EFFECT OF ADOPTION OF WORLD CLASS MANUFACTURING ON THE OPERATIONAL PERFORMANCE OF UNILEVER KENYA LIMITED, TEA DIVISION

BY

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DECLARATION

This research project is my original work and has not been submitted for a degree in this or any other university for examination.

Signed …….. Date……..

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This research project has been submitted for examination with my approval as the University
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May the LORD bless all of you and keep you!

DEDICATION

Special dedication to my husband, Jule, and our beloved children, Nowel, Barbara, Keith, Brendan and Sharon.

ABSTRACT

With the introduction of modern technology and the onset of globalization, the world is transforming into a global village. Organizations are facing very tough competition both locally and internationally and firms are striving to graduate to world class status in order to compete favorably in the market. The objective of this study is to determine the effect of implementation of world class manufacturing on the operational performance of Unilever Kenya, Tea Division. In order to determine the effects of implementation of WCM in Unilever, it was necessary to look at the following parameters; customer complaints, customer case fill on time (CCFOT) or in other terms in time on full (OTIF), tea calibration accuracy, forecast accuracy, days on hand inventory. One null hypothesis was tested with a one tail t-test on 0.05 level of significance for 12 months done before the implementation and another 12 months after implementation. A break of 15 months after implementation was taken into consideration to allow for the implementation to take effect. The findings of the study revealed significant improvements in the operational performance at 0.05 significance level. On time in full deliveries drastically improved, which also translated to high levels of customer satisfaction after implementation of world class manufacturing practices. The study recommends total involvement of all stakeholders when implementing world class manufacturing practices and that top management should drive the entire process. Since world class manufacturing concept is a continuous process, the researcher also recommends that firms should be on the lookout for new production methods and upgrade their practices if they are to remain competitive.

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ABBREVIATIONS AND ACRONYMS

BPR	Business Process Re-engineering
CAD	Computer Aided Design
CCFOT	Customer Case Fill on Time
CCP	Critical Control Point
CCR	Capacity Constrained Resources
CIM	Computer Integrated Manufacturing
DOH	Days on Hand
EDI	Electronic Data Interchange
EI	Employee Involvement
ERP	Enterprise Resource Planning
IT	Information Technology
JIT	Just In Time
MRP	Material Requirements Planning
MRPII	Manufacturing Resource Planning
OTIF	On Time In Full
QC	Quality Circles
SCM	Supply Chain Management
TOC	Theory of Constraint
TPM	Total Productive Maintenance
TQM	Total Quality Management
WCM	World Class Manufacturing

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

The onset of globalization, rapid development in technology, need for shortened product life cycles, increases in oil prices catapulting production costs, increased competition (both internally and externally), new breed of sophisticated customers who have changing needs and expectations, has birthed an environment where manufacturers must be flexible, adaptive, responsive and innovative (Sohal, Burcher, Millen & Lee, 1999). Global competition stresses the firm's ability to innovate and to capture global levels of manufacturing efficiency (Rockart & Short, 1989). Manufacturing industries can only maintain international competitiveness by developing new technology, making continuous technical innovations, and creating new markets. The growing global interdependence and the integration of the global as a social horizon have prompted the need for creation of worldwide organizations and expansion of existing ones (Ferdows & De Meyer, 1990). This has triggered the emergence of what Hayes and Wheelwright (1984) referred to as world class manufacturing (WCM). Schonberger (1986) states that WCM is gained by marshalling resources for continual rapid improvement

The cumulative capability theory proposes effective guidelines for the building of multiple capabilities (Noble, 1995). Originally introduced by Nakane (1985), the cumulative capability theory posits that companies should develop capabilities not just sequentially, but according to a predetermined sequence. The resource based and capability view suggests that best practices are amongst the key contributors of success

for any organization. The resource based view highlights the potential for processes as a potential source of competitive advantage (Dutta, Zbaraki & Birgen, 2003; Pisano, 1994). The theory of constraint stresses the need to remove bottlenecks and ultimately achieve higher productivity. The ability to achieve operational excellence along competitive capabilities such as operational cost, quality, speed, delivery and flexibility is increasingly emerging as a major competitive advantage.

Unilever is the global leader in the world of tea. Its ambition to remain top in the market has driven the organization to craft a vision of doubling its business by the year 2015 while at the same time reducing environmental footprint and increasing positive social impact. Through adoption of best business practices such as total quality management (TQM), lean management, business process reengineering (BPR) and business transformation, the organization has stood the test of time to be a world class organization. 1 billion Euros is invested in Research and Development (R&D), fruitful efforts go to reducing greenhouse impact throughout life cycles of its product; reducing waste associated with disposal of tea, Inside Unilever, (2012). The major objective of this study was to establish whether the adoption of these world class manufacturing practices have improved the operational performance of Unilever Kenya, Tea Division.

1.1.1 World Class Manufacturing

The term "world class" was coined by Hayes and Wheelwright (1984) to describe the capabilities which had been developed by Japanese and German companies, as well as US firms which had competed equally with the Japanese and German firms. Schonberger

(1986) developed these concepts and provided a number of examples of world-class manufacturers located in the USA. He focused on continuous improvement, adding the development of supplier relationships, product design and JIT to the practices. Manufacturing firms can sustain global competitiveness by continuously developing new technologies, perpetual innovations and creating new markets. This is a basic requirement for world class manufacturing. World class performance has been proposed to result from adoption of specific set of practices although these practices may vary over time (Flynn, Schroeder, Sakakkibara & Bates, 1997).

Schonberger (1986) states that world class manufacturing is gained by marshalling the resources for continual rapid improvement. It denotes matching or exceeding any competitor on quality, lead time, flexibility, cost/price, customer service and innovation. WCM embraces practices like just-in-time (JIT), total quality management (TQM) and employee involvement (EI) to achieve continuous improvement of a process. The main purpose is to be successful on the market with high quality products at competitive prices, responding to the customer needs, ensuring maximum flexibility. According to Eid (2009), the term WCM was used because these firms have achieved an outstanding performance in their global competition.

Schonberger (1986) posits that WCM is driven by seven keys: reduced lead time, reduced operation costs, speed time-to-market, exceeding customer expectations, manage global enterprise, streamlining outsourcing processes and improvement on business performance visibility. World Class Manufacturing is linked with national

competitiveness and organizations reformulated roles for themselves accordingly (Hayes & Wheelwright, 1984). World class manufacturing includes both total quality and characteristics of learning organizations (Hodgett, Luthans & Lee, 1994). Such improvements cannot be achieved with traditional methods. They require drastic rethinking and radically redesigning business processes and practices – the whole essence of world class performance (Kearney, 1997).

1.1.2 Operational Performance

Performance is an important aspect of management (Pongatichat & Johnson, 2008). It is the alignment of all business units within an organization to ensure that they are working together to achieve organizational goals. Operational performance is achieved when on organization successfully achieves a competitive edge over its competitors by using quality, cost, speed, and flexibility (Dangayach & Deshmukh, 2001). These are best practices that lead to increased operational performance and which, if a company decides to abandon may lead to poor performance (Ward & Duray, 2000; Camp, 1989). These capabilities are applied to contribute to overall performance (Anderson, Schroeder & Cleveland 1991; Meredith & Vineyard, 1993; Ramanujan & Venkatraman, 1987).

The keys to world class manufacturing dictates a requirement to deploy capabilities to improve manufacturing operations and processes. The use of world class best practices such as JIT, or TQM in the manufacturing strategic framework represents both decisions and actions which help in the achievement of the operational performance (Hayes & Wheelwright, 1984). There is need to adapt an innovative culture in order to continuously improve products to meet customers' changing tastes and preferences.

