

**IMPLEMENTATION OF LEAN SIX SIGMA: A CASE STUDY
OF CfC STANBIC BANK**

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**A Research Project Submitted in Partial Fulfillment for the Requirement for the
Award of Master of Business Administration, School of Business, University of Nairobi**

OCTOBER 2013

DECLARATION

I, the undersigned declare that this research project is my original work and affirm to the best of my knowledge that it has not been presented for any academic award in any University.

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This research project has been submitted for examination with my approval as the University supervisor.

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ACKNOWLEDGEMENTS

Many thanks to the Almighty God for seeing me through the entire project. Thanks to my family, parents and friends for providing both material and emotional support during the entire period of my studies. I also acknowledge all those who gave a helping hand, this would have not been possible without you. I appreciate the great help CFC Stanbic Bank Limited employees who offered their cooperation and data that was used in this study.

DEDICATION

I dedicate this project to my parents and my siblings Greg, Ellinor, Faustine and Aston.

ABSTRACT

Business improvement methodology has been developing for the last century. Empirical studies show that many large companies have integrated Six Sigma with other techniques such as lean quality management system which has brought continuous improvement. The study will seek to answer the following questions; what are the challenges faced in the implementation of Lean Six Sigma? What are the benefits accrued by implementing Lean Six Sigma? In this research a case study form of research was used. The target respondents were staff working at CfC Stanbic in Nairobi. Stratified random sampling was applied in to select 60 respondents for the study In order to investigate implementation of Lean Six Sigma. Self-administered drop-and-pick later questionnaires were distributed to managers and senior employees currently employed by CfC Stanbic Bank. Through this study, Lean Six Sigma is needed because organizations and individuals need a methodology for improvement and problem solving, if the methodology is well applied, it can produce a better approach than other deployment approaches used by other improvement initiatives because it integrates the human and process aspects of process improvement. Effective use of technology, strategic focus in the customer, Change in organizational culture and structure, reward systems, expanding Lean Six Sigma to Human Resources Management, clear performance metrics, and prioritization affects the implementation of Lean Six Sigma.

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CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Organizations have been facing an increasingly competitive and global environment, which calls for enhanced firm capability in identifying new opportunities and sustaining superior performance. Strategies used by companies to avoid competitive disadvantages include the elimination of operational inefficiencies (which are large in the financial sector, on the order of 20 percent or more of total banking industry costs) (de Koning *et al.*, 2008b) and improvement of revenue by increasing the number of customers and their satisfaction, through innovation and improvement (de Koning *et al.*, 2008a). Organizations adopt various tools/methods /approaches to help them realize efficient improved performance, such tools include the Lean Six Sigma, TQM and 5s among others.

1.1.1 Lean Six Sigma

Lean Methodologies refers to the elimination of non-value adding tasks in a process, so as to improve on cost and increase speed. The eliminated tasks are otherwise referred to as 'waste'. Six Sigma is a business improvement methodology that employs dramatic breakthroughs in performance through elimination of variation in a production process.

Six Sigma and Lean methodologies have both evolved over decades as part of the continuing revolution of quality, excellence and breakthrough performance. Motorola created the term Six Sigma as it worked to raise the standards for improvement and Lean grew out of the experiences of the Toyota Production System.

Lean Six Sigma (LSS) is one of the tools adopted by financial institutions to help improve operational efficiency and effectiveness (Snee and Hoerl, 2003), by combining the strengths of lean thinking and Six Sigma. Since lean does not possess the tools to reduce variation and provide statistical control and Six Sigma does not attempt to develop a link between quality and speed (Su *et al.*, 2006), the application of LSS offers useful solutions that can lead to greater efficiency and better quality in the financial services industry (de Koning *et al.*, 2008a). LSS is a methodology that combines two of the most popular tools for improving performance of organizations, Six Sigma and Lean Management (de Koning *et al.*, 2006).

To remain competitive, efficient and agile, companies in services need, increasingly, a constant investment in innovation in the processes. LSS is a methodology that, by combining two of the most popular tools for improving performance of organizations in the 1990s, Six Sigma and lean management, allows us to meet this need (de Koning *et al.*, 2006). Its advantages include the cost control and capital investment, and improvements in the quality of service and customer satisfaction. It is considered an accurate and efficient methodology to support the development of a system of integrated quality management in any business in order to perform virtually free of errors and waste of time (George, 2002).

Services are by nature very often bound by time in terms of the processes that are run and lead to the delivery of an outcome that benefits a customer. In services organizations, lean comes in as a methodology to reduce waste (in terms of time) and to allow the process to become more efficient. It requires the examination of the process from the client's perspective, in order to eliminate the waste and inefficiency. de Koning *et al.* (2008a, b) proposed a framework for the integration of lean and Six Sigma, consisting of a project

organization structure based on Six Sigma (Black Belts (BB), Green Belts (GB), and champions) and in extensive training programs and a define, measure, analyse, improve and control (DMAIC) approach, with lean analysis tools and improvement models embedded and concepts/classifications of both lean and Six Sigma combined.

