



Role of Total Quality Management (TQM) as a Tool for Performance Measurement in Small and Medium-sized Enterprise (SME'S) in Ghana

Michael Kwamega^{1*}, Dongmei Li^{1*} and Evans Brako Ntiamoah²

¹*School of Management, Sichuan Agricultural University, Wenjiang, Chengdu, 611130, China.*

²*School of Business & Economics, Canadian International University College, Ghana.*

Authors' contributions

This work was carried out in collaboration between all the authors. Author DL supervised the work. Author MK designed the study and wrote the draft of the paper including the literature searches. Author EBN managed the analysis and interpretation of the data. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/BJEMT/2015/20806

Editor(s):

(1) Alfredo Jimenez Palmero, University of Burgos, Spain.

Reviewers:

(1) Anonymous, University of Macedonia, Greece.

(2) Anonymous, Federal University of Education Zaria, Nigeria.

Complete Peer review History: <http://sciencedomain.org/review-history/11447>

Original Research Article

Received 10th August 2015
Accepted 31st August 2015
Published 17th September 2015

ABSTRACT

In the phase of globalization and internationalization, businesses and organizations around the globe have launched Total Quality Management (TQM) programs in an endeavor to gain or remain competitive in this dynamic business environment. Herein, this paper focuses on the role of total quality management (TQM), as a management tool effect on SME's in Ghana as far as performance measurement is concerned. The researchers used both purposive sampling and accidental techniques for a sample size of four hundred and fifty (450) respondents. SPSS Statistics version 20.0 was utilized to analyze the data. Correlation and regression was executed to ascertain the significant level of the variables chosen for the study. Inferences from the analysis proved that all the independent variables had a positive correlation with the dependent variable, hence the statistical findings of our hypothesis were supported. It is therefore recommended that in order to improve performance of SME's, management should do their best to address the concerns of the few customers to maximize the level of customer satisfaction and the Government of Ghana

*Corresponding author: E-mail: kwamegamichael@yahoo.com;

through the Ghana standard board and Ministry of Trade and industry must institute a national quality award where quality criteria will be set for firms.

Keywords: Small and medium scale enterprises; total quality management; performance measurement.

1. INTRODUCTION

This study focuses on the role of total quality management (TQM), as a management tool effect on small and medium- sized enterprises (SME's) in Ghana as far as performance measurement is concerned. Quality has become one of the most important drivers of the global competition today. Intensifying global competition and increasing demand for better quality by customers have caused many companies to realize that they will have to provide high quality product and/or services in order to successfully compete in the marketplace. To meet the challenge of this global competition, many businesses have invested substantial resources in adapting and implementing total quality management (TQM) strategies.

Total Quality Management (TQM) is a management system that takes into consideration all the areas of the operations in an organization. Accordingly, since the 1980s businesses and organizations around the globe have launched Total Quality Management (TQM) programs in an attempt to retain or regain competitiveness in order to achieve customer satisfaction in the aspect of increasing competition from around the world in this era of globalization and internationalization. Therefore, for businesses and organizations that would want to meet and exceed the expectations of their customers both home and abroad, total quality management is the requisite strategic tool for performance measurement. In view of that, all firms seek to adopt and implement a set of operations management practices that have been successful elsewhere and that will help them to identify changes in their environment and to respond proactively through continuous improvement [1]. One form of operations management practices is total quality management (TQM) which has received great attention in the last two decades [2].

[3] Studied 116 small firms covering all sectors in Ghana. They examined the relationship of each of the Malcolm Baldrige National Quality Award (MBNQA) variables with the five performance indicators of profitability, customer satisfaction,

sales growth, employee morale, and market share. All the variables of quality management indicated a positive significant relationship with performance.

Researches on total quality management (TQM) suggest that the total quality management (TQM) practices are positively associated with operational performance [4], but they marginally affect organizational performance [5]. However, other research findings depicted that the success of SMEs has a direct impact on the economic development in both the developed and developing countries [6]. [7,8] also stated that, SME's have the ability to generate employment with minimum cost, are pioneer in innovation realm and have high flexibility which allow them to meet the needs of the customers. Hence, these Small and Medium Sized Enterprises (SME's) form the backbone of the private sector at all levels of developing countries and Ghana is no exception.

Several researches have been conducted in the developed world to verify the impact, linkages, component, relationships and practices of TQM on organizations performance. However, those studies have concentrated on large organizations. However, in developing world, few studies have been done in developing countries including some done by [9,10,3,11]. Therefore, researches on the role of TQM as a tool for performance measurement in SME's is limited [12,13]. This paper complements and extends this stream of the literature by probing the impact of TQM activities on organizations and businesses success as well as one additional aspect that potentially contributes to firms' improvement and competitiveness at the local and global market as far as globalization is concerned.