World class manufacturing practices such as total quality management (TQM), just-in-time (JIT), Kaizen, employee empowerment, lean management, total productive management (TPM) possess great potential for increasing productivity. A world class mindset dedicates efforts to higher quality levels, reducing manufacturing cycle time, minimizing on costs, high flexibility and continuous improvements. These are recipes for high operational performance. Organizations that fail to benchmark normally experience lower than expected performance and higher dissatisfaction and turnover of employees (Longeneckker & Fink, 2001).

1.1.3 World Class Manufacturing and Operational Performance

Studies have shown that companies which have achieved world class status have adopted best practices and achieved high performance in operational areas (Voss, 1995). By implementing best practices, operational performance is bound to improve, consequently leading to overall performance improvement of the organization. WCM encompasses adoption of practices like TQM, JIT, and lean management for operational performance.

Operational performance is actualized when organizations optimally utilize their capabilities such as high levels of quality, reduced operational costs, truncated product's cycle, and speed to the market and flexibility to gain competitive advantage (Dangayach & Deshmukh, 2001). In their studies, Camp (1989) stated that a neglect of these tenets leads to poor operational performance. World class manufacturing is associated with best practices which in turn lead to high performance (Davies & Kochhar, 2002).

The benefits of integrating world class manufacturing include increased competitiveness, development of new and improved technology and innovation, increased flexibility,

increased communication between management and production employees, and increase in work quality and workforce empowerment. This, in essence, translates to increase in operational performance. One of the concepts used in WCM is lean management, which focuses on continuous improvement by way of eliminating wastes. Added to the list is total productivity maintenance (TPM), manufacturing excellence, all of which deliver operational productivity. was defined by Hayes and Wheelwright (1984) and Schonbergber (1986) as a competitive strategy employing the best practices in quality management, lean production, and concurrent engineering (Fullerton & McWatters, 2004). Gunn (1987) emphasizes on the role of technology in operational performance. Hanson and Voss (1993) see WCM in terms of practice and performance.

WCM optimizes the problem solving abilities in employees by applying both modern techniques and traditional engineering process (Salaheldin & Eid, 2007). Turbulent environments characterized by truncated product life cycles and segmented consumer markets call for world class manufacturing practices in order to be more flexible to satisfy changing market demands (Cook & Cook, 1994). This improves the organization's performance, giving it an edge over its competitors.

Manufacturing practices like Just-in-Time, Total Quality Management in manufacturing have significant effect on operational performance (Hayes & Wheelwright, 1984). Studies have revealed a strong correlation between these practices and performance, (Dangayach & Deshmukh, 2001). Hill (1993) argues that every company must determine the criteria upon which it will operate against its competitor. His order-winning criteria include price, delivery, quality, product design and variety. One of the ways a company can become a leader in its line of business is to apply in the right way the right concepts

and methods that help it increase in both efficiency and effectiveness in pursuit of business activities. WCM is viewed as a tool for management to dramatically improve business performance and gain or sustain competitive advantage, (Gilgeous & Gilgeous, 1999; Kasul & Motwani, 1995; Kreitner, 1995).

Operational performance will provide the standard rules, integrated tools, right behaviors giving a transparent accurate and near real time view of an organization's operational as well as financial performance. WCM is a tool for operations performance that brings excellence of the entire logistics cycle and production of an undertaking by: continuous improvement of all services; involvement of all levels and functions; adoption of the principles of total quality management, lean production and integrated factory. It has been put forward that WCM is driven by the never-ending needs of customers who are looking for better services and products (Salaheldin, 2005 ; Saxena & Sahay, 2000) .

WCM changing attitudes and beliefs provides a combination between responding rapidly to customer demands and a high degree of customer focus (Lind, 2001). WCM focus on improving operations, eliminations of waste, managing customer relationships, creating lean organizations and implementing green practices (Haleem, Susheel, Qadri & Kumar., 2012). This constitutes operational performance. For businesses to survive and be world leaders in the world of business, they require structures that encourage continuous operational performance.

1.1.4 Unilever Tea Kenya Limited

Unilever Tea is a multinational company with branches all over the world. Its headquarters was moved from Leatherwoods in UK in the year 2011 to Singapore for strategic reasons. Unilever is the largest tea buyer in the world, with around 170,000 tonnes. Unilever represents around 10% of the world market for tea (derived from Euro monitor World market for Hot Drinks 2004 and RTD 2005 market reports). Every year, consumers in more than 120 countries drink 177 billion cups of Unilever tea. The company has an employment capacity of 174,000 employees. In the year 2013, turnover was 49.8 billion Euros, of this, 48% of the raw materials was sourced sustainably. Unilever tea is consumed in 190 nations with the emerging markets representing 55% of the market share. Turnover by the close of years 2013 was 15.3 billion Euros, (Unilever Kenya Limited 2013). However, this study was be confined to Unilever Kenya Ltd, Tea Division.

Unilever Tea Kenya Ltd is the largest exporter of tea in Kenya. It is the biggest bidder of tea at the Mombasa Tea Auction held every Monday and Tuesday each week. The company exports its brands to Europe, America, Australia, India, Pakistan, Japan, Indonesia and Malaysia and many African countries. The company is a key contributor of GDP and has received medals from the government for the last three consecutive years for being ranked as one of the best tax payers. Unilever employs about 2500 employees, besides the casuals who are engaged in tea plucking on a daily basis. It has tea estates and factories in Kericho, together with an established Research and Development office in the same location, (Unilever Kenya Limited, 2012).

Up to 2010, Unilever was faced with a myriad of problems: massive wastage arising from monotonous and duplicated work, high overtime allowances, high rates of customer complaints, increased lead times, high operational costs, poor relations with suppliers, with quality of its brands slowly getting compromised. With slower global growth, leaner and more aggressive competitors, complicated ways of doing business was further eroding Unilever's competitive advantage. Moreover, the world's tea consumption patterns and preferences continued to change with many more consumers preferring different tea types. Increased competition from other tea firms like James Finlay, Williamson Tea, Lindop Tea Company and others for market share was an additional threat. It was against this backdrop, that the top management of Unilever woke up to the realization that it was no longer business as usual and quickly crafted new ways of working, the way to a world class organization in tea business, (Unilever Kenya Limited 2013).

In January 2011, Unilever embarked on best practices not only to be a leader in the tea business but also to be a role model. A restructuring was done whereby roles were revised to avoid duplication of work. Work processes were revitalized to avoid wastage. Project Half was introduced to bring in a more consumer-centric, cost-effective and agile organization. This was in line with lean manufacturing bent on minimizing waste, empowering teams to work smarter, quicker and simpler. This brought dynamism in the ways of working, (Unilever Kenya Limited 2014).

Unilever entered into a supply chain arrangement in mid 2010 with the intention of setting up a world class supply chain. In June 2012, the company launched "Partner to Win" - an award winning strategic programme focused on building relationships with key

supplier partners to achieve mutual growth. This is built on the notion that if Unilever doubles its business, then its suppliers must move in step in order to cater for the increased demand. The top management total quality management (TQM) and came up with a slogan "winning in the market". Driven by the motto of continuous improvement, customer is viewed as "King" and all efforts were geared towards exceeding customers' expectations. The company designed a well documented procedure of dealing with customer complaints. This has highlighted critical areas that needed streamlining, (Unilever Kenya Limited, 2013).