Recently, publications have appeared in the literature devoted to applying these tools in the financial (Hensley and Dobie, 2005) and health (de Koning *et al.*, 2006) sectors. According to Antony (2008), this trend will increase significantly over the coming years, particularly in Europe, given the importance of these sectors to the economic development of any country. This statement confirms the high interest of this topic. Unfortunately, there is still a limitation in the spread of Six Sigma in services, since its use in other services besides health care and financial services is relatively unexplored. In fact, limited application can also be found in call centers, human resources and in product support services (Chakrabarty and Tan, 2007). An important feature regarding Six Sigma research is the lack of a theoretical framework in the existing literature, which is probably related to the scarce contribution in the literature from academicians (Chakrabarty and Tan, 2007).

Lean and Six Sigma have followed independent paths since the 1980s, when the terms were first hard coded and defined: first applications of Lean were recorded in the Michigan plants of Ford in 1913, and those were then developed to mastery in Japan (within the Toyota Production System), while Six Sigma saw the light in the US (within the Motorola Research Centre): Lean is a process improvement methodology used to deliver products and services better, faster, and at a lower cost. Womack and Jones (1996) defined it as “a way to specify value, line up value-creating actions in the best sequence, conduct those activities without

interruption whenever someone requests them, and perform them more and more effectively. Six Sigma is a data driven process improvement methodology used to achieve stable and predictable process results, reducing process variation and defects: Snee (1999) defined it as “a business strategy that seeks to identify and eliminate causes of errors or defects or failures in business processes by focusing on outputs that are critical to customers”.

While both Lean and Six Sigma have been used for many years, they did not get integrated until the late 1990s and early 2000s (George, 2002, 2003), and today Lean Six Sigma is recognised as “a business strategy and methodology that increases process performance resulting in enhanced customer satisfaction and improved bottom line results” (Snee, 2010). Lean Six Sigma uses tools from both toolboxes, in order to get the better of the two methodologies, increasing speed while also increasing accuracy.

1.1.2 Lean and Six Sigma Implementation

Several authors Henderson and Evans, (2000) have studied the Critical Success Factors for Six Sigma implementation. The following factors are among the more important (Henderson and Evans, 2000): Top-down top management commitment, since it helps to influence and restructure business organizations and the cultural change in attitudes of individual employees toward quality in a short implementation period. Extensive education and training in Six Sigma and project management and certification processes that result in GB, BB, and master black belts (MBB).

Change in organizational culture and structure, to a project driven approach, and change in communication plan and channels, to motivate individuals to overcome resistance and to

educate senior managers, employees, and customers on the benefits of Six Sigma. Measure the success in terms of financial benefits, since it facilitates the acceptance by employees and help them to relate to Six Sigma project outcome (Goh, 2000).

Other less important factors are: strategic focus in the customer, emphasizing the quality and product specifications, in human resources management (HRM) and in buyer-supplier relationships, emphasizing the Six Sigma performance levels; clear performance metrics, to maintain a goal-oriented approach (although it may be difficult to identify the variables); expanding Six Sigma to HRM and organizational process thinking and measuring (Waterbury and Bonilla, 2008).

Fryer *et al.* (2007) have broadened the list and presented 13 key CSF for continuous improvement initiatives (Six Sigma, kaizen, total quality management): management commitment; customer management; supplier management; quality data, measurement, and reporting; teamwork; communication; process management; ongoing evaluation, monitoring, and assessment; training and learning; employee empowerment; goal management culture; product design; and organizational structure.

Achanga *et al.* (2006) stressed that management involvement and commitment are perhaps the most essential factors in aiding any of the desired productivity improvement initiatives, followed by financial capabilities, skills and expertise and an organizational culture of sustainable and proactive improvement. It is generally acknowledged that the factors discussed above can be equally applicable to services as they are to manufacturing (Achanga *et al.*, 2006; Chakrabarty and Tan, 2007). Badri *et al.* (1995) found that although service

sector organizations consistently had a lower level (of practice) compared with manufacturing organizations, both organizations agreed on the importance of training, product/service design, supplier quality management, and employee relations but there was a strong negative correlation with their levels of practice regarding quality departments and quality data and reporting.

1.1.3 The CfC Stanbic Holdings

CfC Stanbic Holdings is now the fourth largest bank in Kenya measured by total assets, which has its head office based in South Africa. It is Africa's largest bank by market capitalization and assets. At the end of 2007, the Standard Bank Group had total assets of over US\$ 175 billion and employed over 40,000 people worldwide (Stanbic Annual Report, 2010). The Bank's market capitalization as at 3rd April 2008 was US\$18.6 billion. Its network spans 17 sub-Saharan countries (including South Africa) and extends to 21 countries on other continents, including the key financial centers of Europe, the United States and Asia. In addition to commercial banking, Standard Bank has a strategic interest in the insurance industry through its control of the Liberty Group, one of Africa's leading life offices and financial services (Stanbic Annual Report, 2010).

