

**TOTAL QUALITY MANAGEMENT AND OPERATIONAL PERFORMANCE
OF CENTRAL GLASS INDUSTRIES LTD**

**WAMBUGU GEORGE, I
D61/60002/2013**

SUPERVISOR: ZIPPORAH N KIRUTHU

**A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL
FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER
OF BUSINESS ADMINISTRATION DEGREE, SCHOOL OF BUSINESS,
UNIVERSITY OF NAIROBI.**

2015

DECLARATION

I hereby declare that this research project is my own work and has not been presented for any other award elsewhere.

Signature _____ Date _____

Name: GEORGE I. WAMBUGU

Registration No. D61/60002/2013

This project report has been submitted for purposes of examination with my approval as the Student's University Supervisor.

Signature _____ Date _____

Name: ZIPPORAH N. KIRUTHU

Department of Management Science

ACKNOWLEDGEMENT

Much gratitude reaches out to my supervisor Madam Zipporah Kiruthu for her tireless effort in guiding, advising and critiquing my work.

A high note of appreciation goes to my family, colleagues and friends for walking with me in my academic pursuit.

Above all, special thanks to almighty God for energizing me each day to press on and finish this very demanding piece of study.

DEDICATION

I dedicate this piece of study to my entire family and more so to FrasihIrungu and KelsieWambui who have been a blessing in my life. They have never tired in encouraging me pursue this degree course.

LIST OF ABBREVIATIONS

CGIL	–	Central Glass Industries Limited
EAML	–	East African Maltings Limited
EABL	–	East African Breweries limited
ISO	–	International Standards organization
KBL	–	Kenya Breweries Limited
LTA's	–	Lost time accidents
MBV	–	Market based view
OEE	–	Overall equipment effectiveness
RBV	–	Resource based view
TQM	–	Total Quality management

TABLE OF CONTENTS

DECLARATION	ii
ACKNOWLEDGEMENT	iii
DEDICATION	iv
LIST OF ABBREVIATIONS	v
LIST OF TABLES	ix
LIST OF FIGURES	x
ABSTRACT	xi
CHAPTER ONE: INTRODUCTION	1
1.1 Background	1
1.1.1 Total Quality Management	2
1.1.2 Operational Performance	3
1.1.3 Total Quality Management and Operational Performance	5
1.1.4 Central Glass Industries Limited (CGIL)	6
1.2 Statement of the problem	7
1.3 Objectives of the study.....	9
1.4 Significance of the study.....	10
CHAPTER TWO: LITERATURE REVIEW	11
2.1 Introduction	11
2.2 Theories Underpinning the Study.....	11
2.2.1 Resource Based View	11
2.2.2 Market Based View	12
2.2.3 Institutional Theory	13
2.3 Total Quality Management.....	14
2.4 Operational Performance	14
2.4.1 Customer Focus and Organizational Performance	15
2.4.2 Continuous Improvement and Operational Performance	16
2.4.3 Employee Involvement and Operational Performance.....	16
2.4.4 Top Management Support and Operational Performance	17
2.4.5 Process Approach and Operational Performance	17
2.4.6 Strategic Quality Planning and Operational Performance	18

2.5 Summary	18
2.6 Conceptual Framework.....	18
CHAPTER THREE: RESEARCH METHODOLOGY	20
3.0 Introduction	20
3.1 Research Design	20
3.2 Population of the Study.....	20
3.3 Sampling	20
3.4 Data Collection and Measurement.....	21
3.4.1 Operationalisation of the Variables	22
3.5 Data Analysis	22
CHAPTER FOUR: RESULTS, DATA ANALYSIS AND DISCUSSION.....	24
4.1 Introduction	24
4.2 Response Rate	24
4.3 TQM practices in CGIL	24
4.4 The Impact of TQM Elements on Operational Performance of CGIL.....	25
4.4.1 Improved OEE.....	25
4.4.2 Employee Morale	26
4.4.3 Health and Safety (LTA's).....	26
4.4.4 Energy Usage	26
4.4.5 Overall waste.....	27
4.4.6 Customer Complaint.....	27
4.5.1 Model Summary	27
4.5.2 Analysis of Variance.....	28
4.5.3 Test for Coefficients	28
4.6 Discussions.....	29
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS.....	31
5.2 Findings.....	31
5.3 Conclusions	31
5.4 Recommendations.....	32

5.5 Limitations of the Study.....	32
5.6 Implication for Further Study.....	32
REFERENCES	33
APPENDICES	36
Appendix I: The Questionnaire	36
Appendix II: Secondary data collection checklist.	39

LIST OF TABLES

Table 4.1 Descriptive Statistics1	25
Table 4.2 Descriptive Statistics 2	26
Table 4.3 Model summary	27
Table 4.4 Analysis of Variance	28
Table 4.5 Regression Coefficients.....	28
Table 4.6 Secondary Data Table	30

LIST OF FIGURES

Figure 1 Conceptual Framework.....	20
------------------------------------	----

ABSTRACT

The main purpose of the study was to determine TQM practices adopted by central Glass industries and their impact on operational performance. It was also to identify the gaps to effective TQM implementation as well as the challenges faced in implementation. The target population was all the permanent staff at central glass industries. The study used primary data which was gathered by means of a self-administered questionnaire issued to the respondents. Secondary data available at the central glass industries resource centre was also used to check correspondence to the primary data. Data analysis involved the use of descriptive statistics and multiple regression analysis to determine the co relationship of TQM practices and operational performance of Central glass industries. The model used six variables in the TQM practices construct namely; Top management, Employee involvement, continuous improvement, process approach, customer focus and strategic quality planning. The model also had six variables in the operational performance construct namely; Plant efficiency (Overall Equipment Effectiveness), Energy Usage, Employee morale, customer complaints and Health & safety. Operational performance was the dependent variable whereas TQM practices were the independent variables. The study found out that customer focus, top management support and strategic quality planning were the top practices adopted at CGIL. Employee involvement, continuous improvement and whole process approach were not in the list of TQM practices in place at CGIL. The study found a strong positive link between customer focus, Employee involvement and Process approach to operational performance; however the other three practices had a negative link with operational performance indicating their absence. This assertion could nonetheless be quantified. The study therefore recommends the adoption of all the TQM practices in an integrated manner and their proper implementation to rip the benefits of TQM in this competitive world. Change management could assist in cultivating the right mindsets, behaviors and capabilities with a view to setting the right company cultures.

CHAPTER ONE: INTRODUCTION

1.1 Background

Operations management is a management discipline that is involved with the effective transformation of inputs into outputs efficiently. It mainly involves the management of the plant, processes, people, products, parts and programmes in what is referred to as the conversion process or the value stream. In today's world, firms will survive with much difficulty unless they create a competitive advantage for themselves over their competitors. This is due to the competitive environment that has resulted from world globalization and increased adoption of operations management discipline. (Adam et al, 2001). The competitive advantage can be obtained by establishing a set of operational management strategies or objectives which are based on product's quality, speed, dependability, flexibility and cost. These key strategies can affect the internal productivity of the firm as well as help the organization to gain competitive advantage in the external environment (Waters, 2006).

Operational Performance is defined as the degree to which an operation fulfills the five generic objectives of quality, speed, dependability, flexibility, and cost (Nigel et al, 2010). Delivering quality and quantity goods in specified time is critical for the survival of a manufacturing operation. It is important also to concentrate all efforts in the value creating processes in order to eliminate costs while maximizing throughput reliably (Arthur, 2008).

Since 1980s, TQM has been regarded as one of effective ways for firms to improve their competitive advantage and hence operational performance (Kuei et al, 2001). Deming (1986) and Juran (1993), who are among the top leading pioneers in the quality management area, asserted that competitive advantage can be gained by providing high-quality products or services. Additionally, Eng and Yusof (2003) argued that quality holds the key to competitiveness in today's global market. TQM has been widely considered as an effective management tool to provide organizations with growth and prosperity (Isaac et al, 2004). Additionally, total quality management is an essential ingredient in achieving quality services to customers (Mutua, 2014). Some of the quality management tools used by manufacturing firms to gain effectiveness and competitiveness are: Benchmarking, Supplier Partnering, ISO

Certification, Six Sigma, Learning Organization, Toyota Production System, Balanced Score Card and many others. Central Glass Industries Ltd has adopted lean manufacturing also known as Manufacturing Excellence. Organizations that embrace lean manufacturing as part of their company's long-term strategic direction achieve elevated profits, decreased costs, and long-term efficiency gains (Lechleitner, 2015).