A learning culture was inculcated to develop the attitude for a world-class culture. On-line learning portal was crafted whereby anyone could log on to Unilever academy and take up courses in line with their roles. The company thrives on Total Quality Management, lean management and Just-in-Time (JIT) and a performance culture coupled with continuous improvement, (Unilever Kenya Ltd, 2014).

Unilever has embraced appropriate and cost effective e-technology, for example, Electronic Data Interchange (EDI), Enterprise Resource Planning (ERP), Manufacturing Resource Planning (MRPII) and E-Commerce. Moreover, the technology developed is linked to the global manufacturing strategy so that it can bear the optimal benefits to the organization. With the best tools and work processes, Unilever prides in its best brands in the market.

1.2 Research Problem

With the increasing challenges of globalization, scarce resources, rises in costs of production because of rising oil prices, scarcity of technically qualified manpower and increased competition, firms have to develop manufacturing strategies to give them a competitive edge in the global market (Yamashina, 2006). This coupled with problems listed by Salaheldin (2005), which include high scrap, losing market share, high level of inventory, poor quality of products, long lead times and existence of many sources of waste in production processes have driven organizations to come up with what Hayes and Wheelwright (1984) terms as world class manufacturing (WCM) to overcome such challenges. WCM provides the elimination of all types of wastes and loss of production through the involvement of all levels and departments. Many writers have focused on the area of WCM since Hayes and Wheelwright's work in 1984, but only a few studies on WCM implementation in developing countries like Kenya.

The Kenya tea Industry has continued to grow from strength to strength despite the numerous challenges it has faced over the years. The industry is bedeviled with challenges of limited market diversification, high cost of tea production, limited world class technology for doing tea business, limited value addition to the local tea, low domestic consumption of tea, unethical tea trading practices and working definitions of education and training. The above cited challenges propel the industry to take a paradigm shift if it is to remain competitive in the global tea market. Unilever operates within these tough market conditions with increased intensity in competition, very challenging external environment, economy's slowdown, growing complexities in

running the business, and all these challenges have propelled the organization to adopt world class manufacturing to give it an upper edge in the global competition in the market. This study aimed at finding out the effects of adopting WCM at Unilever Kenya Limited.

Various studies have addressed the benefits accruing from world class manufacturing: Gunn (1987) cites the role of technology in WCM, while Hall (1983) stresses that this is just another different way of operating an organization. Yamashina (2006) looked at the challenges firms in Japan face when adopting WCM; Maskell and Kennedy (2007) looked at WCM in terms of focusing on product quality, JIT production techniques, workforce management and agility in meeting customer requirements.

Ndeto (2008) cited JIT, lean management, supply chain management (SCM) as prerequisites for implementation of WCM; Atiti (2012) looked at the critical success factors in the adoption of WCM; Makena (2013) is of the view that there has been no studies on challenges of implementing world class practices in Kenya. Sokwala (2013) looked at the challenges of adopting world class manufacturing. The researcher is not aware of any study carried out to determine the effects of implementing world class manufacturing on any tea firms in Kenya, bearing in mind the fact that tea is a key foreign exchange earner in Kenya.

This study addressed this gap by seeking to answer to the research question: Has the implementation of world class manufacturing practices affected the operational performance of Unilever Kenya Tea Division?

1.2 Research Objective

The objective of this study is to determine the effect of WCM on operational performance of Unilever Kenya Limited, Tea Division.

1.3 Value of the Study

This study can be applied not only by Unilever employees but also by other employees in the tea fraternity. World class manufacturing calls for continuous improvement and Unilever employees and others in the tea fraternity can benefit by gaining more knowledge on WCM practices from this research project and therefore appreciate the importance of fully implementing this concept as a competitive tool, hence gaining a competitive edge over their competitors. The material in this study can enlighten the top management at Unilever on the importance of WCM as an effective competitive tool.

Researchers and academicians can gain theoretical knowledge to assist them in carrying out research in world class manufacturing and its effect especially in the tea industry in Kenya. The findings of this research can also highlight the emerging gap on the world class manufacturing hence prompting for more studies in the gap established.

The findings of this study can be important to policy makers as it may help them formulate policies that can steer the government to put in place appropriate infrastructure that may empower manufacturing firms to adopt world class manufacturing practices in order to remain competitive in the global market. Moreover, with the world becoming a global village, even the small scale entrepreneurs *"Jua Kali"* industry may need to be empowered to join forces to qualify being branded as world class organizations.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

For better understanding of the subject on world class manufacturing practices, the researcher has gone through a collection of books and articles by renowned writers and analyzed what they had to say about the subject under study. The literature review encompasses the theoretical foundation of the study, world class manufacturing practices, challenges of world class manufacturing, world class manufacturing and performance and empirical studies in world class performance.

2.2 Theoretical Foundation of the study

This study is anchored on the following theories: Theory of Constraints; Cumulative Capability (Sand Cone Theory) and Resource Based View.

2.2.1 Theory of Constraints

The theory of constraints (TOC) developed by Dr Eliyahu M Goldratt is based on the principle that complex system made up of thousands of people and pieces of equipment can have only a small number of variables that limits the ability to generate more the system's goal. Theory of constraints primary objective is to manage potential internal and external constraints, no matter where they may occur, so that they do not become bottlenecks or limits on achieving throughput goals. TOC identifies capacity-constrained resource (CCR), that is, any resource that is likely to compromise the throughput of the organization if its capacity is not carefully managed. External market constraint is where insufficient demand for the product or service inhibits the full consumption of what is

produce. TOC complements lean/JIT's continuous improvement activities and six sigma emphasis on determining how to reduce variation in the system.

Behaviour based constraints occur when people lack understanding of the causes and effect of problems, and when they fail to know where to start making improvement. Alleviating the first problem (by finding the cause) is a prerequisite to making the improvements. TOC complements lean/JIT's continuous improvement activities and six sigma emphasis on determining how to reduce variation in the system. World class organizations are adapting a learning culture as a way of overcoming the people constraint by equipping them with necessary skills that reduce accidents and machine breakages.

2.2.2 Cumulative Capability Theory (Sand Cone Theory)

The cumulative capability theory or the 'sand cone' model by Ferdows and De Meyer (1990), improves manufacturing performance in a cumulative manner and the sequence advocates that manufacturers acquire quality, followed by delivery, flexibility and finally cost. Global competition has intensified the pressure on plants to improve along all four dimensions. According to Vokurka and Davis (2004), world class manufacturers are those that demonstrate industry best practice. To achieve this, companies attempt to be best in the field at each of the competitive priorities (quality, price, delivery speed, delivery reliability, flexibility and innovation).

The sand cone model (Ferdows & De Meyer 1990; Noble 1995) and the competitive progression theory (Roth, 1996) argue that, to become excellent along multiple

dimensions, companies should develop capabilities in a pre-specified sequence. Organizations therefore aim to maximize performance in these areas in order to maximize competitiveness. However, as resources are unlikely to allow improvement in all areas, organizations concentrate on maintaining performance in 'qualifying' factors and improving 'competitive edge' factors. The priorities will change over time and must therefore be reviewed.

2.2.3 Resource Based View

According to the resource based view, it is the organization's special and unique resources that ensure sustained competitive advantage (Barney, 1991). Penrose (1959) argues that resources have to be combined efficiently and effectively to develop organizational capabilities in order to assure organizational success. Capability is defined as a firm's ability to deploy resources, usually in combination, using organizational processes, to effect desired end, (Amit & Schoemaker, 1993). Barney (1991) argued that for a resource to yield competitive advantage, it must be valuable, rare among competitors, imperfectly imitable, and should not be substitutable by competitors.