CfC Stanbic Holdings was formed in June 2008 out of a deal that brought together Stanbic Bank Kenya Ltd and CfC Bank Ltd, which includes CfC Bank, CfC Life, CfC Financial Services, Heritage Insurance and Heritage Insurance Tanzania. For year ending 31st December 2008, CfC Stanbic Holdings Limited reported a pre-tax profit of Kes. 1.3billion; an increase of Kes 119 million from the results of the year ended 31 December 2007. Profit after tax increased by 7.8% from Kes 828 million in 2007 to Kes 892 million in 2008 (Stanbic

Annual Report, 2010). The Bank attributed the growth substantively to the merger between CFC and Stanbic banks in June 2008 which saw an increase of both net interest income and non-interest revenue that increased by Kes. 1.255 billion and Kes. 723 million respectively. Commenting on the results, Mike du Toit, Managing Director, CFC Stanbic Holdings said, “The 2008 results are an indication of the resilience of CFC Stanbic Holdings’ operations to face the challenges presented by a merger and integration process. (Stanbic Annual Report, 2010).

Operating costs grew by 104% to Kes. 1.378b. This was mainly due to the merger of banking operations. The cost to income ratio increased to 58.5 percent from 50.2 percent in 2007, materially due to integration-related costs. During the year under review, the Bank’s total assets grew by 141 percent largely as a result of the merger and organic growth which placed the Bank in a strong position in the market. Customer loans and advances increased by Kes.24.5 billion while customer deposits, the Bank’s main source of funding, increased by Kes. 38.8 billion. As a result of the increased earnings and the merger, Shareholders’ equity recorded a gain of 112% to Kes. 7.1 billion as compared to Kes. 3.3 billion in 2007. Staff costs increased by 80.6% as compared to the previous year due to the merged bank headcount and business operation expansion (Stanbic Annual Report, 2010).

As a part of the high profile merger of CFC and Stanbic Holdings in Kenya there was clearly a need to interconnect the two ATM switches of the respective banks to ensure that customers could immediately benefit from using the (formerly) two ATM networks. Paynet Kenya Ltd., a provider of financial services outsourcing within East Africa, was contracted to interconnect the two banks’ switches from both a technical and operations

perspective (Stanbic Annual Report, 2010). The switch interconnectivity provides a seamless banking offering to both existing Stanbic and CfC customers and includes access to either bank's ATMs and PesaPoint, access to banking facilities for customers of each bank and a wider banking network. As a result of the merger, the management of the bank has acknowledged that there are a lot of efficiencies that can be drawn from its current operations. It has identified LSS as the vehicle to use in attaining the desired level and gone ahead to contract for the services of a Black Belt to support implementation of continuous improvement initiatives (Stanbic Annual Report, 2010).

1.2 Statement of the Problem

Businesses are always on the lookout for ways to improve their bottom line and CfC Stanbic is one of them. Approaches to business improvement come and go but improving the bottom line never goes out of style. Business improvement methodology has been developing for the last century (Snee, 2004). Lean Six Sigma is the latest generation of improvement approaches. In order for Banks to remain competitive, efficient and agile, they increasingly need, a constant investment in innovation in the processes. LSS is a methodology that, by combining two of the most popular tools for improving performance of organizations in the 1990s, Six Sigma and lean management, allows banks to meet this need (de Koning *et al.*, 2006). Its advantages include the cost control and capital investment, and improvements in the quality of service and customer satisfaction. It is considered an accurate and efficient methodology to support the development of a system of integrated quality management in any business in order to perform virtually free of errors and waste of time (George, 2002).

Services are by nature very often bound by time in terms of the processes that are run and lead to the delivery of an outcome that benefits a customer. In banks, Lean comes in as a methodology to reduce waste and to allow the process to become more efficient. It requires the examination of the process from the client's perspective, in order to eliminate the waste and inefficiency. Six Sigma, however, focus on refining the process, reducing the variability, to obtain the same result at least 99.9997 percent of the time (Six Sigma).

Empirical studies show that many large companies have integrated Six Sigma with other techniques such as lean quality management system which has brought continuous improvement and a good example being the Caterpillar (Haikonen et al., 2004). Furthermore, Pantano et al. (2006) proposed the application of Six Sigma in a cluster of small companies so that they can share their resources and achieve the needed level of inputs as possible solution to overcome the difficulties found in the SMEs and financial institutions. With respect to the role of Lean Six Sigma in reducing the defects, it has been demonstrated in several studies that the defect is reduced after its implementation in manufacturing systems.

Despite documented importance of Lean Six Sigma in developed countries, no known local study has been conducted in the country to determine implementation of lean six sigma in Kenya; this study sought to fill the existing research gap by researching on Lean Six Sigma implementation in CfC Stanbic bank. The study will seek to answer the following questions; what are the challenges faced in the implementation of Lean Six Sigma? What are the benefits accrued by commercial banks on implementing Lean Six Sigma?

1.3 Objectives of the Study

The objectives of the study were to:

- i. Establish the practices relating to implementation of Lean Six Sigma
- ii. Establish the benefits of implementing the Lean Six Sigma programme
- iii. Establish the challenges in implementing the Lean Six Sigma programme

1.4 Value of the Study

The study would be of importance to other financial and other institutions whose interest lies on improved services delivery for customer satisfaction. It would assist the institutions in pointing out areas of difficulties in the allocating of resources towards addressing priority needs.