Most organizations embrace the lean strategy but lack the necessary tools and knowledge to implement it in their operations. In fact, many have used concepts such as value stream mapping, one piece flow/continuous flow, and 5S initiatives; nevertheless they have not been able to tap into the full benefits of the concepts. Having a strategy in place suited for the organization is important but most importantly, having the right blend of strategy formulation /implementation in place will make all the difference and promote success.

1.1.1 Total Quality Management

According to Deming, quality is the predictable degree of uniformity and reliability at a cost that will deliver a price that the customer is willing to pay for or suited to the market. Quality is the fitness for purpose that the customer sees value in a product or service. Deming identified fourteen principles that promote productivity and performance of the organization. Appropriate integration of these principles delivers quality in the organization. Ishikawa also emphasized the importance of TQM in improving performance in the firm.

Application of total quality management principles, technique and tools in organizations is becoming popular because it forms the strategic foundation for realizing a competitive advantage and improving operational and hence organizational performance. Total Quality management requires a blend of three elements in any firm, namely; operating system, management infrastructure and mindsets or behaviors and capabilities (McKinsey, 2008). A good TQM strategy promises tremendous benefits in operational performance and enriches organizational culture. TQM is the culture of an organization committed to customer satisfaction through continuous improvement. This perception varies between countries, industries and firms, but has known essential principles that can be implemented to capture

greater market share/customer loyalty, increased profits, and an enhanced reputation in the market.

These essential elements will be seen to revolve around customer focus, employee involvement, top management support, supplier partnership, continuous improvement, process approach and strategic quality planning.

The benefits of continuous quality improvement can not only be reflected in decreasing costs, but also on improved business profits. What counts for a firm as deduced from continuous quality improvement, is not cost minimization, rather the effect that superior quality has on maximizing profits (Freiesleben, 2005). The role played by customer focus cannot be overstated as everything that organizations do revolves around the customer. The tastes and preferences of the customer must be taken into consideration in the production planning stage as missing out on it has far reaching consequences of customer dissatisfaction with the overall effect of losing the customer to competitors.

Firms should spend time and effort on the implementation of TQM in order to accomplish the requirement of quality. Companies will introduce quality management practices by communicating TQM philosophy and principle in a top-down cascade approach. Proper implementation of TQM will not only enhance the relationship between firms and their suppliers, but also between firms and their customers (Davidson, 2015). Customer satisfaction will certainly shoot up by providing preeminent products or services.

1.1.2 Operational Performance

Performance is made of the actual outputs or results of an entity as compared against its intended outputs (goals and objectives) (Richard et al, 2009). Organizational performance involves activities aimed at establishing organizational goals. The organization must monitor progress toward achieving these goals by making appropriate adjustments (McNamara, 2013). Organizational performance is the final achievement of an organization and contains measures, such as the existence of particular targets to be achieved. The organization should set a time frame

of achieving the goals and the realization of efficiency and effectiveness (Gibson et al, 2010).

Additionally, organizational performance could also be termed as the ability of an enterprise to achieve such objectives as high quality products, large market share, good financial performance and use of relevant strategies to survive in the competitive environment (Koontz and Donnell, 2003). Organizational Performance can be evaluated in terms of either operational or financial performances. Examples of factors that promote operational performance include productivity, level of output, employees' performance, and customer satisfaction (Kuo, Chang, Hung, and Lin, 2009). On the other hand, the enterprise's financial performance is measured in terms of revenue growth, profit margin, and the growth of the organization (Jerome, 2013). In the present business environment, the performance of the organization is measured using financial gains, and employee and client satisfaction. Ho (2008) argued that the effectiveness and efficiency of firm's operations affect both operational and financial performance.

Furthermore, Venkatraman et al. (1986) identified sales growth, return on investment, and performance of individual departments as primary factors that help in assessing financial performance. The quality of products and services offered by the organization in terms of fulfilling customer demands and competing in the market assists in evaluating operational performance (Delaney et al, 2006). According to Sigei (2014) there are many factors that can be used to measure performance that include market and financial results, operating performance involving efficiency and effectiveness of an organization, employee performance, social responsibility and customer results e.g. customer complaints.

The five performance objectives or strategies of quality, speed, flexibility, dependability and cost can be broken down into more specific measures such as customer complaints or customer satisfaction, timeliness of delivery, delivery lead times, mean time between failures, order lead time and price (Nigel et al, 2010). This measures can further be aggregated into more defined strategic objectives like 'achieve zero customer complains', 'achieve a delivery lead time of one day', etc which are more measurable.

The more detailed the performance measures are, the clearer the direction the organization is taking, and the more it is specific on action lines. Although these measures provide a preview of operational performance, other descriptive measures should be used to provide a complete overview of the organization because each organization has its own other measures which tend to be organization specific e.g. safety level, level of compliance etc.

1.1.3 Total Quality Management and Operational Performance

Total quality management (TQM) is a firm-wide management philosophy of continuously improving the quality of the products/services/processes by focusing on the customers' needs and expectations to enhance customer satisfaction and firm performance. There are several elements of connection between total quality management and operational performance.

TQM is the culture of an organization. Simply, describing differences in the behavior of firms by country of origin suggests that each individual country maintains a unique set of characteristics that will affect decisions made within the firm. While this may be true in some situations, many firms and their workers also share common factors such as language, religion, customs, borders, beliefs, rules, and ethnic heritage which affect their productivity (Bonvillian and Nowlin, 1994; Ronen and Shenkar, 1985).

Culture affects the way human beings behave; it affects their mindsets and capabilities with the end result of either affecting their productivity positively or negatively. Organizational culture therefore needs to be aligned to strategic quality objectives. A firm that has adopted a continuous improvement culture and one that seeks to satisfy its customers certainly reports an improved operational performance. Top management/Leaders support employee development; establish a multipoint communication among the employees, managers, and customers; and use information efficiently and effectively.

In addition, leaders encourage and empower employee participation in decision-making. Empowered and motivated employees have a greater potential of improving performance. The success of all other integral TQM factors such as customer focus, continuous improvement, employee involvement, process management, and others lie

in top management support (Spencer, 1994). Top management will create a competitive operating system that has the right technologies, enhanced organizational layout, improved process design and the right human resources .Management will tap into the best raw materials and equipments to support operations.

1.1.4 Central Glass Industries Limited (CGIL)

CGI was established in 1987 and it has been a wholly owned East African Breweries Limited subsidiary until it was acquired by Consol Glass Proprietary limited earlier in March this year. It produces glass containers in flint/clear, amber/brown and green to national and internationally required standards. It is currently the leading container glass manufacturer in the East African region.

The plant is a modern, fully integrated container glass manufacturing entity with additional printing facilities for bottle labeling. With the just concluded plant upgrade to match modern technology, the plant ably serves both the local and export markets. The plant maintains Continuous touch to international developments in glass container manufacture by means of a technical support agreement with German glass firms (Diageo, 2015).

CGI exports more than 50% of its products to countries such as Zimbabwe, Uganda, Rwanda, Mauritius, Ethiopia, Burundi, Seychelles, Eritrea, Zambia, Tanzania, Re-Union and Angola among others. In 2008, the company celebrated its best year ever with profits growing by 19% over the previous year. The above was an outstanding performance in the history of the plant. However; the plant has continuously experienced a myriad of hiccups ever since. The plant continues to operate at full capacity while facing significant challenges in meeting expanding demand. Frequent challenges have compelled the plant to look for ways of improving performance in a bid to meet the demand substantially.