RBV highlights the processes as a potential source of competitive advantage (Dutta, et a., 2003; Pisan, 1994; Whittington et al, 2003). Process has therefore been pivotal in strategic management research (Khanna & Gulati, 2000; Pettigrew, 1992; Schendel 1992; Van De Ven, 1992). RBV is grounded in the perspective that a firm's internal environment (in terms of resources and capabilities) is more critical to the determination

of the strategic action that is the external environment. It provides that a firm's unique resources and capability determines its strategy.

2.3 World Class Manufacturing Practices

Schonberger (1986) developed the concept of world class manufacturing. He focused on continuous improvement adding supplier relationships, product design, just-in-time to the practices mentioned by Hayes and Wheelwright. Various studies have addressed the benefits accruing from world class manufacturing (Buchanan and Huczynski, 2004: Escrig-Tena, 2004; McAdam & Henderson, 2004; Salaheldin & Eid, 2007; Sharma & Kodali, 2008; Sinclaire & Sahili, 2001; Sohal & Terziovski, 2000). Gunn (1987) cites the role of technology in WCM, while Hall (1983) stresses that this is just another different way of operating an organization. To be world class manufacturing requires commitment to excellence and recognition that a firm cannot do all the things well but must be committed to doing certain things exceedingly well, Stocks & Lambert (1992).

World Class Manufacturing practices include Total Quality Management (TQM) which focuses on continuous improvement because world standards constantly change (Cook & Cook, 1994); Just-in-time (JIT), Kaizen, Customer relationship management (CRM), lean management with elimination of waste and green practices, among others (Haleem, Sushil, Quadri & Kumar, 2012). Others include: effective management practice capable of adapting to changing environments, Total Productive Maintenance (TPM), Quality Circles (QC), kanban (Pull System), Material Requirements Planning (MRP), Flexible Manufacturing System (FMS), Computer Aided Design (CAD), Computer Aided

Manufacturing (CAM), Computer Integrated Manufacturing (CIM), Manufacturing Resource Planning (MRPII), benchmarking, electronic commerce, Business Process Re-engineering (BPR), Enterprise Resource Planning(ERP), Electronic Data Interchange (EDI), Supply Chain Management, Employee Involvement to achieve Continuous Improvement of a process and team working and multi-skilling.

The key emphasis of world class manufacturing practices is dedication to higher quality levels, greater flexibility, reduction of product's life cycle, continuous improvements because world standards keep changing. Such improvements cannot be achieved with traditional methods. They require fundamentally rethinking and radically redesigning business processes and practices which is the essence of WCM (Keaney, 1997). WCM simply put is world class excellence representing a superior competitiveness that stands the test of time in any chosen markets and allows a company to deliver world-beating standards in everything it does (Eid, 2009).

2.4 Empirical Review

Many writers have focused on WCM since Hayes and Wheelwright's work in 1984, but only a few studies on WCM implementation in developing countries, with special reference to Kenya. Schonberger (1986), highlighted Seven Key Performance Indicators of WCM Practices. Dogan and Eylul (2013) stated that it is important that WCM implementation strategies be revised by taking into account the effects of these strategies on the operational and managerial performances of the firms. Kreitner (1995) approaches WCM as a tool to dramatically improve business performance and gain or maintain a competitive position.

Various studies have addressed the benefits accruing to world class manufacturing. Maskell and Kennedy (2007) state that WCM is a very broad term which generally includes focus on product quality, JIT production techniques, workforce management and agility in meeting customer requirements. Motivating lean transformation all throughout the organization and providing accurate, timely and easily understandable information for decision-making process leading to increasing customer value, growth, profitability and cash flow.

Yamashina (2010) provides the insight into the strategies that Japanese firms are adopting to face the challenges in the adoption of world class manufacturing practices in order to overcome the ever growing stiff competition from both the advanced counties and the rapid growing still developing countries.

Ndeto (2008) cited that total quality management, just-in time, lean management, supply chain management as prerequisites for implementation of world class manufacturing. However, while some few Kenyan firms are adopting world class practices, a good number of others are lagging behind and yet in this era of the world as a global village, most firms need to embrace WCM if they will survive in the global market.

Ngeta (2009) concluded that over nine of every ten listed companies apply WCM techniques with specific care to TQM. As a result of implementing best practices, reduced costs, increased quality and time saving benefits were observed. On the challenges, cultural issues and staff attitudes were noted. While industrial and allied

sectors had extensive adoption of best practices, commercial, service, finance and investment segments had lesser World Class Manufacturing practices embraced.

Kisombe (2012) discovered that lean manufacturing tools and techniques in industrial operations assisted the Sugar Sector in Kenya to remain competitive. Currently, there are no studies carried out to find out the impact of implementing world class practices in any tea firm in Kenya. Others include Atiti (2012) who looked at the critical success factors in the implementation of world class organization in the Standard Chartered Bank in Kenya.

Sokwala (2013) states that manufacturing firms in Kenya should think "outside the box" and embrace WCM in order to overcome challenges of operational and financial costs of business, political interferences, global competitions who have already embraced best world class practices, outdated technologies. The study recommends that top management should be key drivers in the implementation of world class manufacturing practices because they are in a position to deal with challenges as and when they arise.

2.6 Summary of the Literature review

World class manufacturing is a competitive tool that manufacturing firms have adopted to remain relevant in the competing world. It calls for continuous improvement and perpetual innovations. The manufacturing practices in application today risk being obsolete tomorrow. The onus of organizations is to continually research for new modern technology to remain relevant in the market. There is therefore need to continually research for new application methods to allow for continuous improvement. Tea is a key

foreign exchange earner in Kenya and upto now, the researcher is not aware of any study carried out on the challenges faced by tea firms in Kenya through the adoption of world class manufacturing. This study sought to address this gap by evaluating the effects of adoption of world class manufacturing on operational performance through a case study of Unilever Kenya Limited.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter looks at the methodology used in this study. It comprises of research design, data collection and data analysis and operationalization of study variables.

3.2 Research Design

This is a case study of Unilever Kenya Limited, Tea Division. As pointed out by Leedy and Ormond (2005), case studies are useful for investigating why individuals or programmes change as a result of circumstances or intervention over time. Moreover, information is readily accessible, and the facts gathered in the study can be applicable to all tea manufacturing firms.

The longitudinal research design was used in this research. Voss, Tsikriktis & Frohlich (2002) stated that longitudinal case research can be particularly valuable because one of the most difficult, but most important things that researchers try to identify in research is the relation between cause and effect.

3.3 Data Collection

Secondary data was used for this study. The following operational variables were used: customer complaints, customer case fill on time (CCFOT), tea calibration, forecasting accuracy, operational cost and days on hand (DOH). These operational variables have been explained in Section 3.4. Data was collected for 12 months before implementation

of WCM (July 2011 to June 2012). A break of 15 months after implementation to allow for the benefits of the concept to be felt was taken into account. The other 12 months was after implementation, covering October 2013 to September 2014.