The study would provide a platform for further research in the area of implementation of Lean Six Sigma that would contribute to successful implementation of this methodology in business enterprises. In the academic field, future researchers can use the study as a reference point if one is researching on implementation of Lean Six Sigma and related topics.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Businesses are always on the lookout for ways to improve their bottom line and approaches to business improvement come and go but improving the bottom line never goes out of style. Business improvement methodology has been developing for the last century (Snee, 2004a, b). While improvement has always been an endeavor of business, but improvement as we think about it today began with the seminal work of Taylor (1911) on scientific management. Lean Six Sigma is the latest generation of improvement approaches.

Lean and Six Sigma are popular contemporary process improvement methodologies intended for companies striving for operational excellence (Arnheiter and Maleyeff, 2005). Both have roots in the industrial revolution started by Henry Ford in the early twentieth century. The ideas that arose at that time were studied, modified and taken to Japan by Toyota gurus Eiji Toyoda and Taiichi Ohno (Dahlgard and Dahlgard-Park, 2006). From this starting point, the concepts Six Sigma and Lean have evolved and changed the way that many people view improvement work (Byrne *et al.*, 2007). However, even though these concepts have evolved in somewhat different directions, there has been considerable cross-fertilisation and a merger of the two may even create room for more. Such a merger is frequently referred to as Lean Six Sigma or Lean sigma (Van den Heuvel *et al.*, 2006). Advocates often stress the complementary benefits of combining the pragmatic and value-centred Lean together with the data-driven Six Sigma (Kumar *et al.*, 2008). The more down-to-earth Lean initiatives could be applied to day-to-day problems and the resource-demanding Six Sigma to more complex problems (Magnusson *et al.*, 2003).

2.2 Objectives of Lean Six Sigma

Lean Six Sigma is a business strategy and methodology that increases process performance resulting in enhanced customer satisfaction and improved bottom line results. It is also being widely recognized that Lean Six Sigma is an effective leadership development tool. Welch and Welch (2005) points out that “Perhaps the biggest but most unheralded benefit of Six Sigma is its capacity to develop a cadre of great leaders.” Leaders enable an organization to move from one paradigm to another; from one way of working to another way of working. In making these shifts, work processes of all kinds get changed. Lean Six Sigma provides the concepts, methods and tools for changing processes. Lean Six Sigma is thus an effective leadership development tool in that it prepares leaders for their role, leading change.

Lean Six Sigma is needed because organizations and individuals need a methodology for improvement and problem solving. Processes do not get better by themselves. In fact, if not improved on some periodic basis, processes deteriorate over time. A systematic approach to improvement is needed to improve performance as measured by quality, cost, delivery and customer satisfaction. Customer needs are ever changing and increasing. Cash flow is always critical to the success of an organization. Bottom line improvements provide the cash needed to fuel innovation and growth. Lean Six Sigma works better than previous approaches because it integrates the human and process aspects of process improvement (Snee, 2000).

Six Sigma places a clear focus on getting bottom line results. Identification of the business impact is part of the methodology. No Lean Six Sigma project is approved unless the bottom line impact has been identified. Bottom line impact gets the attention of top management for,

as quality expert Joseph Juran has pointed out, their language is money. The five-phase improvement process: define, measure, analyze, improve, control (DMAIC) sequences and links in a useful way key statistical and other tools that have been found to be effective in improving processes. While not totally new (Hoerl and Snee, 2002), no improvement process has done this so effectively. These three features: integration of the human and process elements of improvement; clear focus on getting bottom-line results ; and a method that sequences and links improvement tools into an overall approach, when combined with other aspects of Lean Six Sigma, produce a deployment approach that is better than the deployment approaches used by other improvement initiatives.

2.3 Lean Six Sigma Project Process

To remain competitive, efficient and agile, companies in services need, increasingly, a constant investment in innovation in the processes. LSS is a methodology that, by combining two of the most popular tools for improving performance of organizations in the 1990s, Six Sigma and lean management, allows us to meet this need (de Koning *et al.*, 2006). Its advantages include the cost control and capital investment, and improvements in the quality of service and customer satisfaction. It is considered an accurate and efficient methodology to support the development of a system of integrated quality management in any business in order to perform virtually free of errors and waste of time (George, 2002).

Services are by nature very often bound by time in terms of the processes that are run and lead to the delivery of an outcome that benefits a customer. In services organizations, lean comes in as a methodology to reduce waste (in terms of time) and to allow the process to

become more efficient. It requires the examination of the process from the client's perspective, in order to eliminate the waste and inefficiency. Six Sigma, however, focus on refining the process, reducing the variability, to obtain the same result at least 99.9997 percent of the time (Six Sigma).

Koning *et al.* (2008a, b) proposed a framework for the integration of lean and Six Sigma, consisting of a project organization structure based on Six Sigma (black belts (BB), green belts (GB), and champions) and in extensive training programs and a define, measure, analyse, improve and control (DMAIC) approach, with lean analysis tools and improvement models embedded and concepts/classifications of both lean and Six Sigma combined. Recently, publications have appeared in the literature devoted to applying these tools in the financial (Hensley and Dobie, 2005) and health (de Koning *et al.*, 2006) sectors. According to Antony (2008), this trend will increase significantly over the coming years, particularly in Europe, given the importance of these sectors to the economic development of any country. This statement confirms the high interest of this topic.