Diageo, which has been the greatest shareholders of East African Breweries Limited, introduced the Lean manufacturing program best known as perfect plant in the factory. It was aimed at improving performance across all its sites in Europe, Asia, and Africa. With the incubation program being rolled out in the US plants, the program received considerable support from business leaders in an effort to improve the sites

from the conventional manufacturing practices and hence realize improved performance, competitiveness and thus deliver value to its customers.

In Africa and particularly Kenya the program was introduced to all of the five EABL business units namely, CGIL, East African Maltings Limited, Kenya Breweries Limited, and EABL International. Diageo uses this program to monitor and measure manufacturing performance (McKinsey, 2008). It usually uses highly granular and rich performance metrics and then benchmark operations performance to identify improvement opportunities. Diageo then develops action plans with respect to success probability. This approach ensures that the manufacturer focuses on those improvements that deliver the greatest impact in consideration of returns on investment and other internal measures.

Diageo initially became interested in the perfect plant after a series of benchmark studies that conveyed the best-in-class metrics in the food and beverage industry. As it is today, Food and beverage companies are eager to understand the financial impact of their improvement options, and their entire focus is on delivering re-evaluation and take action on opportunities to improve manufacturing performance. (McKinsey, 2008).

CGI has not been able to tap into the benefits brought about by the perfect plant program due to lack of a proper TQM implementation infrastructure and philosophy.

1.2 Statement of the problem

Glass manufacturing firms play a significant role in the Kenyan economy in general. Food and beverage firms acquire packaging containers from glass manufacturers as glass is among the highly recommended packaging material from the Kenya bureau of standards. CGI manufactures container glass products in flint, amber, and green colors. Products of all sizes ranging from bean jars, oval flasks, pharmaceuticals, beer bottles and vodka bottles are produced. It is imperative that operations in CGIL remain efficient in order to meet demand (cgil, 2013). One effective way to improving efficiencies is embracing TQM.

Glass manufacturing firms are faced with a myriad of problems in the production process. Production of glass bottles is not only a sensitive and complex affair but a

challenging one too owing to the high fragility and brittleness associated with glass products. There are two major glass manufacturing firms in Kenya; The Milly Glass in Mombasa and CGIL. Although there is a significant deal of automation, some bits of operations are still manual. Any variation in the process has far reaching implications in the quality of the products.

Lack of consistent and continuous monitoring of the systems and processes will invariably affect the efficiencies of the operations. There are a million defects that arise in the process of producing bottles; a solution in one defect might raise another defect in a different part of the product (Emhart, 2013). The customers are increasingly raising the defect tolerance bar high requiring manufacturers to get it right first time and avoid reworks, rejects and customer complaints. They are demanding better quality products at a cheaper price that competitors are willing to offer. The plant therefore, has not been able to attain its full potential and hence become the most preferred and celebrated glass business in East and central Africa; its main competitors being The Milly Glass Company in Mombasa and Kioo Glass in Tanzania. Environmentally, glass takes at least 1 million years to decompose. It's hard to imagine that glass disposed off 900 hundred years ago is still lying on the ground. However, glass is 100% recyclable and can be reprocessed endlessly.

The production and use of glass has a number of environmental impacts. New glass is made from four main ingredients: sand, soda ash, limestone and other additives for colour or special treatments. Although there is no shortage of these raw materials as yet, they all have to be quarried, which can damage the landscape, affect the environment and use more energy. Therefore by simply recycling glass CGIL conserves non-renewable fossil fuels and reduce the emission of harmful gasses into the atmosphere (CGIL, 2015). In addition, cullet recycling helps in reducing the amount of solid waste taken to the landfill. Therefore, CGI is unique and its efforts in recycling cullet.

To gain full potential, central glass industries' leaders have an alternative of embracing TQM in order to get a breakthrough and record a brilliant performance. Proper implementation of TQM in manufacturing firms is a critical determinant in enhancing organizational performance (Shortell et al, 2005). It ensures that things are

done right the first time. Mann (2002) agreed that TQM not only acts as a management tool for producing quality products and services, but also a process that leads to increased productivity and an enhanced competitive advantage.

Past studies have also written about TQM and its role in improving operational performance of manufacturing firms. These literatures suggest that TQM is positively linked to firm's operational performance in terms of quality, speed, dependability, flexibility, and cost (Choi and Eboch, 1998; Cerio 2003). Sharma and Kodali (2008) stated that the significance of TQM in manufacturing cannot be overemphasized because it is such an important aspect of performance improvement in a firm.

Wachira(2013) asserted that organizational performance is largely influenced by the implementation of total quality management at 75.5%. His study was also able to identify quality management practices that were deemed to have an effect on operational performance. Rono (2013) found that the challenges to effective implementation of TQM can be managed well and through proper communication of the TQM concept, its implementation in the organization can be successful. A study by Kawa (2013) evaluated the effects of automation on operational performance and found that it's a key pillar towards improved performance though not in isolation. Rono, Kodali, Wachira and other studies concentrated on manufacturing firms in general but they did not cite or mention glass manufacturing firms. They also did not address the elements that make TQM a success in relation to the operational performance of glass manufacturing firms as well as the challenges faced in an attempt to implement TQM in a firm's operations.

The study thus sought to answer the following questions: How has total quality management impacted the operational performance of central glass industries Ltd? What are the impediments to effective TQM implementation in CGI?

1.3 Objectives of the study

The primary objective of the research was to gather knowledge of TQM practices and their implementation to bridge the gap and provide manufacturing industries with practical assistance in correctly managing and implementing TQM to achieve operational performance excellence. Additionally, the information gathered would

help answer the research questions. Thus, the scope of this study was in finding out the association between TQM and operational performance in glass manufacturing industry and more precisely, Central Glass Industries Ltd. The specific objectives of the study were:

- i. To explore the effects of TQM in operational performance in CGIL
- ii. To determine the impediments in TQM implementation in CGIL

1.4 Significance of the study

The findings of this study were expected to generate knowledge and understanding of TQM and its effects in operational performance. It was specifically designed to assist the management of Central Glass Industries Limited acknowledge the status of the plant in terms of total quality management and thus aid them in decision-making processes. Managers would readily adapt to TQM as a strategy for delivering quality products to customers to realize enhanced profitability, enhanced customer satisfaction, quality, employee participation and satisfaction, teamwork, working relationship, productivity, and market share.

This study aimed to benefit the Government through the Kenya Association of Manufacturers (KAM) and the Kenya Bureau of Standards (KEBS) in policy formulation. It was to create a body of knowledge to be used by scholars and auditors from KEBS on areas of TQM to include in their audits for effective auditing. The study was deemed to aid KEBS in formulating and enacting policy's that would govern quality operations at the manufacturer's and the industry's level.

To the employees, the study targeted helping in understanding the awareness of TQM or any other quality program that was in place at Central Glass Industries. It was important to note that with this study came the Identification of key TQM factors needed for effective TQM realization. Identification of TQM elements was important for the firm to avoid concentrating its energies on non-core elements that are not linked to results.

The study was also of benefit to the academic world as it was expected to add to the existing body of knowledge and understanding of TQM and how it can be

implemented to realize improved performance. It also formed a basis of future studies in the field of Quality Management.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The relationship between TQM and operational performance has been studied by various scholars in the past in different contexts. This particular study examined TQM and its effect on operational performance in a major glass business in East Africa. The literature review therefore covered relevant literature concerning the theories underpinning the study, performance in Central Glass industries, performance indicators and TQM. It also covers the conceptual framework and a summary.

2.2 Theories Underpinning the Study

Issues surrounding TQM and firm's operational performance were discussed in three broad theories. These were; resource based view (RBV), market based view (MBV) and institutional theory.

2.2.1 Resource Based View

RBV is an approach of strategy formulation aimed at attaining competitive advantage based on an organization's resources. Under this view, Organizations look for competitive advantage within themselves as opposed to looking for competitive environment outside (Barney J, 1990).The theory suggests that capabilities are a critical contributor to organizational performance (Tippins and Sohi, 2003). Capabilities refer to an organization's ability to assemble, integrate, and deploy valued resources (Amit and Schoemaker, 1993).