3.4 Data Analysis

Data to obtain the objective was analyzed using the hypothesis testing. Secondary data was analyzed using t-*test* for comparison of process performance statistics (customer complaints, customer case fill on time, tea calibration, forecasting accuracy, and days on hand) before and after implementation of world class manufacturing practices. When the sample size of the data being analyzed is less than 30 ($n<30$), the t-*test* is the most appropriate when comparing the means of two samples (Kothari, 2008). The following hypotheses were tested:

1. H_1: There have been reduced customer complaints after implementation of WCM.

2. H_2: There has been improvement in customer case fill on time after implementation of world class manufacturing.

3. H_3: There has been increase in tea tasting calibration of Unilever Tea Brands after implementation of world class manufacturing practices at Unilever Tea Ltd, Tea Division.

4. H_4: There has been increased forecast accuracy after implementation of world class manufacturing at Unilever Tea Ltd, Tea Division

5. H_5 There has been reduced days on hand (DOH) after implementation of WCM at Unilever Tea Ltd.

For two samples 1:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{s^2\left[1/n1 + 1/n2\right]}}$$ (Cooper & Schindler)

Where;

S^2 is associated with pooled variance estimate

Given by:

$$S^2 = \frac{(n1-1)s1^2 + (n2-1)S2^2}{(n1+n2-2)}$$

n_1 is the number of months before World Class Manufacturing practices were adopted.

n_2 is the number of the jobs after adopting World Class Manufacturing practices.

S_1 is the standard deviation for sample n_1. S_2 is the standard deviation for sample n_2.

X_1 is the mean for monthly data collected before adopting World Class Manufacturing practices.

X_2 is the mean for monthly data collected after adopting World Class Manufacturing practices.

Significance level $\propto = 0.05$ (one tailed test) and the degree of freedom will be equal to $(n_1 - 1) + (n_2 - 1)$. The level of significance of 0.05 was chosen because most studies in business use this significance level and also to allow ease of calculation and use of readily available tables and Microsoft Excel Software.

3.5 Operationalization of Study Variables

In order to validate the objective of this study, the following variables were used; customer complaints, customer case fill on time (on time in full), tea tasting calibration, forecasting accuracy and days on hand inventory (DOH).

3.5.1. Customer Complaints

A customer complaint is an expression of a customer's dissatisfaction of a product or service (non-conformance) to the responsible party. Conformance quality describes how consistently a product/service meets design specifications (Flynn, Schroeder & Flynn, 1996). Conformance quality will be measured as the percentage of failures by customer's expectation, which is expressed as a customer complaint. Unilever maintains a complaints log database whereby all Unilever customers log complaints whenever their expectations have not been met (quality non-conformance). Once logged, a complaint can only be closed by the logging customer after the concerns raised have been resolved beyond any reasonable doubt. This variable measures the quality conformance of products offered by Unilever to its customers by looking at the number of complaints raised by customers. The larger the number of complaints, the greater the degree of dissatisfaction (non-conformance) and vice versa.

3.5.2 Customer Case Fill On Time (CCFOT)/On Time In Full (OTIF)

Custotomer Case Fill on Time (CCFOT) is the measure of delivery of Unilever's teas to customers, on time in full (OTIF). The customer case fill on time measure and the associated loss tree approach are an integrated method to improve the order to delivery process. Together, they measure all losses from the point of the original order that the customer raises to the final receipt of the product by the customer. Performance is measured on the basis of delivery of the brand not just within contracted dates, but in full.

Part delivery is not acceptable, and so are late deliveries. A grace period of +(-) 7 days is allowed, with above (+7) implying late delivery as opposed to below (-7) which denotes early delivery. This was expressed in percentage, and a high percentage rates on time in full denotes the ability to meet the customers' expectations and vice versa. The target for this key performance indicator for Unilever is 95% delivery in full.

3.5.3 Tea Tasting Calibration

Tea tasting calibration is an art of differentiating tea categories according to their quality in order to award their quality values. Unilever adopts a standardized tea lingo (tea language) which is understood by its customers globally. This is an internally developed sensory language which allows the company to categorize teas into sensible component groupings to be able to optimally buy and blend. Tea standards are graded according to quality and each customer places orders within those quality parameters. This variable is expressed as a percentage, and a high percentage denotes Unilever's ability to satisfy customers' requirements in full, hence satisfying all customers' expectations. Unilever's target pin point is 98%.

3.5.4 Forecasting Accuracy

Forecasting is attempting to predict or project future statistics – for instance for sales, prices or demand. The forecasting process predicts demand and the use of products and services so that the right quantities are ordered in advance. Forecast is based on future prices and demand in the market. A wrong forecast negates lean management policy by way of many days on hand or the risk of stock outs. Neither scenario is desirable by any firm. This variable measures Unilever's ability to predict optimal inventory for effective

supply chain and is expressed as a percentage. The higher the percentage therefore, the more the accuracy and vice versa. Unilever's target has been 95% accuracy.

3.5.5. Days On Hand Inventory

Days on hand is a measure of inventory – that is, the amount of stock held at a point in time, divided by the average day's sales of that stock. Days of inventory on hand tells the average amount of time a company will hold inventory before the inventory is sold. This is to discourage unnecessary holding of stocks. Holding stocks is an expensive exercise and translates to costs in storage, workforce, and a risk both in terms of pilferage and loss in quality. Conversely, low days of inventory on hand could lead to the company running out of inventory. If the company runs out of inventory, its profits will most likely decrease. This variable is expressed as the number of days a company takes to sell its average balance of inventory, so, the fewer the days the better. The target for days on hand inventory is 16 days.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter looks at the analysis of secondary data collected. The secondary data collected was used to establish the effects of introduction of world class manufacturing in Unilever Tea Kenya on the operational performance. This was done by comparing the operational performance before the introduction of world class manufacturing and the period after. A t-test was used to look at the relationship before and after. The parameters used include customer complaints, forecasting accuracy, tea calibration, customer case fill on time, and days on hand.

4.2 Effects of Introduction of World Class Manufacturing Practices at Unilever

The responsibility of successful implementation of best practices is for the whole organization rather than a few individuals. Records available at Unilever show that the following best practices have catapulted Unilever's growth by transformation the erstwhile normal organization into a role model in the tea industry which is now the envy of many. These best practices continue to shape the destiny of this world class organization, which include, quality management (TQM), lean management, just in time, customer relations management (CRM) and total production management (TPM).

Records available show that before implementation of world class manufacturing practices at Unilever, there was a lot of wastage from all quarters. Wastage came in all

forms from overproduction, a lot of idle time owing to overstaffing, a lot of over-time, under-utilization of resources, and all these resulted in massive losses in revenue. Introduction of lean manufacturing ensured that resources were optimally utilized for profit maximization, return on investment by ensuring quality in the process and product. Critical control points were identified – these are areas that were prone to misuse. Records show that telephone usage was abused and this had to be curtailed – management introduced monitoring system that could trace extensions with high unjustified telephone bills and if there was trace of misuse, the bearer would be cautioned against misuse.

Introduction of modern technology also brought the invention of internal communication system that brought great reduction in cost. Rather than have overseas travel, teleconferencing facility has come in handy and issues can be addressed and resolved over a single sitting. This is economy in both time and finance. Project half was introduced to minimize on waste. Management introduced incentive policies of rewarding employees who introduced simplified ways of working. This has brought in a lot of creativity and innovation in the office.

One of the key best practices of world class manufacturing is the introduction of modern technology. Before the implementation of world class manufacturing practices, Unilever was using traditional methods of manufacturing. Most of the work was done manually and therefore productivity was low. There was overstaffing and most of the jobs were monotonous and therefore boring. The researcher has established that after the

introduction of modern technology, most of the assignments became obsolete. Moreover, computers introduced were very fast, with many features that could produce very high quality work. This meant a fewer number of staff were required to perform tasks that were performed by many people. The office is now inclined to more flatter structures and lean staff. With no wastage and lean staff fully engaged, the organization has not only saved in operational costs but this has also eliminated boredom from monotonous jobs. The operating principle allows cost-efficient, automated and flexible just-in-time manufacture.