Unfortunately, there is still a limitation in the spread of Six Sigma in services, since its use in other services besides health care and financial services is relatively unexplored. In fact, limited application can also be found in call centers, human resources and in product support services (Chakrabarty and Tan, 2007). An important feature regarding Six Sigma research is the lack of a theoretical framework in the existing literature, which is probably related to the scarce contribution in the literature from academicians (Chakrabarty and Tan, 2007).

Several authors (Henderson and Evans, 2000) have studied the CSF for Six Sigma implementation. The following factors are among the more important (Henderson and Evans, 2000): Top-down top management commitment, since it helps to influence and restructure business organizations and the cultural change in attitudes of individual employees toward quality in a short implementation period. Extensive education and training in Six Sigma and project management and certification processes that result in GB, BB, and Master Black Belts (MBB). Change in organizational culture and structure, to a project driven approach, and change in communication plan and channels, to motivate individuals to overcome resistance and to educate senior managers, employees, and customers on the benefits of Six Sigma. Measure the success in terms of financial benefits, since it facilitates the acceptance by employees and help them to relate to Six Sigma project outcome (Goh, 2000).

Other less important factors are: strategic focus in the customer, emphasizing the quality and product specifications, in human resources management (HRM) and in buyer-supplier relationships, emphasizing the Six Sigma performance levels; clear performance metrics, to maintain a goal-oriented approach (although it may be difficult to identify the variables); expanding Six Sigma to HRM and organizational process thinking and measuring (Waterbury and Bonilla, 2008). Fryer *et al.* (2007) have broadened the list and presented 13 key CSF for continuous improvement initiatives (Six Sigma, kaizen, total quality management): management commitment; customer management; supplier management; quality data, measurement, and reporting; teamwork; communication; process management; ongoing evaluation, monitoring, and assessment; training and learning; employee empowerment; goal management culture; product design; and organizational structure.

Other factors suggested included recognition and reward systems, effective use of technology, cultural change, trust in organization and project selection, and prioritization. Regarding lean management project implementation, Achanga *et al.* (2006) stressed that management involvement and commitment are perhaps the most essential factors in aiding any of the desired productivity improvement initiatives, followed by financial capabilities, skills and expertise and an organizational culture of sustainable and proactive improvement.

It is generally acknowledged that the factors discussed above can be equally applicable to services as they are to manufacturing (Chakrabarty and Tan, 2007). Badri *et al.* (1995) found that although service sector organizations consistently had a lower level (of practice) compared with manufacturing organizations, both organizations agreed on the importance of training, product/service design, supplier quality management, and employee relations but there was a strong negative correlation with their levels of practice regarding quality departments and quality data and reporting. One wonders whether the findings would be the same nowadays.

2.4 Benefits of Lean Six Sigma

As the definition of Lean A particular skill of a Lean Six Sigma program facilitator is an ability to influence cultural change and workplace change. From a project perspective, green belt (GB) and black belt (BB) projects typically return in excess of \$50k and \$175k per project, respectively, (Harry, 1998). Experience has shown that companies considered to be doing an effective job of deploying Lean Six Sigma get the following returns: large

companies return 1-2 percent of sales/year and small to medium size companies return 3-4 percent of sales/year (Snee, 2004a, b). These percentages translate into sizeable savings.

The excitement grows when you realize that savings accumulate year over year: for example, a company getting 2 percent/year return get 2 percent in the first year, $2+2=4$ percent in the second year, $2+2+2=6$ percent in the third year, etc. This of course assumes that the savings are sustained over time; hence sustaining improvement becomes a critical issue (Snee, 2006). These levels of savings have been experienced in a wide variety of industries around the world including; chemical, automotive, finance, electronics, pharmaceuticals, health care, and government. The companies involved are easily recognizable including GE, Du Pont, Merck, Johnson & Johnson, W.R. Grace, Allied-Signal/Honeywell, Bank of America, Cummins, and so on (Snee and Hoerl, 2005).

2.5 Challenges of Lean Six Sigma Model

In order to adopt Lean Six Sigma as a rigid data-driven approach to achieve higher quality performance in the long term, it has been suggested that a company must develop a unique combination of resources and competencies that “bring home” the benefits of Six Sigma (Huq, 2006). This competency-based perspective is based on the premise that a company needs to have the assets, skills and resources necessary to perform some selected activities systematically in order to achieve a better competitive position in the market place (Sanchez, 1996). According to these authors, the competencies have a cognitive aspect in terms of knowledge and skills the company possesses and an action aspect that enables a company to deploy its competencies in a coordinated manner.

According to Huq (2006), these competencies also include both personal and corporate competencies. Personal competencies comprise the technical knowledge and charisma of the Six Sigma facilitators leading the Six Sigma or Lean Sigma deployment, that is the Black Belts and Master Black Belts. Corporate competencies comprise a combination of skills, knowledge and experience that enable a firm to implement a change program successfully (Dunphy *et al.*, 1997). These skills and knowledge are embedded in a corporate culture and work methods and they can only develop through continual process improvement efforts (Huq, 2006).