Firms should concentrate in their core competencies to edge out competitors by creating products that are difficult to copy.According to Connor (2002) resources based view is an important, essential and an inside-out management concept that is useful in developing successful strategy. In contrast to the input/output model the resource based theory is of the view that a firm's internal environment on the basis of resources and capabilities is more critical to the determination of strategic action than is external environment. There are two types of resources; tangible and the intangible.

Capabilities are embedded in business routines and processes. Grant, (1995) pointed out that an organizations source of competitive advantage thrives on sustainability and appropriateness. He pointed that In order to be of real value to their investors, firms must not only create and sustain their competitive advantage but also they have to be able to capture the rents derived from their activity. These rents are not only challenged by the firms' rivals, but also by its customers, workers and other stakeholders.

The resources based view of strategy also creates a frame work for the executives to think about their strength and weakness, understand marketing issue that helps to improve corporate performance (Falkenreck, 2010).

A model developed by Barney described the source of competitive advantage to be residing in resources both tangible and intangible that must be heterogeneous and immobile, not imitable and non-substitutable with great effort. TQM can lead to the improvement of performance by encouraging the development of assets that are specific, produce socially complex relationships which are steeped in the history and culture of the company and generate tacit knowledge (Barney, 1991).

TQM can further the development of a series of routines and form the fabric of behavior in the organization, which result from a process of learning and experience within the company itself (winter, 1994). Thus, TQM generates a wealth of distinctive competencies within the company that encourage a more effective and efficient development of the operations within the organization. The result is the generation of competitiveness and improved performance in the organization.

2.2.2 Market Based View

Market based view of strategy formulation designs the company policies and strategic action based on the trends and the nature of the industry's environment. According to Poser (2003), market based view of strategy helps the organizations to identify and select competitive dimensions and promote the management to meet the appropriate winner. For making effective and suitable strategy, company uses external resources in market based view that is quite effective to analyze the impact of external environment over the business operations (Poser, 2003).

Market based view of strategy is also helpful in expansion plan for company and for this purpose, it considers political factors, customers, market condition, technology, social etc. factors for making strategy.

2.2.3 Institutional Theory

The institutional theory explained institutions as being composed of cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life. It recognizes the existence and embedment of institutional “actors” in a social environment. These “actors” could be individual persons, organizations or the national state. Institutional theorists suggest that organizational actions and processes are driven by their actors in order to justify and explain their actions. In this perspective, strategy formulation and implementation is rationally accounted for by organizational actors and rooted in the normative and social context that motivates actors to seek legitimacy (Dacin, Oliver et al, 2007).

Through various cognitive, normative and regulative forces organizations adopted a standardized set of practices (Scott 2001). Organizations try to fit in with the norm by adopting strategy implementation that validates them as part of the organizational field. Traditional institutional theory believes that organizational fields become structured by powerful influences among organizations.

The adoption of a system such as strategy implementation was highly dependent on the extent to which it is institutionalized by legitimacy. Legitimacy concerns lead organizations to adopt practices that “conform to the mandate of the institutional environment” (Kraatz and Zajac, 2006). Institutions are carried by formal organizations, regimes which convey a central authority system, and by culture, which gives meaning to the customary and the conventional in daily life. Institutions are also carried by individuals, and provide accounts of the social and legal constructions of individual identity (Friedland and Alford, 1991).

Institutional theory argued that all organizations took the shape they do because they “draw from the culture around them value-based notions of how things should be organized”(Tolbert and Zucker, 1996). To this end therefore institutional theory

affected TQM and hence performance in that the “actors” were seen to be influenced by the cultures around them due to the fact that TQM is by itself a culture.

2.3 Total Quality Management

Research by Flynn et al. identified the most influential elements of TQM as intangible and behavioral. Additionally, the study found TQM as a soft variable consisting of customer focus, human resource focus and leadership as these are invisible but have a direct impact on company’s performance (Flynn et al, 1995; Powell, 1995). Following a comprehensive review of the literature it was eminent that most of the researchers evaluated TQM through six variables. These variables were; strategic planning, leadership, customer focus, information and analysis, process management and people management (Terziovski and Samson, 1999).

According to Curkovic et al (2000) the most successful elements of TQM were customer focus, employee empowerment and top management support (Mehmood, Qadeer and Ahmad, 2014). Talib (2013) claimed no research explicates the key elements of TQM. It becomes hard to identify the exact elements of TQM based on the above criteria (Hoang et al, 2006). Nevertheless, the majority of the researchers agreed that the most significant elements of TQM were customer focus, process approach, supplier partnering, employee involvement, continuous improvement, top management support and strategic quality management.

The study used these six most influential elements of TQM in order to investigate their relationship with operational performance.

2.4 Operational Performance

Performance helps in attaining objectives of the organization. Operational performance was defined as the output of the firm’s operations in achieving firm’s goals. Organizational performance was divided in three dimensions. These were financial, operational, and organizational effectiveness (Venkatraman and Ramanujam, 1986). Operational performance included product quality, market efficiency, market share and new product introduction. On the other hand, financial performance includes the profitability and sales growth, and organizational effectiveness is the extent to which organizations achieve their objectives effectively.

According to Agarwal et al (2003) and Guo (2002) organizational performance had two dimensions, namely: judgmental and objective performance.

Whereas judgmental performance covered the employees and customers perceptions such as service quality, customer satisfaction, and retention; Objective performance included financial and market-based assessments such as sales growth, market share, profit and efficiency. A number of variables were thus used to measure operational performance in this study. Global Key performance indicators were thus used to measure performance. In the global index of KPI's there was overall waste, overall equipment efficiency, Customer complaints, employee engagement, health and safety, Energy usage ,and quality index (Diageo, 2013).

2.4.1 Customer Focus and Organizational Performance

Customer focus was defined as the extent to which an organization continuously satisfies its customer's needs and expectations (Zhang, 2000). Customer focus is the primary aspect of TQM (Bank, 2000). It relates to the achievement of long-term organizational objectives (Mehmood et al). According to Hackman and Wageman (1995) obtaining customer information forms the fabric of TQM garment.

In order for an organization to succeed in the prevailing business environment, it should consider satisfying customers' needs (Sila, 2007). On the same note, customer focus emphasizes on creating value for the customers leading to organizational growth (Juran, 1988 and Mele and Colurcio, 2006).The organization should focus on implementing TQM in the most appropriate manner to attain a high performance.

Customer focus also enhances the performance of the organization by increasing customer satisfaction. Liu et al (2002) and Lee et al (2010) conducted studies to investigate the role of TQM in ensuring customer satisfaction. They revealed that quality management settings, changing needs of the customers acted as primary measures of customer satisfaction. Additionally Asikhia (2010) found that customer orientation is positively associated with firm performance. The above literature revealed that customer focus acted as a primary element of TQM and predicted operational performance.

2.4.2 Continuous Improvement and Operational Performance

Production industries embrace continuous improvement as a method of ensuring fewer defects and promoting growth in production. Continuous improvement entails running an error-free production to improve features and quality of products and services. Continuous improvement acts as a TQM element that assists a firm in the daily management of the organization. Organizations that achieve their goals always practice continuous improvement through engaging all company stakeholders to improve quality and ensure total customer satisfaction (Oooi et al, 2006).

Firms that practice Total quality management always set work processes that help minimizing errors and wastes during production; hence, improving the effectiveness of the organization (Anderson et al, 1994). Proper implementation of TQM increases chances of high performance in the organization (Spencer, 1994).

Subsequently, members of the organization are stimulated to use innovations and new production techniques through the implementation of continuous improvement tactics (Prajogo and Sohal, 2003). Continuous improvement acts as one of the primary Total Quality Management initiatives aimed at achieving total improvement in the organization and promote performance. Studies by different scholars revealed that operational performance was directly related to continuous improvement.