In addition, introduction of modern technology has spanned tremendous growth for Unilever. Today's fast-moving, ever-changing manufacturing environment demands faster responsiveness to changes in the market, product innovation and supply chain events. The researcher has established that with the use of electronic data interchange, Unilever is able to communicate with its customers globally and very fast. Data for contracts drawn with customers globally can be transferred electronically without involving any paperwork. Electronic networks provide a visual of all data updated in the system in a matter of seconds, enabling all stakeholders to be on the same page instantly. Responsible individuals must be notified immediately when supply chain issues threaten the completion of objectives, so actions can be taken to ensure customer delivery and quality requirements continue to be met. The researcher also confirmed that Unilever's Logistics Department is entrusted with the responsibility of ensuring that such information is relayed in a matter of seconds globally – very efficiently and effectively. One competitive tool for an organization to trade against its competitors is to avail

information to the market before competition – the researcher is convinced that Unilever has acquired this secret weapon!

Other world class manufacturing practices that the researcher noted at Unilever is the employee involvement and team working. Power is decentralized and employees are involved in decision making. Employees are encouraged to come up with their projects and just in January year 2014 the company came up with the reward for the "unsung heroes", to reward exhibited talent that would otherwise not have been recognized. This has opened prospects for innovations. Another notable attribute for this organization is it's active involvement in corporate social responsibilities – taking care of orphanage homes, clean up of the environment, a lot of afforestation in the tea growing areas Kericho to preserve the catchment areas. Unilever has introduced hand washing programme in schools where children are encouraged to avoid infections by washing hands with soap all the time, especially after visiting the toilets and before having meals. The researcher notes that these are good practices that give Unilever a competitive edge.

The researcher has established that Unilever is committed to lean management. In this best practice, the company's policy is zero tolerance on waste. Embedded in this culture is project half which (the researcher established) was devised with the primary objective of reduction of cost of production by half. The project revolves around introduction of work simplification to reduce the number of hours taken to complete assignments, looking for ways to engage fewer workers in doing the same job, shorter working week, etc. This project encourages innovation and creative skills by rewarding staff who come

up with ideas/ways of reducing repetitive jobs/wastes. This has led to huge savings by reducing operational costs.

Records available to the researcher confirmed that there is employee involvement at Unilever Tea Kenya. Workers are given a free hand to make decisions as long as they are held accountable. For career development, Unilever has put in place academy portals to ensure that there is continuous learning, making Unilever a learning organization. This has facilitated continuous improvement which is a prerequisite for world class manufacturing practice. Records also show that Unilever Tea Kenya has successfully integrated its suppliers into its network and provides them with necessary information to ensure that their growth is at par with Unilever's. Unilever's mission is to double its business by year 2016 and the company has been empowering its suppliers so that they grow in tandem. To ensure compliance to good manufacturing practices, Unilever has been blacklisting suppliers who fail to comply with sustainable agriculture, tea manufacturing without using pollutants in the environment.

After close scrutiny of Unilever's manufacturing practices, the researcher confirms beyond any reasonable doubt that all measures have been put in place to qualify being branded a world class organization. Notably, Unilever entered into a supply chain with top class service providers to enhance quality of its service. It has partnered with Kenya Tea Development Authority who are amongst the top quality tea producers in Kenya, Maersk shipping line for the best haulage services. Cargill (K) Ltd was contracted to offer warehousing and clearing and forwarding services. With a team of highly qualified

logistics team, Unilever offers an excellent world class service to its customers. Moreover, structures are well in place to ensure customers are given first hand attention. Any issue raised by customers is addressed promptly.

4.3 The Effect of World Class Manufacturing on Operational Performance of Unilever Tea Kenya, Tea Division

The secondary data was analyzed using t-test for comparison of operational performance statistics (customer complaints, tea tasting calibration, forecasting accuracy, customer case fill on time (CCFOT), days on hand inventory) before and after the adoption of world class manufacturing practices. When the sample size of the data being analyzed is less than 30 ($n<30$), the t-test is the most appropriate in comparing the means of two samples (Kothari, 2004). For the test of the hypotheses, the formula in section 3.4 was used. For ease of calculation and use of readily available tables and software, a significance level of $\propto = 0.05$ was chosen for the study. This significance level is commonly used in many business studies. In order to compute statistics, secondary data was collected from the company's records.

Data collected was for twelve months before the implementation of world class manufacturing and fifteen months break after implementation of WCM practices was adopted. A fifteen months' break was given to allow for the effects of WCM implementation to manifest. Microsoft Excel was used to compute the sample statistics. The results of the computations were shown in the respective tables in the next section.

4.3.1 Customer Complaints

The following hypothesis was tested:-

H_0**:** $\mu \geq \mu_1$**,** (There was no reduction in customer complaints after implementing world class manufacturing practices).

H_1: $\mu < \mu_1$, (There was a statistically significant reduction in the number of customer complaints after implementation of world class manufacturing practices).

Where μ was the mean number of customer complaints before adoption of WCM practices and μ_1, the mean number of customer complaints after implementation of WCM practices. The following observations were deduced from the data analysis:

Table 4.1: Customer Complaints

	$\bar{X}_1$	$\bar{X}_2$	S_1	S_2	n_1	n_2	Df	Computed t	Comment
Customer Complaints	26.833	3.333	8.610	1.840	12	12	22	26.827	**Reject H_0**

Comment: There was significant reduction of customer complaints after implementing world class manufacturing, hence the H_0 hypothesis must be rejected.

Analysis

Observing the statistics recorded for the 12 months consistently, there was significant reduction in customer complaints after the company implemented world class manufacturing practices. Before implementation, it was observed to be with a average of 26.8 complaints while after the implementation the average dropped to 3.3 , translating to 87.6% improvement. The standard deviation prior to implementation of WCM practices was observed at SD=8.6 and thereafter it was recorded at SD=1.8. This result shows that the small recorded SD reflects the

concentration within standard, a small standard deviation means that the values in a statistical data set are close to the mean of the data set on average, and a large standard deviation means that the values in the data set are farther away from the mean, on average. This is significant for manufacturing practices , therefore , H_1: $\mu < \mu_1$, (There was a statistically significant reduction in the number of customer complaints after implementation of world class manufacturing practices).

4.3.2 Customer Case Fill On Time (On Time In Full)

H0**:** $\mu \geq \mu_2$**,** (There is no change in the level of CCFOT after implementing world class manufacturing practices.)

H1: $\mu < \mu_2$, (There is a statistically significant increase in the level of CCFOT after Implementation of world class manufacturing practices.)

A close scrutiny of observed data recorded for the 12 months before and after implementation of WCM practices shows that there was significant improvement in CCFOT, where the percentage improvement during the 12 months observation was 25.86%. CCFOT increased from mean of Mean=57.3 before WCM to Mean=85.16 after implementation of WCM practices.

Table 4.2: Customer Case Fill On Time

	$\bar{X}_1$	$\bar{X}_2$	S_1	S_2	n_1	n_2	Df	Computed t	Comment
CCFOT	57.333	85.166	14.149	8.858	12	12	22	57.244	**Reject H_0**

Comment: There is significant improvement in CCFOT after implementing WCM, therefore the H_0 hypothesis should be rejected.