The remainder of this paper is structured as follows. Section 2 will be present both the theoretical background and hypothesis to this study. Section 3 provides the research methodology of the study. In section 4, the researchers present the statistical results and discussions of finding. Finally, this study in section 5 discusses the conclusion of the study.

2. LITERATURE REVIEW

Although the literature on total quality management (TQM) includes a rich spectrum of works, there is no consensus on the definition of quality. The concept of quality has been defined in different ways by different authors. Gurus of the total quality management (TQM) practices such as Garvin, Juran, Crosby, Deming, Ishikawa and Feigenbaum all provided their own definitions of quality concept and TQM. [14] proposed a definition of quality in terms of the transcendent, product based, user based, and manufacturing and value-based approaches. He also identified eight attributes to measure product quality. Juran defined quality as “fitness for use” and focused on a trilogy of quality planning, quality control, and quality improvement [15]. In the same way, [16] defined quality as “conformance to requirements or specifications” that is based on customer needs. He identified 14 steps for a zero defect quality improvement plan to achieve performance improvement. According to Deming, quality is a predictable degree of uniformity and dependability, at low cost and suited to the market. He also identified 14 principles of quality management to improve productivity and performance of the organization [17]. Ishikawa also emphasized importance of total quality control to improve organizations’ performance. He contributed to the quality literature by introducing a cause and effect diagram (Ishikawa diagram) to diagnose quality problems [15]. In a similar vein, Feigenbaum introduced the concept of organization-wide total quality control and defined quality as “the total composite product and service characteristics of marketing, engineering, manufacturing and maintenance through which the product and service in use will meet the expectations by the customer” [15]. Key denominators of these quality improvement plans include management commitment, strategic approach to a quality system, quality measurement, process improvement, education and training, and eliminating the causes of problems.

TQM is the culture of an organization committed to customer satisfaction through continuous improvement. This culture varies from one country to another and between different industries, but has certain essential principles, which can be implemented to secure greater market share, increased profits, and reduced costs [18]. Management awareness of the importance of TQM, alongside business process reengineering and other continuous improvement

techniques was stimulated by the benchmarking movement to seek, study, implement and improve on best practices [19]. A review of existing literature on TQM and continuous improvement programs identifies 12 common aspects: Committed leadership, adoption and communication of TQM, closer customer relationships, benchmarking, increased training, open organization, employee empowerment, zero defects mentality, flexible manufacturing, process improvement, and measurement.

Furthermore, to determine critical factors of TQM, various studies were undertaken and different instruments were developed by individual researchers and institutions such as Malcolm Baldrige Award, EFQM (European Foundation for Quality Management), and the Deming Prize criteria.

Based on these studies, a wide range of management issues, techniques, approaches, and systematic empirical investigations have been generated. [20] developed 78 items related to TQM practices, which were classified into eight critical factors to measure the performance of TQM in an organization. They labeled these critical factors as: Role of divisional top management and quality policy, role of the quality department, training, product and service design, supplier quality management, process management, quality data and reporting, and employee relations.

[21] developed another instrument which they identified seven quality factors of TQM. These are top management support, quality information, process management, product design, workforce management, supplier involvement, and customer involvement. This instrument is closely related to the preceding instrument developed by [20]. In a later study, [22] measured the impact of TQM practices on quality performance and competitive advantage.

On the other hand, [23] developed the theoretical foundation of quality management practice by examining Deming’s 14 points. They reduced the number of factors from 37 to 7 using the Delphi method, which consist of visionary leadership, internal and external cooperation, learning, process management, continuous improvement, employee fulfillment and customer satisfaction.

In a related echelon, using the Malcolm Baldrige Award criteria [24] identified ten empirically validated critical TQM factors, which include corporate quality culture, strategic quality

management, quality improvement measurement systems, people and customer management, operational quality planning, external interface management, supplier partnerships, teamwork structures, customer satisfaction orientation, and communication of improvement information. In addition to [24], various authors also assessed the validity of Malcolm Baldrige Award criteria [25,26].

[27] developed 12 integrated quality management constructs, which were labeled as supplier quality management, supplier performance, customer focus, statistical process control usage, benchmarking, internal quality information usage, employee involvement, employee training, design quality management, employee empowerment, product quality, and top management commitment.

Performance measurement is very important for the effective management of an organization. According to Deming without measuring something, it is impossible to improve it. Therefore, to improve organizational performance, one needs to determine the extent of TQM implementation and measure its impact on business performance [28,29].