2.4.3 Employee Involvement and Operational Performance

Employees play critical roles in supporting performance and productivity of the organization. Organizations should respect employees because they are the most valuable assets that a company can afford to lose. Firms that are very competitive train their employees on how to use their abilities, skills, and knowledge in ensuring continuous productivity. TQM implementation process proposed by Prajogo and Sohal (2001) incorporated employees leading to extreme improvement in operational performance. Delaney and Huselid (1996) discovered optimal human resources strategies influence total quality management in the organization that eventually affects performance.

A study conducted by Li in 2000 found out training employees and making them participate in decision-making processes and sharing of organization information increases productivity and ensures free interaction between employees and the management. It's worthy to note that employees can use their skills and resources to improve the performance of the organization because they also share benefits. Similarly, training employees and involving them in decision-making processes makes them more loyal to the organization and more empowered to actively participate in shaping the organization to prosperity.

2.4.4 Top Management Support and Operational Performance

Top management commitment plays a critical role in quality performance and success of the organization. Deming (1982) stated that committed and strong leadership is essential for successful and durable operational programs. Top managers enable the firm to facilitate quality management programs for effective performance (Gibson, 1990 and Gryna, 1991). Top management commitment is accountable for setting goals that are specific, measurable, achievable, realistic and timely.

Top leadership is also responsible in directing the organization towards enhanced performance. Wang et al (2010) found that leadership positively influences firm performance. Top management provides direction for the achievement of operational-related goals. In operational management system, top management support provides the essential atmosphere to enhance performance in the organization. Spencer (1994) recommended that top management support was critical in improving the overall performance of organizations.

2.4.5 Process Approach and Operational Performance

Inferior quality manufacturing process always resulted in higher scrap rate and rework rate which lead to more resource consumed to produce qualified products (Ahire and Dreyfus, 2000). The goal of process management is to reduce process variation by building quality into the production process (Flynn et al, 1995 and Handfield et al, 1999).

Reducing process variation will increase the quality of outputs as well as decrease the occurrences of unnecessary costs such as rework costs and waste costs by finding and

correcting quality problems immediately (Forza and Flippini, 1998). Hence, the effectiveness of process approach implementation has been cited as one of the major elements of integrated quality efforts (Anderson et al, 1995).

2.4.6 Strategic Quality Planning and Operational Performance

All organizations must have a vision, mission, and values that form the basis of operations. All of these are formed by taking into account the quality concept. With effective strategic quality planning efforts, employees are taken as an input in developing the vision, mission, strategies, and objectives. This facilitates acceptance and support of strategic quality plans by the employees. Successful strategic quality planning efforts also take into account the possible side effects of the plan to the environment prior to the production. This will manifest and improve social responsibility of the firm and hence a good reputation from the customers.

2.5 Summary

Different scholars have studied links between performance and TQM and realized different outcomes. Different production types are utilized in investigating the above relationship including innovative, financial and operational performance. Operational performance results into positive and stable relations, but there are other types that show inconsistent results. Organizations that have implemented TQM prove of its significance in promoting Operational performance.

Total Quality Management forms the fundamental principle for success in a competitive environment. Different firms use total quality management as a tool for increasing their business profile, and consider the proposed strategy to gain a competitive advantage. The cost of production, delivery of end products, production time, and product/service quality are all strong indicators of Operational performance.

2.6 Conceptual Framework

A conceptual framework shows the relationship of concepts, variables and ideas. It is an intellectual representation of some aspect of reality that is derived from some observations made from phenomena. It helps connect ideas to achieve the research objective.

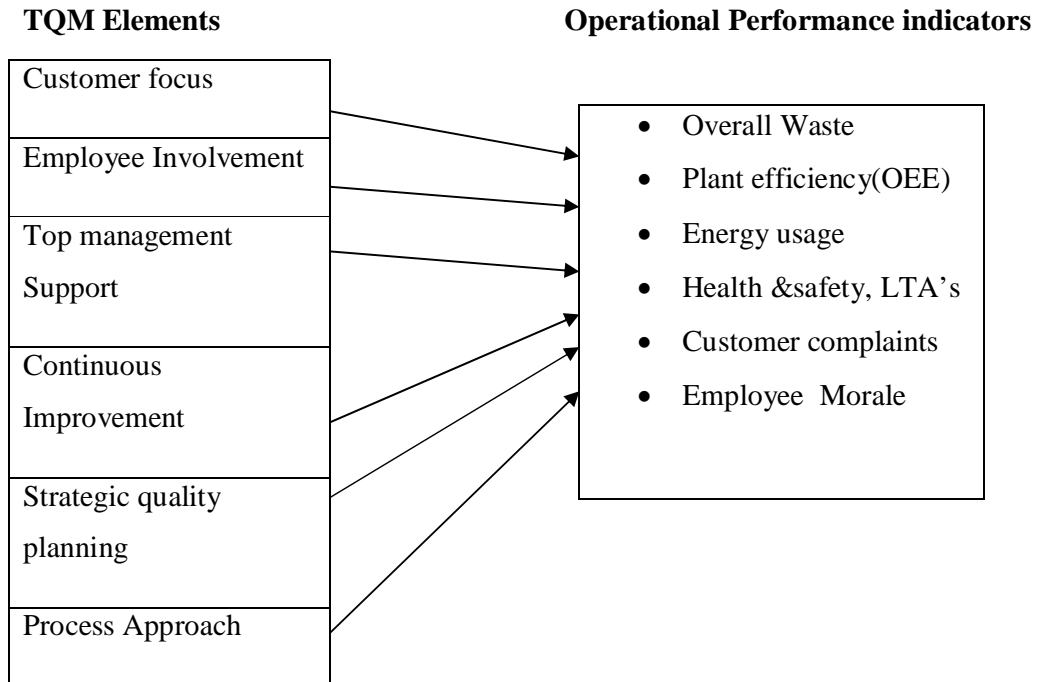


Figure 1: Conceptual Framework

The relationships were tested using the following hypothesis;

H1: customer focus is related to operational performance

H2: Continuous improvement is related to operational performance

H3: strategic quality planning is related to operational performance

H4: Process approach is related to operational performance

H5: Employee involvement is related to operational performance

H6: Top management support is related to operational performance

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

This chapter introduces the methodology that was followed to achieve the objectives of the study. It describes the procedures that were used by the researcher to collect and analyze data. It covers the research design, target population, sampling design, data collection and analysis.

3.1 Research Design

This study used a descriptive research technique in order to achieve the set objectives which were to determine the relationship between TQM and operational performance and to explore the TQM elements that are in place in the organization and hence deduce the missing elements as well as the challenges faced in implementation. According to Cooper and Schindler (2000), a descriptive research design is concerned with finding out the; who, what, where, when and how much. The design was deemed appropriate because the main interest was to explore the viable relationship between Total Quality Management practices and operational performance of Central Glass Industries Limited.

3.2 Population of the Study

The population of CGIL was 87 permanent and pensionable employees.

3.3 Sampling

The study employed a stratified sampling design. The departments within CGIL were stratified into five strata according to their functions. The departments were, finance, production, engineering, batch and furnace and quality. From each department a number was picked to have a representative sample. To determine the sample size for the study, Cochran's formula was used as shown:

$$n = \frac{Z^2 pq}{e^2}$$

Where, n= desired sample size

Z= standard normal deviation, which is set at 1.96 (95% confidence level)

P= proportion of the targeted population that has the same functions focused in the study, is estimated at 93% (cgil, 2012).

$$q=1-p$$

e= degree of accuracy, which is set at 5%. The degree of proportion of error that should be accepted in the study is 0.05, since the study has 95% confidence level.

$$\text{Therefore, Desired Sample (n)} = \{1.96^2 * (0.93 * (1-0.93))\} / 0.05^2$$

$$n= 100$$

Since the total population was smaller than the desired sample size, the finite correction formulae (n_f) was applied to adjust the desired sample size as shown below:

$$n_f = n / \{1 + (n-1)/N\}$$

$$N = 93 \quad n = 100$$

$$n_f = 100 / (1 + 99/93) = 48$$

Therefore a total of 48 employees were interviewed. They included 5 top level managers, 15 middle level managers and 28 unionstaff across all the departments. It was deemed that it would give the desired precision and accuracy.