Analysis

The Customer Case fill On Time (CCFOT) measure and the associated loss tree approach are an integrated method to improve the order to delivery process. Together they measure all losses from the point of the original order that the customer raises to the final receipt of the product by the customer. Interpreting the results tabulated for the last 12 months of observation, before implementation of WCM practices the mean average for CCFOT measures were recorded as 57.33 and after the implementation of WCM the mean average was recorded at 85.8 . This shows significant improvement in handling customer orders and deliveries, where by the reduction in the mean, assures customers in reduced lead time. The increase in arrival of customers' consignments in full and on time depicts improvement in customer service which translates to more orders.

4.3.3 Tea Tasting Calibration

The following hypothesis was tested:-

H_0: $\mu \geq \mu_3$ (There was no increase in tea tasting calibration score after implementation of WCM)

H_3: $\mu < \mu_3$, (There was a statistically significant increase in tea tasting calibration score after implementation of WCM)

Where μ is the average taste calibration score before adopting world class practices and μ_3 the average taste calibration score after adopting world class practices.

Table 4.3: Tea Tasting Calibration

	$\bar{X}_1$	$\bar{X}_2$	S_1	S_2	n_1	n_2	Df	Computed t	**Comment**
Tasting Calibration	72	90.25	3.696	4.437	12	12	22	71.649	**Reject** H_0

Comment: There was significant improvement in tea tasting calibration after implementing WCM, hence the H_0 hypothesis should be rejected.

Analysis

Data observed and recorded for tea tasting calibration before and after implementation of WCM, for the 12 months, there was significant improvement in the recording where before the implementation the mean average was Mean=72 and after implementation mean=90.25. The SD=3.6 before and after implementation it was recorded as SD=4.4 . The significant percentage change in the tea calibration was observed 25% up from the previous analysis and therefore showing significant increase in tea testing calibration accuracy after implementation of WCM practices.

4.3.4 Forecasting Accuracy

The following hypothesis was tested:-

H_0: $\mu \leq \mu_4$, (There was no significant change in forecasting accuracy after adoption of world class manufacturing practices.)

H_4: $\mu > \mu_4$, (The forecasting accuracy significantly increased after adopting world class manufacturing practices.)

Where μ is the average number of forecasting accuracy before implementing world class manufacturing practices and μ_4 is the average number of forecasting accuracy after implementing world class manufacturing practices.

The output results of forecasting accuracy are shown in table 4.4.

Table 4.4: Forecasting Accuracy

	$\bar{X}_1$	$\bar{X}_2$	S_1	S_2	n_1	n_2	Df	Computed t	**Comment**
Forecasting Accuracy	73.85	85.983	2.055	0.841	12	12	22	73.227	**Reject** H_0

Comment: There was significant increase in forecasting accuracy after adoption of WCM, hence the H_0 hypothesis should be rejected.

Analysis

In forecasting the level of accuracy observed for the last 12 months before and after implementation of WMC practices, the level of accuracy significantly increased, where before implementing WMC practices it was forecasted with Mean=73.85 and after implementation forecasted accuracy level improved significantly to Mean=85.98., translating percentage level of accuracy forecasted to 16.4% in the mean observed. This shows an improvement in organization level of accuracy after implementation of WCM practices.

4.3.5 Days on Hand Inventory

H_0: $\mu \leq \mu_5$, (There is no significant reduction in days on hand inventory after adoption of world class manufacturing practices.)

H_4: $\mu > \mu_5$, (There is a statistically significant reduction in days on hand inventory after adoption of world class manufacturing practices.)

Where μ is the average days on hand inventory before adopting world class manufacturing practices and μ_5 is the average days on hand inventory after adopting world class manufacturing practices. The output results for average days on hand inventory are shown in table 4.5.

Table 4.5: Days on hand Inventory

	$\bar{X}_1$	$\bar{X}_2$	S_1	S_2	n_1	n_2	df	Computed t	Comment
DOH Inventory	37.5	20.166	11.736	3.826	12	12	22	37.474	**Reject** H_0

Comment: There was significant reduction in DOH inventory after implementation of world class manufacturing practices, hence the H_0 hypothesis should be rejected.

Analysis

The data observed for days on hand inventory before implementation of WMC practices was a mean of 37.5 that later reduces to Mean=20.16 with differences in Standard Deviation of SD=11.7 before and SD=3.8 after. There was significant improvement in percentage , with 46.13% from mean differences . Companies often begin with stated goals of reducing days on hand from something like 15 days down to 10 days, therefore the observation after implementation of WMC practices significantly shows improvement in having reduction in safety stock to eliminate the problem of uncertainty in the manufacturing process. It can be concluded that H_4: $\mu > \mu_5$, (There is a statistically significant reduction in days on hand inventory after adoption of world class manufacturing practices.)

CHAPTER FIVE: SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings of the data analysis on the objective of this study, that is, the effects of the implementation of world class manufacturing practices on operational performance. It begins by looking at the summary of the findings, draws conclusion from the study and finally makes recommendations and makes suggestions for further area of study.

5.2 Summary of the Findings

This study focused on the various world class manufacturing practices that have been adopted by Unilever Kenya , Tea Division. These include Total Quality Management, Lean Management, Supply Chain Management, Electronic Data Interchange, Manufacturing Resource Planning, Just In Time (Customer Case Fill On Time), Total Productive Management, Employee Involvement, Learning Organisation, Quality Assurance, Customer Relations Management and Benchmarking. The study established that Unilever Kenya Tea Division has garnered its resources to successfully implement world class manufacturing practices giving it a competitive edge in the global market.

The study also found out that the company successfully managed to counter the challenge of staff resistance by creating awareness, involving staff in decision making and making the staff own the process. This arrayed all the fear of the unknown. Moreover, the employees were enlightened on the benefits of the company being elevated to world class status and so instead of resisting, they fully owned the implementation process. This

made the process very successful. However, the challenge that emerged was the cost of training the staff and the reduced speed of operation during the implementation period. Another challenge was senior management's sluggishness in relinquishing power as they had to delegate the role of decision making.

Moreover, the t-test revealed that the operational performance increased significantly as a result of implementation of world class manufacturing practices in Unilever Kenya, Tea Division. The implementation of best practices like JIT, TQM and EDI have plummeted the growth of Unilever making it a role model in the tea industry. Lean manufacturing practices enabled minimal wastages and damages. By actively engaging in corporate social responsibilities, Unilever has endeared itself to the community both locally and internationally.

5.3 Conclusion

The main objective of this study was to establish the effects of implementing world class manufacturing practices at Unilever Kenya, Tea Division. The researcher concludes that implementation of world class manufacturing practices not only leads to increase in operational performance but also empowers any organization to compete effectively in the global market, hence remaining relevant. The researcher concurs with Sokwala (2013) that best practices indeed lead to exceptional operational performance and therefore lead to competitive advantage. The researcher is of the opinion that in line with Makena (2013), all employees both top management and operational staff should be equipped with necessary tools and be fully involved from the inception to implementation of WCM for the success of the process so that the organization can reap the benefits of

excellent operational performance from best practices. The researcher is of the opinion that world class manufacturing is the way forward for any business that wants to remain relevant and concludes that in line with Ngeta (2009), best practices indeed have competitive advantage due to exceptional operational performance results.

5.4 Recommendations

The study recommends that organizations should continuously involve all stakeholders when implementing world class manufacturing practices. Meeting customers' requirements is key to success of any business, managing good suppliers' relationships is equally vital so is employees' involvement. On the same, the study recommends that top management must be key drivers in implementing best practices as challenges can easily be overcome when top management actively participate in ensuring successful implementation. The study recommends flexibility in adoption of technology for operational success.