Traditionally, organizational performance has been measured by using financial indicators, which may include inter alia profit, market share, earnings, and growth rate. [30] emphasized that financial indicators would measure only past performance. Therefore, in order to overcome potential shortcomings of traditional organizational performance systems they added non-financial categories to the traditional performance measurement system.

There is a relatively large body of empirical studies that measure business performance by TQM criteria [31,22,25,32,26,33,34,4]. These studies explore a variety of theoretical and empirical issues. If TQM plan is implemented properly, it produces impact on a wide range of areas including understanding customers' needs, improved customer satisfaction, improved internal communication, better problem solving and fewer errors. However, reviewing the performance of an organization is also an important step when formulating the direction of the strategic activities. This will also prompt firms to examine where their strengths and weaknesses lie, and as part of the 'Plan – Do – Check – Act' cycle; measurement plays a key role in quality and productivity improvement

activities. To summarize, it is important to understand the role of TQM as improvements tool in business performance, on sustaining current performance and reducing any possible decline in performance.

3. THEORETICAL BACKGROUND AND HYPOTHESIS

3.1 TQM and SME's Performance

Studies regarding TQM have been applied to SMEs by previous scholars. This is due to the dominant role played by SMEs in most developed and developing countries. Some have indicated that SMEs place high emphasis on performance in such areas as greater market focus, efficient use of material and human resource and improving business competitiveness in the market through the application of quality management in the firms [35,36] There have been a number of studies concerning TQM and SMEs performance. [37] conducted a study focusing the relationship between TQM and SMEs performance from the perspective of 139 SMEs in Qatari industrial sector. The finding shows that there is a substantial positive effect of the TQM implementation on both the operational and the organizational performance. [6] conducted a study to determine the critical factors of total quality management (TQM) and measure their effect on organizational performance of SMEs operating in the Turkish textile industry. With 163 questionnaires returned, data analysis revealed a strong positive relationship between TQM practices and non-financial performance of SMEs, while there was only weak influence of TQM practices on financial performance of SMEs. [38] examined the effects of the seven TQM dimensions, namely leadership, process management, supplier, customer focus, employee management, communication and quality information system and tools and techniques on the organizational performance of the Iranian manufacturing SMEs. SME performance was measured by profitability, customer satisfaction, sales growth, and employee morale and market share. A statistical analysis on 65 samples revealed a number of significant relationships between TQM practices and organizational performance of the manufacturing SMEs. The outcome also indicated that leadership and process management play an important role in enhancing organizational performance of the Iranian

manufacturing SMEs. From the above statement, the researchers hypothesize:

H1: *The commitment of top management and employees to effect TQM practices and implementation is related to SME's performance.*

3.2 TQM and Performance Measurement

Performance measurement is an integral part of all management processes and traditionally has involved management accountants through the use of budgetary control and the development of financial indicators such as return on investment. However, it has been claimed that conventional aggregate financial accounting indicators are inappropriate in TQM settings [39]. Several authors have claimed that an important part of ensuring that TQM leads to sustained improvements in organizational profitability is that direct quantitative measures of manufacturing are used to assess the effectiveness of managers' efforts to manage the development and implementation of TQM programmes [40-42]. With the growing awareness that quality of final products and services is a strategic competitive variable, companies have recognized also that the concept of high quality must be applied to production processes to generate quality products and minimize costs. TQM has evolved as a philosophy that emphasizes the need to provide customers with highly valued products and to do so by improvements in efficiency by way of eliminating waste, reducing lead times at all stages of the production process, reducing costs, developing people, and improving continuously [43].

While TQM provides a potential for organizations to enhance their competitiveness there is evidence that many organizations have been disappointed in the extent to which TQM has been associated with sustained improvements in organizational profitability [44].

Performance management systems are a foundation of human resource (HR) management practices and are the basis for developing a systems approach to organization management. In theory, a performance management system links organizational and employee goals through a goal-setting process, and subsequently links employee goal achievements to a variety of HR management decisions through a performance measurement process.

[45] contended that quality practices had become so important that management accounting could

no longer ignore TQM. Traditional accounting supports cost and production analysis, but not quality analysis [45,46]. The thrust of the TQM philosophy is that quality and its management have to be built in from the beginning and that the accomplishment of quality standards and improvement is the responsibility of everyone [47,48].

[49] claimed that quality is, in fact, largely a customer perception based on how well the product or service meets the customers' needs and expectations. Poor quality occurs when these needs are not met. Satisfying the customer is an important aspect of the manufacturing process and this requires the customer's input at all stages of manufacturing [50].

