted that, grouped these practices into GMP, HACCP, ISO 9001 and TQM on a basis of the kinds of quality assurance practices. In light of this, in the figure 5 below we present mean value regarding various categories of quality assurance practices. The level of implementation was found to be uppermost in hygiene.

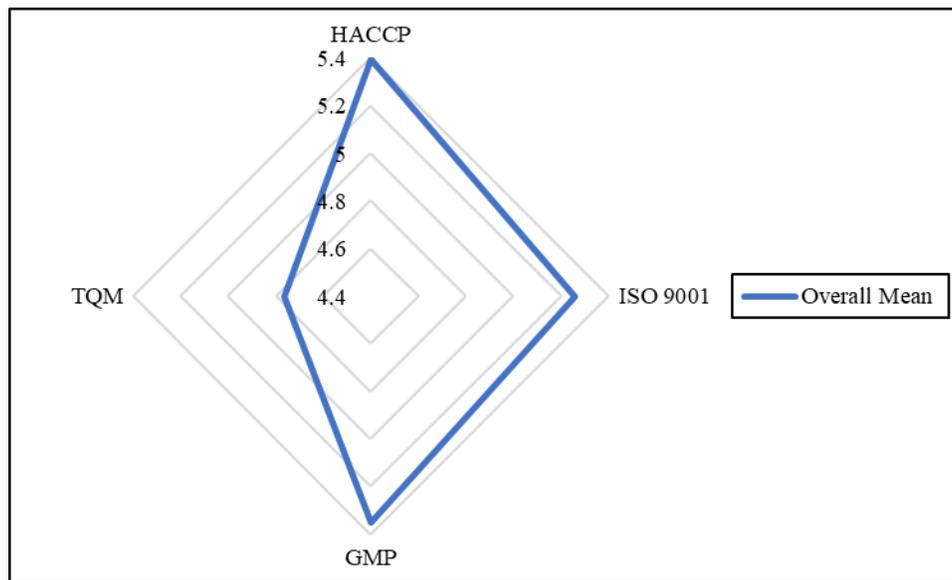


Fig 5. Mean value about the categories of quality assurance practices

V. Conclusion

Quality assurance and control are designed to enhance organizational performance and earned considerable attention from industrial practitioners and scholars during the current decade. The reason is due the ever-growing universal pressures from consumers expecting superior quality of goods and services. As a result, the competition in the global market environment has been increasing at fast pace. Since organizations are developing innovative strategy to satisfy the consumers demand. To this end, the present paper aims at examining the extent to which both quality assurance and control and performance of different business organizational scales (small-scale, medium-scale, and large-scale) are linked and how both quality assurance and control influence the business corporations' performance in a highly competitive environment. The scope is on South African food manufacturing industries. This paper is expected to assist determining and discovering the impact of quality assurance and control at manufacturing companies level,

whether the quality assurance and control systems of South African food manufacturing industry enable a smooth inter-company relationship, enhanced supply chain management activities, determining whether the quality of food produced are recognized by the Food and Agriculture Organization. It was observed that more than half of the companies that were involved in this study have already adapted and implemented quality assurance practices and these were: GMP, HACCP, or ISO 9001 certified. The outcomes demonstrated that most of the South African food processing companies have got enough experiences and knowledge regarding the quality assurance practices. Additionally, the South African government has recently implemented the food hygiene and food safety. Nevertheless, there is no an requirement or regulation in South Africa pushing a food manufacturing firm to compel with a GMP or HACCP or ISO 9001 certification. As far as the authors are aware this the first example works in the context of South Africa covering important aspects regarding the universal benchmark.

References

- Brown, A., Van D. W. T. & Loughton, K. 2004. 'Smaller enterprises' experiences with ISO 9000' International Journal of Quality R and reliability Management. Vol.15 No.3, pp. 273-85.
- Casadesus, M. & Karapetrovic, S. 2005. The erosion of ISO 9000 benefits: a temporal study. International Journal of Quality and Reliability Management, Vol. 22, No. 2, pp. 120-36.
- Goeff, T. 2001. Six Sigma: SPC and TQM in manufacturing and services. Hampshire: Gower Publishing Limited.
- Goetsch D. & Davis S.2006. Total Quality Approach to Quality Management Quality Management. Introduction to Total Quality Management for Production, Processing, and Services. 5 th ed. New Jersey: Pearson Prentice Hall.
- Gosnik, D., & Vujica-Herzog, N.2010. Success factors for Six Sigma implementation in Slovenian manufacturing companies. Advances in Production Engineering & Management, 205-216. ISO.2011.
- ISO Quality Management - ISO 9000 essentials. Available at www.iso.org/iso/iso_9000_essentials (Accessed on September 28, 2017).
- Lamport, M., Seetanah, B., Cohhyedass, P., & Sannasse, R.2014. The association between ISO 9000 certification and financial performance. International Research Symposium in Service Management, Mauritius.
- Li, Y. L., Chen J. & Huang, Y. 2006. A framework for investigating the impact of IT capability and organisational capability on firm performance in the late industrializing context. International Journal of Management, vol. 36:1/2/3, pp. 209-229
- Martinez- Costa, M & Martinez Lorente, A.2008. "Does quality management foster or hinder innovation? An empirical study of Spanish firms". Total Quality management and Business Excellence. Vol.19 No.9, pp 209-221.
- Talib, F., Rahman, Z., & Quresha, M.2010. The relationship between total quality management and quality performance in the service industry: a theoretical model. International Journal of Business, Management and Social Social Sciences, 113- 128.

Biography

Ndala Yves Mulongo is currently conducting a PhD degree in the Faculty of Engineering and the built environment, University of Johannesburg. He holds bachelor of engineering in extraction metallurgy and master of engineering in engineering management (with distinction) from University of Johannesburg, South Africa. His research interests involve life cycle approach, cost of electricity production, energy efficiency measures, green supply chain management, impact of mining operations on environment, mineral processing, manufacturing processes.

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