WCM calls for continuous improvement to meet customers' ever changing tastes and preferences. The study recommends that organizations should never relent in their search for new discoveries in the market in order to remain abreast in their areas of operation, otherwise they risk being overtaken by competitors.

Commitment to quality is essential for a firm to compete effectively in the global arena. For an organization with world class manufacturing status, quality department becomes an integral part of quality improvement programmes. It's the quality department's

prerogative to ensure that WCM status is sustained through eradication of defects and failure.

5.5 Limitations of the Study

The scope of this study was limited to Unilever Kenya, Tea Division, mainly because of time constraint. The findings therefore may not be representative in the implementation of world class manufacturing practices in industries outside tea manufacturing. Moreover, this study was confined to one tea company in Kenya (Unilever) and the strategies applied may not necessary be applicable to other companies in the same sector.

The timeframe within which the study was to be concluded was slim. Consequently, time constraint hindered an in-depth investigation of this study. Moreover, juggling between work and study was a big challenge.

There was no parameter in this study to measure the degree of involvement of top management, who are key receipe to successful implementation of WCM practices. It would have been interesting revelation to unravel top management's role in the implementation process.

5.6 Areas of Further study

The study suggested that further research should be done on the factors inhibiting the successful implementation of world class manufacturing practices in other organizations outside the tea industry in Kenya. The study also suggests further study to be carried out on the challenges of implementing world class manufacturing practices in the small

enterprises in Kenya, with special focus on “Jua Kali” industry in Kenya in order to provide them with information to enable them compete effectively in the global market.

The researcher is also not aware of any study carried out to compare the effects of implementing world class manufacturing practices between two organizations from different geographies, for instance, effects of implementing WCM practices in developing countries vis-â-vis developed countries. This could be an interesting berth that future researchers could delve into.

Top management’s involvement is a prerequisite for an effective and successful implementation of WCM programme. The researcher therefore invites studies on the role of top management in both the inception and successful implementation of the world class manufacturing practice.

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APPENDICES

Appendix 1: Cover Letter

UNIVERSITY OF NAIROBI
MOMBASA CAMPUS

Telephone: 020-8095398
Telegrams: "Varsity", Nairobi
Telex: 22095 Varsities

Tel: 020 8095398
Mombasa, Kenya

DATE: 08th SEPTEMBER, 2014

TO WHOM IT MAY CONCERN

The bearer of this letter, **Imathiu Lydia M.** of Registration Number **D61/83231/2012** is a Master of Business Administration (MBA) student of the University of Nairobi, Mombasa Campus.

She is required to submit as part of her coursework assessment a research project report. We would like the student to do her project on ***Effect of Adoption of World Class Manufacturing Practices on the Operational Performance of Unilever Kenya Limited Tea Division.*** We would, therefore, appreciate if you assist her by allowing her to collect data within your organization for the research.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organization on request.

Thank you.

Joseph Aranga
Assistant Coordinator, School of Business-Mombasa Campus

03 SEP 2014

Appendix 2: DATA COLLECTION SHEET

Unilever Kenya Tea Division Key Performance Indicators for 12 months before and after Implementation of World Class Manufacturing Practices (Average %age Per Month)

Before Implementation of WCM (June 2011 to June 2012)

CUSTOMER COMPLAINTS						
	Before		**After**			
Jul 2011 - June 2012	**Incidents**	**Oct 2013 - Sept 2014**	**Incidents**			
Jul	25	Oct	3			
Aug	11	Nov	4			
Sept	16	Dec	5	S_2	95.63478	
Oct	24	Jan	4	t	26.82752	
Nov	37	Feb	1			
Dec	25	Mar	7			
Jan	16	Apr	2			
Feb	37	May	4			
Mar	32	June	5			
Apr	28	July	2		**94.71434**	**20.24983**
May	34	Aug	0			
June	37	Sept	3		**3.992384**	
Mean	**26.83333**		**3.333333**		**5.886207**	
Std Dev	**8.610394**		**1.840894**			
Count	**12**		**12**			

CUSTOMER CASE FILL ON TIME (ON TIME IN FULL)						
	Before		**After**			
Jul 2011 - June 2012	**%age**	**Oct 2013 - Sept 2014**	**%age**			
Jul	66	Oct	70			
Aug	82	Nov	72		**155.6499**	**132**
Sept	53	Dec	73			
Oct	81	Jan	79		**5.190535**	
Nov	65	Feb	87		**-5.36233**	
Dec	62	Mar	87			
Jan	52	Apr	93			
Feb	58	May	93	S^2	160.0791	
Mar	50	June	87	t	57.24466	
Apr	44	July	93			
May	40	Aug	93			
June	35	Sept	95			

Mean	**57.33333**		**85.16667**
Std Dev	**14.14999**		**8.858455**
Count	**12**		**12**

TEA TASTING CALIBRATION			
	Before		**After**
Jul 2011 - June 2012	**%age**	**Oct 2013 - Sept 2014**	**%age**
Jul	75	Oct	86
Aug	76	Nov	84
Sept	74	Dec	86
Oct	74	Jan	92
Nov	75	Feb	92
Dec	76	Mar	88
Jan	65	Apr	87
Feb	65	May	88
Mar	70	June	90
Apr	72	July	94
May	72	Aug	98
June	70	Sept	98

Mean	**72**		**90.25**
Std Dev	**3.696846**		**4.43706**
Count	**12**		**12**

DAYS ON HAND INVENTORY			
	Before		**After**
Jul 2011 - June 2012	**Days**	**Oct 2013 - Sept 2014**	**Days**
Jul	19	Oct	25
Aug	21	Nov	24
Sept	29	Dec	24
Oct	36	Jan	25
Nov	28	Feb	24
Dec	38	Mar	21
Jan	36	Apr	17
Feb	36	May	17
Mar	46	June	17
Apr	51	July	16

		40.6653	**41.24472**
		2.662707	
		-6.85393	
S^2	42.88383		
t	71.64925		
		129.1036	**42.08688**
		4.672913	
		3.709321	

May	54	Aug	15	S^2	131.0167
June	56	Sept	17	t	37.47435

Mean	**37.5**	**20.16667**
Std Dev	**11.73669**	**3.82608**
Count	**12**	**12**

FORECAST ACCURACY			
	Before		**After**
Jul 2011 - June 2012	**%age**	**Oct 2013 - Sept 2014**	**%age**
Jul	71.7	Oct	84.80
Aug	71.9	Nov	84.20
Sept	70.3	Dec	84.90
Oct	71.9	Jan	86.1
Nov	72.1	Feb	86.3
Dec	73.8	Mar	86.2
Jan	76.1	Apr	86.2
Feb	76.2	May	86.1
Mar	75.2	June	86.5
Apr	75.2	July	86.60
May	75.6	Aug	86.90
June	76.2	Sept	87.00

Mean	**73.85**	**85.98333**
StdDevp	**2.055683**	**0.84146**
Count	**12**	**12**

22.61251 **9.256064**

1.959305

-6.19267

S^2 23.03325

t 73.22783

t $= X_1 - X_2 / \sqrt{S^2(1/n_1 + 1/n_2)}$ t = 26.83333 - 3.3333/S_2 (1/12+1/12

S2 = (n1-1)S12+(n2-1)S22/(n1+n2-2) S_2 = (11x8.610394) + (11x1.840894)/22