3.4 Data Collection and Measurement

This research used primary and secondary data sources. Primary data was collected by use of a semi structured questionnaire. A questionnaire, as the data collection instrument of choice was, easy to formulate and administer as it provided a relatively simple and straightforward approach to the study of attitudes, values, beliefs and motives (Robson, 2002).

All the items in the questionnaire were measured with a five-point Likert scale ranging from disagree (1) to strongly agree (5) to ensure consistency and ease of data computation (Brah and Lim, 2006). The questionnaire was structured to capture data on total quality management elements and the second section sought data on the impact of Total quality management elements on operational performance of CGI.

The questionnaire was administered through a drop and pick later method at an agreed time with the researcher. Secondary data on Operational performance indicators was collected by means of a checklist from the Quality, Safety, Batch & Furnace, and production departments.

3.4.1 Operationalisation of the Variables

In this study, the variables measuring the construct operational performance were all global key performance indicators. Energy usage was gotten from an aggregate of High fuel oil, Low petroleum gas, electricity, diesel and water usage. Overall waste had elements ranging from rejections due to defects and reworks due to misprints. OEE measured how well the equipment operated when scheduled. Data was gotten from Scheduled time available from Production Planning, Planned losses from Maintenance and Production Planning and Unplanned losses from production reports. More so, Information on employee engagement came from value surveys. Average score was provided by employees on values survey for Super-engaged, Engaged, Proud of what to do, Be the Best, Freedom to succeed, Passionate about consumers, Valuing each other categories. Health and safety KPI's were gotten from lost time accidents (LTA'S). Customer complaints calculation was from the number of customer and consumer complaints per Mil 9-litre cases produced in the plant. A multiple regression analysis was run with operational performance being the independent variable. The study found the effect of TQM variables on this element.

3.5 Data Analysis

Data was aggregated at the organizational unit of analysis. Data was analyzed using SPSS as per the requirements of various statistical tests. The study utilized usual cross tabulations and descriptive statistics. The study used a regression model to show the relationship between total quality management elements and operational performance of Central Glass Industries.

The model was as follows

$$Y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \beta_6x_6 + e$$

Where; Y=operational performance

X1= Customer focus

X2= Top management support

X3= Employee involvement

X4=Continuous improvement

X5 = Strategic quality planning

X6 = Process approachand

e =Standard error

The relationship will clearly be revealed by regression coefficientsobtained from regression analysis.

CHAPTER FOUR:RESULTS, DATA ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents the research findings, analysis and presentation of data gathered from questionnaires. The findings were presented mainly in form of tables. Data was summarized into mean scores and standard deviations. This research studied a total of six TQM elements in relation to operational performance. The range was ‘Strongly agree (1)’ to ‘strongly disagree’ (5). The scores of agree to strongly agree have been taken to present a variable which had mean score of 0 to 2 on the continuous Likert scale; ($0 \leq S.D \leq 2$). The scores of ‘fairly practiced’ have been taken to represent a variable with a mean score of 2.1 to 3.5 on the continuous Likert scale: ($2.1 \leq M.E. \leq 3.5$) and the score of disagree to strongly disagree have been taken to represent a variable which had a mean score of 3.6 to 5 on a continuous Likert scale; ($3.6 \leq S.A \leq 5$). A standard deviation of >1 implies a significant difference on the impact of the variable among respondents.

4.2 Response Rate

Completed and returned questionnaires were 40 out of 48 sent to respondents representing a response rate of 83.33 %. A high response rate assures more accurate results and validity of data according to Warner, (1988). This response rate was considered precise and a true representation of the facts on the ground.

4.3TQM practices in CGIL

The researcher sought to identify the Total quality management practices or elements that were eminent in CGIL. In this pursuit a questionnaire that had scores ranging from strongly agree (1) to strongly disagree (5) was used. The score of sample means and standard deviations obtained was as follows. From the table below customer focus was the most vibrant practice that the respondents strongly agreed was in place. It had a mean score of 1.55 and a low standard deviation of 0.639 indicating strong dominance in CGIL. In second position was top management support with a mean of 2.15 and a standard deviation of 0.834. It recorded a fairly moderate score with majority of the respondents being neutral on the issue of whether top management actively participates in quality management issues. Next was process approach with a

mean score of 2.25 and a standard deviation of 1.006. Again this was a fairly average score with majority of the respondents being neutral on the issue. Following process approach closely with a similar score was employee involvement with a mean of 2.30 and a standard deviation of 1.018. The bottom two practices were continuous improvement and strategic quality planning with an average mean scores of 2.45 and 2.50 respectively. Their standard deviation was 1.061 and 0.679 respectively as shown in table 4.1 below.

Descriptives - Descriptive Statistics - September 23, 2015

Descriptive Statistics									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Customerfocus	40	1	3	1.55	.639	.737	.374	-.395	.733
ContinuousImprovement	40	1	5	2.45	1.061	.883	.374	.689	.733
TopManagementSupport	40	1	4	2.15	.834	.264	.374	-.463	.733
EmployeeInvolvement	40	1	5	2.30	1.018	.885	.374	.222	.733
StrategicQualityPlanning	40	1	4	2.50	.679	-.516	.374	-.086	.733
ProcessApproach	40	1	4	2.25	1.006	.258	.374	-.992	.733
Valid N (listwise)	40								

Table 4.1 Descriptive Statistics 1

4.4 The Impact of TQM Elements on Operational Performance of CGIL

The researcher sought to establish how this TQM practices affected operational performance of CGIL. The affected variables in the operational performance construct were; overall equipment effectiveness, Health and safety, Energy use, Customer complains, Employee engagement and overall Waste.

4.4.1 Improved OEE

The study sought from primary data what the employees felt as pertains OEE improvement in the factory. Since OEE is dependent on continuous improvement, the question to measure this was designed to include continuous improvement, “We have recorded an improved OEE in the last six months on both lines due to embedment of continuous improvement culture in the organization”. The results of the mean and standard deviation were as shown in table 4.2 below.

Descriptive Statistics									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ReductionofComplains	40	1	5	2.38	1.055	.554	.374	-.357	.733
ImprovedOEE	40	1	5	2.18	1.010	.731	.374	.266	.733
ImprovedMarketShare	40	1	5	2.30	.883	.767	.374	1.174	.733
OptimalEnergyUsage	40	1	5	2.18	1.035	.946	.374	.406	.733
EmployeEffectiveness	40	1	4	2.40	1.008	.209	.374	-.974	.733
ImprovedProductivity	40	1	5	2.35	1.001	.517	.374	-.040	.733
EmployeeInvolvementinManagement	40	1	5	3.15	1.122	-.195	.374	-.727	.733
ZerolostTimeAccidents	40	1	5	1.75	.840	1.880	.374	5.464	.733
Valid N (listwise)	40								

Table 4.2 Descriptive Statistics 2

4.4.2 Employee Morale

The researcher sought to determine the level of employee engagement in management decisions. Since employee engagement had a direct effect on employee morale and enthusiasm, enough questions were drafted in the questionnaire to measure this. The results of means were read in table 1 above. A score of 3.15 was realized indicating majority of the respondents fairly agreed on being involved. However on perusing through the available secondary data, employee engagement had dropped from 77% last year to 66% this year.

4.4.3 Health and Safety (LTA's)

The study sought to determine the effect of TQM practices on Health and safety of the worker. It sought whether employees agreed with “my safety my responsibility” culture. This was because the safety of employees variably affected their productivity. From the table above of means and standard deviation a mean of 1.75 was realized from the questionnaire. This was a strong score. It actually corroborated the strong secondary data score of zero lost time accidents last year and this year.

4.4.4 Energy Usage

The researcher also sought to identify how TQM had impacted energy usage at CGI.A mean score of 2.18 was realized indicating a vast majority of respondent agreed on energy usage being optimal and resulting to the best homogeneity of glass and hence quality products. A look at the secondary data available corroborated this assertion.