Substantial benefits are realized by organizations implementing performance measurement programs. These benefits are realized almost immediately through an improved understanding of processes by all employees. Furthermore, individuals get an opportunity to receive a broadened perspective of the organization's functions, rather than the more limited perspective of their own immediate span of control.

As a process, performance measurement is not simply concerned with collecting data associated with a predefined performance goal or standard. Performance measurement is better thought of as an overall management system involving prevention and detection aimed at achieving conformance of the work product or service to your customer's requirements. Additionally, it is concerned with process optimization through increased efficiency and effectiveness of the process or product. These actions occur in a continuous cycle, allowing options for expansion and improvement of the work process or product as better techniques are discovered and implemented. This leads us to our next hypothesis regarding TQM and Performance measurement.

H2: *The degree to which a product or service meets customers requirement and expectation is related to performance measurement.*

4. METHODOLOGY

4.1 Research Methods

This section provides an overview of the method used for our research and how data for this study

were collected and analyzed in order to examine our hypotheses and arrive at the findings. The main objective of this research is to investigate the role of TQM, as a management tool effect on SMEs in Ghana as far as performance measurement is concerned. In order to understand and establish a reliable result we adopted both qualitative and quantitative methods. [51] described that a quantitative method means that data is collected with the aim to try theories. The difference between making a qualitative or quantitative study is that the qualitative study goes to the heart of the problem and has an inductive approach. The quantitative research design reaches a broader part of the problem and has a more deductive approach. Quantitative research focuses on measurement, causality, generalization and replication. Quantitative research is rather a lot of interpretation. Quantitative method or approach is adopted because of the empirical investigation we conduct into this phenomenon. Hence, both techniques were absorbed because some of the questionnaires were in open ended format whilst the others were in close ended format. Data for this section is mainly acquired through the administering of questionnaires to be answered by the firm and its customers. Data obtained from the survey was used to test the hypothesis by SPSS software. In addition, in-depth interviews were used for some questions that investigate how it happened [52]. This qualitative method can throw up important contributions that enrich the real context. In this paper, three firms are chosen as case study. The relevant information is acquire through the field survey such as questionnaires of customers and semi-structured interviews of top managers, and secondary archives from customer complaint forms, the company's marketing department as well as other departments.

4.2 Case Selection

The process of selecting a suitable case is an essential step to build theories from case studies. This became important because when unsuitable cases are selected, the result obtained will be misleading and will not help us achieve our research objectives. Appropriate selection of case helps define the limit for generalizing the finding of the study and control waste [53]. Considering the number of cases that can be studied at a particular time choosing a relevant case becomes an essential obligation [54].

4.3 Data Collection

The population of the survey constituted the management and non-management staff and customers of selected SME's in Ghana. The researchers used the purposive sampling technique and accidental technique. However, the three (3) firms were selected because they are among the top SME's in Ghana. The study used a sample size of four hundred and fifty (450) respondents. Due to adequate time the researchers devoted for the data collection, the researchers were able to get four hundred and nineteen (419) questionnaires that were administer.

4.4 Measurement of Variables

For purpose of this research, questions on TQM, SME's performance and performance measurement were asked and placed on a 5-point scale ranging from strongly agree (5), Agree (4), Undecided (3), Disagree (2), and strongly disagree (1) in form of statement. This scale is adopted from [55-57]. The respondents were asked to indicate their level of agreement with each statement.

4.5 Validity and Reliability of Data

The reliability of data used for empirical analysis and hypothesis testing was assessed. The reliability of the data was assured by the use of Cronbach's alpha (numerical value of 0.5 is considered appropriate to show consistency). For this research data, the alpha value for TQM, SME's performance and performance measurement is 0.72. The data gathered for the study was tested by cross-sectional data with the use of statistical software SPSS 20.0. Descriptive statistics and Pearson correlation were generated between variables.

5. RESULTS AND DISCUSSION

5.1 Statistical Population and Statistical Samples

For analyzing data, the statistical package program SPSS 20.0 was used. According to the descriptive statistics, the sample consists of 419 personnel from selected SME's in Ghana. The sample consists of 220 women (52.5%) and 199 men (47.5%). 35% of the sample (147 participants) is between the ages of 20-30, 51.1% of the sample (214 participants) is

between the ages of 31-50 and 13.9% of the sample (58 participants) is at the age of 51 or older. 51. 280 participants (67.0%) are married, 139 participants (33.0%) are single. Most of the sample is married. 7 participants (1.6%) are primary school graduates, 41 participants (9.9%) are high school graduates, 235 participants (56.0%) are university graduates, 117 participants (28%) have a Master's Degree, and 19 participants (4.4%) have a Doctorate Degree.