Organizations achieve success through the integrated functioning of people, processes, and technology. The strength of organization development lies in its roots in organization behavior and dynamics, and the application of action research to improve human performance and organizational effectiveness. Six Sigma offers advantages as a complement to use with other, less technical organizational development techniques when interventions are required to improve operational processes (Jeffery, 2005).

For Lean Six Sigma to be successful, it must have both technically and interpersonally competent facilitators managing the program and leading the improvement projects and the company must have a unique combination of resources and competencies so that the program is sustained in the long term (Huq, 2006). This is consistent with the classical human resources model which evaluates an organization based on the three C's – competence of the workforce, commitment of the management and culture of the organization (Rao, 1999). The question arises, how to get more people – not just the Lean Six Sigma facilitators – to

overcome the mental barriers of using statistical analysis using the DMAIC methodology for everyday improvements within their workplace (Wiklund and Wiklund, 2002).

An example of a competency-based perspective of success is where leadership commitment, open communication, employee empowerment and team structures exist in an organization (Powell, 1995). It seems reasonable to assume that these factors are independent of the type of improvement program so would equally apply to Six Sigma and Lean Six Sigma (Naslund, 2008). Organizational competency also includes the concepts of a learning organization, an ability to work in teams and an appropriate infrastructure to allow individuals to be creative and innovative (Huq, 2006).

The skills level of the Lean Six Sigma program facilitator lead the projects are also critical to success (Pyzdek, 2009). A particular skill of a Lean Six Sigma program facilitator is an ability to influence cultural change and workplace change taking place from project improvement activities and this would be related to the seniority of the role they play in the organization. According to Hooper (Hooper and Devine, 2002), the quality professional needs to re-invent their role in an organization and move from “quality control” to “interpreters of business strategy” and drive the integration of all quality processes, metrics, tools and accountancy systems to optimize the performance of all departments. This could mean that the role of the deployment facilitator could take a high level or a low level depending on whether the role is senior and influential or less senior, perhaps more analytical and less influential, respectively.

2.6 Empirical Studies

Lean and Six Sigma are popular contemporary process improvement methodologies intended for companies striving for operational excellence (Arnheiter and Maleyeff, 2005). Both have roots in the industrial revolution started by Henry Ford in the early twentieth century. The ideas that arose at that time were studied, modified and taken to Japan by Toyota gurus Eiji Toyoda and Taiichi Ohno (Dahlgaard and Dahlgaard-Park, 2006). From this starting point, the concepts Six Sigma and Lean have evolved and changed the way that many people view improvement work (Byrne *et al.*, 2007). However, even though these concepts have evolved in somewhat different directions, there has been considerable cross-fertilization and a merger of the two may even create room for more. Such a merger is frequently referred to as Lean Six Sigma or Lean sigma (Antony *et al.*, 2003; Van den Heuvel *et al.*, 2006). Advocates often stress the complementary benefits of combining the pragmatic and value-centred Lean together with the data-driven Six Sigma (Kumar *et al.*, 2008). The more down-to-earth Lean initiatives could be applied to day-to-day problems and the resource-demanding Six Sigma to more complex problems (Magnusson *et al.*, 2003).

The Toyota Production System (TPS) provided the basis for what is now known as lean thinking, as popularised by Womack and Jones (1996). Waste was defined as “anything other than the minimum amount of equipment, materials, parts, space and time which are absolutely essential to add value to the product” (Russell and Taylor, 2000). Working to this brief through a process of trial and error, Ohno would go on to achieve a new manufacturing paradigm the Toyota Production System (TPS) (White and Prybutok, 2001). Lean manufacturing extends the scope of the Toyota production philosophy by providing an

enterprise-wide term that draws together the five elements of “the product development process, the supplier management process, the customer management process, and the policy focusing process for the whole enterprise” (Holweg, 2007). The foundation of the lean vision is still a focus on the individual product and its value stream (identifying value-added and non-value added activities), and to eliminate all waste, or *muda*, in all areas and functions within the system – the main target of lean thinking (Womack and Jones, 1996). Seven forms of waste have been identified: over-production; defects; unnecessary inventory; inappropriate processing; excessive transportation; waiting; and unnecessary motion.

Lean six sigma uses tools from both toolboxes, in order to get the best of the two methodologies, increasing speed while also increasing accuracy (Mader, 2008). Benefits of lean six sigma in the industrial world (both manufacturing and service) include: ensuring services/products conform to what the customer needs (voice of the customer); removing non-value adding activities (waste); reducing the incidence of defective products/transactions; shortening cycle time; and delivering the correct product/service at the right time in the right place.

The application of Lean Six Sigma in the service sector has been less tried and tested, amid fears that the processes in service industries do not lend themselves to the rigorous application of the set of statistical tools associated with Six Sigma (Patton, 2005). There are three main reasons why services need to apply Lean Six Sigma (George, 2003): Service process can be slow and therefore costly, i.e. prone to error and therefore leading to reduced customer satisfaction. Many service processes are complex and have too much “work-in-progress” which leads to increased waiting time – a non-value added cost. Call centres are a

worldwide phenomenon. Countries such as The Netherlands, Ireland, UK, Philippines, South Africa and India all have large call centre industries. In the USA there are over 55,000 call centres employing approximately 2.9 million agents (Mahesh and Kasturi, 2006). In the UK the sector employs over 595,000 agents in 6,324 call centres (Intel, 2009).