4.4.5 Overall waste

The study was also to answer the question on whether CGIL has recorded reduced overall waste and thus improving its productivity. On this a score of 2.35 was obtained. This indicated majority of the respondents agreed on CGIL improving productivity as a result of reducing overall waste.

4.4.6 Customer Complaint

It was also in the researcher's interests to find out how TQM had impacted customer complaints as a variable in operational performance construct. From the data gathered a mean score of 2.38 was obtained with a standard deviation of 1.075, however a closer look at the mode indicated a vast majority were neutral on the issue.

4.5 Regression Analysis

4.5.1 Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.518 ^a	.268	.135	.62435

Table 4.3 Model Summary

The model summary table provides information about the regression line's ability to account for the total variation in the dependent variable. The model summary for the regression model has a correlation coefficient of 0.518. The correlation coefficient increases by a unit as a result of a corresponding increase in the independent variables. The model summary has been used to determine the correlation between quality management practices and Operational performance of Central Glass Industries Ltd

4.5.2 Analysis of Variance

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.711	6	.785	2.014	.092 ^b
	Residual	12.864	33	.390		
	Total	17.575	39			

a. Dependent Variable: OperationalPerformanceIndex

b. Predictors: (Constant), Problems are solved from a process viewpoint in the organization as opposed to blame game, Satisfying our customers and meeting their expectations, Top Management actively participates in quality management, People in this organization have a relatively high level of authority over work related decisions, The strategic quality plan for this company is well thought of and its promising, Continued study and improvement culture

Table 4.4 Analysis of Variance

From the above table on ANOVAs results, a probability value of 0.092(a) was obtained. The p-value obtained was greater than level of significance $\alpha=0.05$, implying that the regression model was not significant in predicting the relationship between total quality management practices and operational performance of CGIL. Only one independent variable (customer focus) was statistically significant since their level of significance was less than 5%.

4.5.3 Test for Coefficients

This test was carried out to determine whether there was any relationship between quality management practices and operational performance of central Glass industries Limited. Here are the results of the findings provided in the table below:

Regression - Coefficients - September 23, 2015

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.541	.473		3.257	.003	.578	2.503
	Customerfocus	.382	.165	.364	2.319	.027	.047	.717
	ContinuousImprovement	-.111	.141	-.176	-.790	.435	-.398	.175
	TopManagementSupport	-.060	.166	-.074	-.359	.722	-.397	.278
	EmployeeInvolvement	.143	.139	.217	1.027	.312	-.140	.426
	StrategicQualityPlanning	-.108	.218	-.109	-.494	.625	-.552	.337
	ProcessApproach	.242	.133	.362	1.814	.079	-.029	.512

a. Dependent Variable: OperationalPerformanceIndex

Table 4.5 Regression Coefficients

From the above findings, the following regression model was obtained as provided below:

$$Y = 1.541 + 0.382x_1 - 0.06x_2 + 0.143x_3 - 0.111x_4 - 0.108x_5 + 0.242x_6 + e$$

Y being operational performance,

X₁ being customer focus,

X₂ being top management support,

X₃ being employee involvement,

X₄ being continuous improvement,

X₅ being strategic quality planning,

X₆ being process approach and (e) is the standard error.

Using the above model, it was possible to determine the relationship between quality management practices and Operational performance of CGIL. However, some independent variables in the above model were not significant since some of them had p-values greater than 5% as shown in the table above.

4.6 Discussions

From the above analysis, it was discovered that the most popular Total quality management practice in CGIL was: customer focus and process approach. Further, the analysis indicated the other four approaches including continuous improvement, employee involvement, strategic quality planning and top management support were insignificant or had a negative relationship with operational performance. From ANOVAs results, a probability value of 0.092(a) was obtained implying that the regression model was not significant in predicting the relationship between quality management practice and operational performance of CGIL.

Endricks and Singhal (2007) provided evidence of a relationship between Total quality management practices and Operational performance of manufacturing firms and the effectiveness of the implementation of quality management practices.

In addition, Choi and Eboch (2008) found a significant direct link between quality management practices and performance of a firm. The findings of this study can only be explained by using the available secondary data as provided in the table below.

The cells marked in green represent the areas that CGIL is on track and the cells marked red indicate areas that CGIL is behind the track.

		F14		F15														
CGI FY15 BPM KPIs (P12)		YTD	AOP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P1	P2	
Taking care of ourselves	Nobody gets hurt	No. of LTA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		LTA free days	370	365	401	432	462	493	523	554	585	613	644	674	705	735	766	797
		No. of SIRCs raised	1203	1664	108	167	49	73	85	150	89	59	51	70	99	44	47	138
		SIRs closure rate (%)	93	85	49	62	53	37	99	97	37	36	31	46	58	73	74	29
Taking care of our business	Quality	Customer complaints Index (PPM)	0.08	0.15	0.13	0.13	0.3	0.5		0.5	0	0.26	0	0.26	0.23	0.22	0	0.11
		Plant Quality Index (PQI)	98.2	97.5	98.6	98.6	98.77	94			95.9	96.7	96.62	96.4	96.7	96.5	97.4	97.1
		Overall Waste (%)	27.3	18	20.2	36.4	32	33			91	33	12.4	22.9	21.9	18.5	16.2	16.5
	Exemplary Service	Overall Equipment Effectiveness (OEE)	74.9	78	79.7	68.8	76.5	69.35		44.3	79.03	87.3	80.5	82.6	85.05	85.70	84.42	79.16
		Pack to Melt ratio (%)	72.7	82	79.8	83.6	68.0	67		9	67	87.6	77.1	78.1	82.0	83.8	83.5	80.6
		Furnace Utilization (%)	86	86	90.3	85.2	79.8	71.3			87.6	71.2	79.6	88.9	99.4	97.0	96.1	80.7
		Plant availability (%)	78.7	85	80.6	81.87	81.9	76.37		70	86.7	87.97	82.96	86.3	89.0	88.2	87.5	87.6
		ATP (Asset Care) (%)	78.6	85	81.1	86.46	85.03	84.5			57.32	80.4	68.5	83.2	68	72.96	70.23	58.3
		Work order completion rate (%)	80.9	85	81.8	86.81	86	85.9			59.05	81.9	70.6	83.6	65	73.3	71.48	59.93
		Planning effectiveness (%)	80.9	75	79	81.27	75.8	78.7			66.9	78.4	69.3	78.9	65	61.7	71.77	69.3
Continuous Improvement (%)	7.1	10	6	5	5	5			8	13	14	14	5	7	12	16		
ATP (Adherence to Production) (%)	81.2	85	84.01	81.2	58.2	80.8		13	88.7	96.6	126	114	100	105	108.9	110		
Taking care of our communities	Environment	Energy usage (M/kg)	11.3	8.56	9.82	12.2	13.2	11.8		12.26	9.45	10.10	8.96	7.65	7.79	7.32	9.80	
		Water usage (L/kg)	2.03	1.6	2.1	3.8	3.02	3.86			5.27	3.01	2.724	2.89	2.09	1.88	2.12	2.80
		Waste to Landfill (tonnes)	263	253	30.60	20.9	15.7	22.1	11.88	25.28	27.78	9.76	9.00	23.06	83.90	283.78	111.70	52.56

Table 4.6 Secondary Data Table

From the table above the parameters used to express operational performance for the year 2014/2015 are shown. The period under consideration was between July 2014 to August 2015, also referred to as F15 in the table above. Customer complaints were on track for four months, tracking below the target of 0.15 ppm. This represented 33% in terms of the months that customer complaints were on track. In health and safety, all the months covering the period of study were on track at zero number of LTA's representing a 100% on track. Overall waste was below the recommended 18% for only two months in the entire period of study covering twelve months representing 16% on track for the entire period. OEE was at its best for seven months above 78% representing a 58% on track. Continuous improvement was also on track for five months above a target of 10% representing a 41% on track for the whole period. Lastly energy usage was on track for just three months being below the target of 8.56Mj/kg. This represented a 25% on track.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the key findings of the study as well as the conclusions, limitations of the study, and recommendations for further research.