5.2 Statistical Analysis

This section of the study reports the statistical analysis of the data on TQM, SME's performance and performance measurement. Table 1 reports a summary of descriptive statistics and Pearson correlation between all variable used. The dependent variable used is total quality management (TQM). The independent variable used includes; customer satisfaction (CS), sales growth (SG), and employee morale and market share (EMMS) and improved internal communication (IIC).

5.2.1 Total Quality Management (TQM), Small and Medium-Sized Enterprises (SME's) Performance and Performance Measurement (PM)

Inferences from the Pearson correlation analysis above prove that all the independent variables had a positive correlation with the dependent

variable. Thus all the independent variables had a significant contribution to the total quality management. Form the correlation Table 1, customer satisfaction had the highest correlation coefficient of 0.800 at $P < .01$ (2-tailed). In addition, other independent variables such as sales growth (SG) and employee morale and market share (EMMS) also have a correlation coefficient of 0.680 at $P < 0.01$ (2-tailed) and 0.623 at $P < .05$ (2-tailed) respectively. Furthermore, improved internal communication had a significant correlation with the dependent variable at 0.612 at $P < .01$ (2-tailed). According to the statistical findings our hypotheses were supported and prove that a well-managed service contributes positively to SME's performance and its measurement.

Based on Table 2, a regression model was established using the equation: $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n$ where: Y is the dependent variable, " α " is a regression constant; β_1 , β_2 , β_3 and β_n are the beta coefficients; and X_1 , X_2 , X_3 , and X_n are the independent (predicator) variables. Standardized beta coefficients were put in the regression equation. This revealed that Total Quality Management (TQM), Small and Medium-Sized Enterprises(SME's) Performance and Performance Measurement (PM) can be predicated as: $Y = \alpha + .23 X_1 + .64 X_2 + .34 X_3 + \dots + \beta_n X_n$ where: Y is (TQM); X_1 , is (CS); X_2 , is (SG); X_3 is (EMMS), and X_n is the nth predicator.

Table 1. Descriptive statistics and Pearson correlation

Variables	N	Mean	SD	2	3	4	5
1.TQM	419	3.13	0.414	.800**	.680**	.623*	.612**
2.CS	419	3.27	1.292		.589*	.702*	.460
3.SG	419	3.08	1.034			.526*	.634**
4.EMMS	419	3.05	0.175				.234
5.IIC	419	3.87	0.223				

*Correlation is significant at 0.05 (2-tailed), **correlation is significant at 0.01 (2-tailed)

Table 2. Regression analysis

Models	R-square	Unstandardized coefficients.		Standardized coefficient	t-value	Sig.
		Beta	Standard error	Beta		
1. CS	.448	-.405	.059	.233	.082	0.000
2.CS, SG	.567	-.567	.061	.640	0.818	0.000
3. CS, SG, EMMS	.716	-.593	.063	.338	5.908	0.000
4. CS, SG, EMMS , IIC	.818	-.426	.068	.592	8.443	0.000

6. CONCLUSION

The study was conducted to investigate the role of TQM as a management tool effect on SMEs in Ghana as far as performance measurement is concerned. Quality it is said helps a firm gain competitive advantage; therefore the practice of quality management will help Ghanaian products gain competitive advantage over foreign products. This study has established that Ghanaian SME's believe quality management is a key-contributing factor to firm growth and performance. However, some managers may be conversant with quality management practices and its advantages and therefore would want to implement them, their employees may not know what they are. Therefore, top management consistent in information flow is very essential. Also, there is need for the creation of an entity exclusively responsible for quality and quality standards. Its responsibility should be assisting firms in the implementation and practice of quality management and the manufacture of quality products. The Government of Ghana through the Ghana standard board and Ministry of Trade and industry must institute a national quality award where quality criteria will be set for firms. This should be a government supported and in partnership with businesses and stakeholders. The study adopted both qualitative (case study) and quantitative methods respectively. SME's in the Koforidua Municipality were selected to gather data, which was acquired from answers obtained from our administered questionnaire and also through interviews. The statistical findings showed significantly that there was a significant relationship between the TQM, SME's performance and performance measurement. Also, findings provide empirical backing that successful implementation and practice of total quality management in SME's will bloat performance and survival of these firms'. Helpful insights as to the usefulness of TQM have also been provided for organizations and managers who have trivial disquiets about TQM.

This paper focused only on Koforidua Municipality, it is unable to explain the general situation in Ghana. Thus, this is a major limitation of this work. Nevertheless, the hypothesis established for this study was supported by the researchers' findings. Future study will expands the sample size, and this could help provide better understanding of the general situation.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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