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

In this research a case study form of research was used. A case study portrays a practical profile of persons, events, or situations (Robson, 2002) in research. This allowed for the collection of large amount of data in a highly economical way.

3.2 Respondents

The target respondents of this study were staff working at Cfc Stanbic Bank Head Office in Nairobi. The study focused on the top, middle and lower level management staff who are directly dealing with the day to day management of the bank. The study examined a sample of staff drawn from the population of 200 management staff. The population characteristic was summarized in table 3.1 below.

Table 3.1: Target and Sample Population

Sections	Population	Proportion	Sample Size
Top Management	28	0.3	8
Middle Level Management	75	0.3	23
Low level Management	97	0.3	29
Total	200	0.3	60

A sample is a small group obtained from accessible population, (Mugenda & Mugenda, 2003). Sampling is the procedure a researcher uses to gather people, places or things to study, (Kombo & Tromp, 2006). It is the process of selecting a number of individuals or

objects from a population such that the selected group contains elements representative of characteristics found in the entire group, (Orotho and Kombo, 2002). Stratified random sampling was applied in carrying out the study as per the departments, a sample of 30% of the total population was used therefore 60 respondents constituted the sample population for the study, according to Gay 1983 as cited by Mugenda and Mugenda, (2003) suggests that for descriptive studies at least 10% - 20% of the total population is enough. Stratified random sampling ensures inclusion, in the sample, of sub groups, which otherwise would be omitted entirely by other sampling methods because of their small number of population, (Mugenda & Mugenda, 2003).

3.3 Data Collection

In order to investigate implementation of Lean Six Sigma in, self-administered drop-and-pick later questionnaires were distributed to managers and senior employees currently employed by CFC Stanbic Bank. This study utilized a questionnaire to collect primary data as used in various previous research projects (Lumpkin and Dess, 2001). The questionnaire was designed in this study comprised of two sections. The first part included the demographic and operational characteristics designed to determine fundamental issues including the demographic characteristics of the respondent. The second part was devoted to the identification of implementation of lean six sigma in the banking industry. The questionnaire was designed to include both structured and unstructured questions. The structured questions was used in an effort to conserve time and money as well as to facilitate an easier analysis as they were in immediate usable form; while the unstructured questions was used so as to

encourage the respondent to give an in-depth and felt response without feeling held back in revealing of any information.

3.4 Data Analysis and Presentation

Before processing the responses, the completed questionnaire was edited for completeness and consistency. The research used both qualitative and quantitative data, for the qualitative data content analysis was used and the findings presented in a prose form. For the quantitative data descriptive statistics was used to summarize the data. This included mean, standard deviation, percentages, frequencies, tables and other graphical presentations.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter discusses the interpretation and presentation of the findings obtained from the field. Descriptive and Inferential statistics have been used to discuss the findings of the study. The study targeted a sample size of 60 respondents from which 55 filled in and returned the questionnaires making a response rate of 91.6%. This response rate was satisfactory to make conclusions for the study. The response rate was representative. According to Mugenda and Mugenda (1999), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. Based on the assertion, the response rate was considered to excellent.

4.2 Respondents Information

The study requested the respondent to indicate their age category, from the findings, 34% of the respondents indicated that they were aged between 41 to 50 years, 32% of the respondents indicated that they were aged between 31 to 40 years, 18% of the respondents indicated that they were aged between 20 to 30 years, whereas 16 % of the respondents indicated that they were aged above 51 years. This implies that respondents featured in this study were well distributed in terms of their age.

The study requested the respondent to indicate their highest level of education. from the findings, 38% of the respondent indicated their highest level as college, 32% of the respondent indicated their highest level of education as university, whereas 30% of the

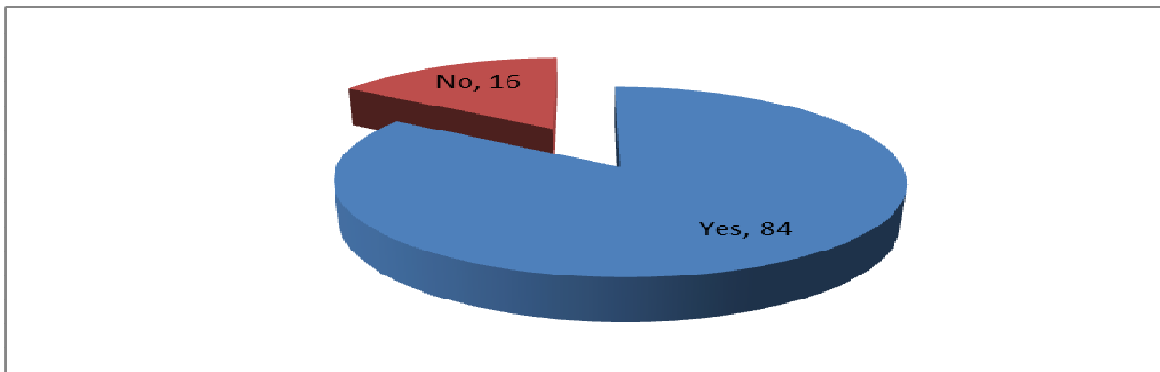
respondents indicated their highest level of education as post graduate, this is an indication that most of the respondents focused in this study had degree certificates as their highest levels of education.