5.2 Findings

The response rate was 83.33%. This was sufficient representation of the entire population of CGIL. From the findings it was evident that customer focus stood out as the most adhered to practice followed by process approach. The other practices of continuous improvement, top management support, employee engagement and strategic quality planning scored a negative slope. The probability value from ANOVA was 0.092 slightly above the 0.05 allowable margin. One reason that could possibly attempt to explain this was maybe due to lack of enough questions in the questionnaire to measure one item. Single questions were used instead. The regression model was therefore not significant in predicting the relationship. The timing of this study was also not precise. Between the period chosen for analysis there were eminent transitions. The organization had closed down in October last year for an upgrade and early this year its owners changed from EABL to Consol Glass Proprietary. The shake up and issues that came with it may have influenced the respondents in shaping their opinions.

5.3 Conclusions

The main objective of the study was to find out the effects of TQM practices to operational performance of CGIL. This was to be achieved by deriving a regression equation to determine the relationship. As per the findings this was satisfactorily achieved. The other objective was to determine the impediments or limitations that derail TQM implementation in CGIL. This too was achieved and will be discussed in subsequent subheading. TQM was also found to be a force to reckon with in strategy formulation and implementation aimed at attaining competitiveness. It was also found that TQM is by itself the culture of an organization. With the explanations given

above it was fit to conclude that the primary and secondary data almost gave the same result.

5.4 Recommendations

From the findings of this study a crystal clear image of the missing TQM practices was painted on the wall. An integration of all the TQM practices is essential to rip off the benefits of TQM in CGIL. Employees need to be empowered and made to feel they are involved by top management. Continuous improvement need to be embedded in all processes and job descriptions should include continuous improvement as a responsibility. Top management also should enhance the creation of the right cultures through proper recruitment and hiring of staff. A business process re-engineering should also come in handy to help reinvent CGIL so as to win the hearts of customers.

5.5 Limitations of the Study

Perceptual data form the basis of opinions and hence primary data obtained could be erroneous. At the particular time of study employees were unsure of the future as the company was on ownership transition. Further, the study did not account for certain behavioral factors – related to employees’ and managers’ characteristics, attitudes, and experience levels – as well as organizational factors – such as structure, size, and business nature – that play a moderating role in the relationships highlighted in this study.

5.6 Implication for Further Study

In light of future research work in this area, a wider emphasis should be put to involve other glass manufacturing firms in Kenya. Other factors should also be considered like capital expenditure, technology, automation, age of the firm and competition.

REFERENCES

- Abdulah, E. and Omar, S. (2012). *The relationship between TQM and service quality in the Libyan Judiciary system*. Scientific & Academic Publishing
- Ahire, S.Landeros, R. &Golhar, D. (1995). Total quality management: A literature review and an agenda for future research, *Production and Operations Management*, pp. 277-307.
- Anderson, E.*et al.* (1994). Customer satisfaction and word-of-mouth. *Working Paper*, National Quality Research Center, University of Michigan Business School.
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, Vol. 17, pp.99–120.
- Connor, T. (2002).The resource-based view of strategy and its value to practicing managers. *Strategic change*,11 (2002), 307-316.
- Charles Lusthaus, et al. (1996). The impact of human resource management practices in perceptions of organizational performance. *Academy of Management Journal*.
- Deming, W. (2004). *The New Economics for Industry, Government, Education*, (2nd Ed.). MIT Press
- Falkenreck, C. (2010). Reputation Transfer to Enter New B-to-B Markets: Measuring and Modelling Approaches. New York: Springer.
- Fred Carden et al. (2002). *OrganisationalAssessment ; A framework for improving performance*.
- Faisal Talib, et al.(2010). *International Journal of Business, Management and Social Sciences* Vol. 1.
- Jerome, N. (2013). Impact of sustainable human resource management and organizational performance. *International Journal of Asian Social Sciences*, 3(6), 1287-1292.

- Kimantiria, D. (2014). Supply chain management practices and competitiveness in the national government of Kenya: A case study of Ruiru Sub-County. *A Research Project*.
- Kuo, T.et al. (2009). Employees' perspective on the effectiveness of ISO 9000 certification: A total quality management framework. *Total Quality Management*, 20(12), 1321-1335.
- Manyika, J.*et al.* (November 2012). *Manufacturing for the future: The next era of global growth and innovation*. McKinsey & Company. Retrieved 22 February 2015 from <http://www.nist.gov/mep/data/upload/Manufacturing-the-Future.pdf>
- Mehmood, S. et al. (2014). Relationship between TQM dimensions and organizational performance. *Pakistan Journal of Commerce and Social Sciences*, 8(3), 662-679.
- Prajogo, D. et al. (2003) "The relationship between TQM practices, quality performance, and innovation performance: An empirical examination", *International Journal of Quality & Reliability Management*, 20(8), 901 – 918
- Rothaermel, F. (2012). *Strat. Mgmt: Concepts and Cases*. McGraw-Hill/Irwin, p. 5
- Sigei, C. (2014). *A total quality management and performance of multinational pharmaceutical firms in Nairobi, Kenya*. A Research Project.
- Spencer, B. (1994). Models of organization and total quality management: A comparison and critical evaluation, *The Academy of Management Review*, 19 (3), 446-471.
- Talib, F. (2013). An Overview of Total Quality Management: Understanding the Fundamentals in Service Organization. *International Journal of Advanced Quality Management*.
- Terziovski, M. & Samson, D. (1999). The link between total quality management practice and organizational performance, *International Journal of Quality & Reliability Management*.

Vijayavel, J. *et al.* (2014). Principles of total quality management (TQM) governing automotive industries with reference to skill enhancement and capacity condition. *International Journal of Pharmaceutical Sciences and Business Management*, 2(9), (36-41.)

APPENDICES

Appendix I: The Questionnaire

Introduction

This Questionnaire is intended to collect data on TQM and operational performance of central Glass industries limited for the last six months. It's purposefully for academic affairs only. Please answer these questions by putting a mark where relevant. The respondents and information volunteered will remain anonymous and confidential.

Section One

The following statements are in reference to Total quality Managements practices believed to be in existence in Central glass industries limited. Please indicate the extent in which you agree or disagree with the statements.

TQM Practices	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Satisfying our customers and meeting their expectations is the most important thing we do (customer focus)					
Continual study and improvement culture is embedded in the organization (continuous improvement)					
Top management actively participates in quality management and improvement process (top management support)					

People in this organization have a relatively high level of authority over their work-related decisions (employee involvement)					
The strategic quality Plan for this company is well thought of and its promising(Strategic quality planning)					
Problems are solved from a process' viewpoint in my organization as opposed to blame game (process approach)					

Section Two

TQM Practices and Operational Performance	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
In the last six months my organization has had reduced customer complaints due to the implementation of its strategic quality plan which is entrenched in its vision statement.					
We have recorded an improved OEE in the last six months on both lines					

due to embedment of continuous improvement culture in the organization.					
Our market share has improved since the plant upgrade due to enhanced customer focus and satisfaction.					
Energy usage has been at its optimal in the last six months resulting to the best homogeneity in melting and thus quality glass.					
Employees are highly motivated and usually give their best capabilities resulting to high line OEE and few rejects					
My organization has recorded improved productivity as a result of reduced overall waste.					
Employees are highly trained on glass production and they are involved by management in organizational matters					
My organization has had zero lost time accidents due to adoption of the zero harm culture.(my safety is my responsibility)					

Appendix II: Secondary data collection checklist.

NO.	OPERATIONAL PERFORMANCE METRICS	YES	NO
1	Does the available data record a positive change or reduction in customer complaints from Jan-Sept 2015 as compared to last year same months?		
2	Are there figures to show a reduction in energy usage in the said period? How does it compare for the two periods under study? Is there an improvement?		
3	What is the number of LTA's recorded this year as compared to last year. Is there an improvement?		
4	What was the average OEE per month last year in the months of Jan-Sept and what has it been in the year 2015? Is there a decline?		
5	What is level of total rejects of products this year as compared to last year? Is there an improvement?		
6	From the annual value survey conducted by the organization, can you say employees are enthusiastic about their jobs?		