The study requested respondent to indicate the number of years they had served for. From the findings the study established that 40 % of the respondents had served for a period of above 12 years 32% of the respondent indicated that they had served for a period raging between 3 to 9 20% of the respondents had served for a period ranging 9 to 12 years, whereas 8% of the respondents indicated to have served for a period of less than 3 years, this indicates that majority of the respondents had served for a considerable period which implies that most of the respondents had vast knowledge which could be relied upon by this study.

4.3 Objectives of Lean Six Sigma Implementation in CfC Stanbic

The study sought to establish whether the objectives of Lean Six Sigma affect its implementation, from the finding 84% of the respondent indicated that the objectives of Lean Six Sigma affect its implementation whereas 16% were of contrary opinion. The respondents were to provide 'Yes' or 'No' as their response.

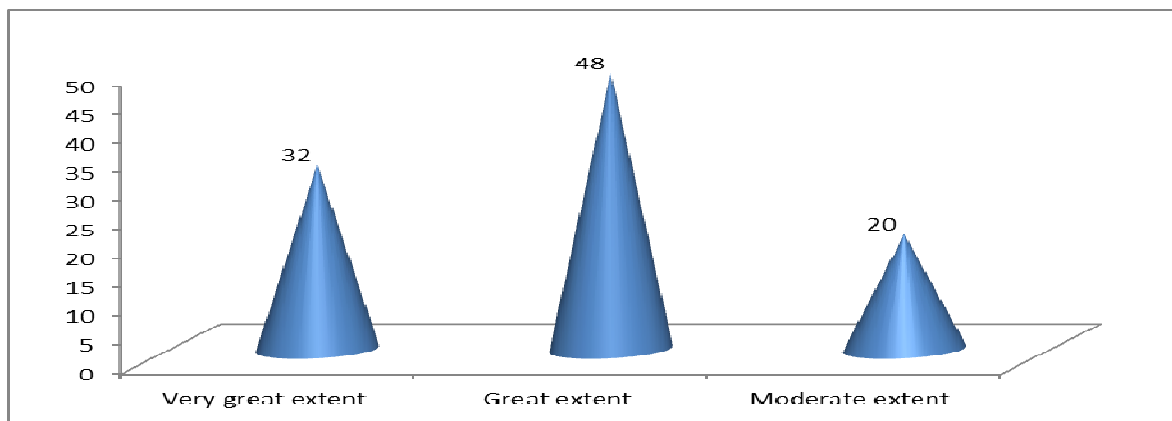
Figure 4.1: Effects of objectives of Lean Six Sigma on Implementation



This implies that the objectives of Lean Six Sigma affect its implementation and should be communicated once and organization makes a decision to implement such a project.

Respondent were requested to indicate the extent to which objectives of Lean Six Sigma affects its implementation.

Figure 4.2: Extent to which the objectives of Lean Six Sigma affect its Implementation



The study sought to determine the extent to which objectives of Lean Six Sigma affects its implementation, from the findings 48% of the respondents indicated to a great extent 27.3% of the respondents indicated to a very great extent, where as 20% of the respondents indicated to a moderate extent.

This implies that the objectives of Lean Six Sigma affect its implementation to a great extent. The study revealed that the key objectives of Lean Six Sigma were ensuring efficient utilization of resource and helping in the management of resources in the bank.

Table 4.1: Attributes relating with Lean Six Sigma methodology

Attribute	Mean	Standard deviation
Lean Six Sigma is needed because organizations and individuals need a methodology for improvement and problem solving	1.60	0.27
When combined with other aspects of Lean Six Sigma, produce a deployment approach that is better than the deployment approaches used by other improvement initiatives	1.68	0.27
Lean Six Sigma is an effective leadership development tool in that it prepares leaders for their role leading to change	1.70	0.23
Lean Six Sigma works better than previous approaches because it integrates the human and process aspects of process improvement	1.70	0.26
Lean Six Sigma is a business strategy and methodology that increases process performance resulting in enhanced customer satisfaction and improved bottom line results	1.76	0.26
A systematic approach to improvement is needed to improve performance as measured by quality, cost, delivery and customer satisfaction	1.78	0.23
Lean Six Sigma provides the concepts, methods and tools for changing processes	2.94	0.23

Respondents were requested to indicate their level of agreement with the above statements, with a scale of 1 – 5 where; 1 is where they strongly agree and 5 strongly disagree. The study sought to determine the respondents level of agreement with the above statements, from the findings majority of the respondents agreed that : Lean Six Sigma is needed because organizations and individuals need a methodology for improvement and problem solving as shown by a mean of 1.60, when combined with other aspects of Lean Six Sigma, produce a deployment approach that is better than the deployment approaches used by other

improvement initiatives as shown by a mean of 1.68, Lean Six Sigma works better than previous approaches because it integrates the human and process aspects of process improvement. Lean Six Sigma is an effective leadership development tool in that it prepares leaders for their role leading to change as shown by a mean of 1.70 in each case. This technique is a business strategy and methodology that increases process performance resulting in enhanced customer satisfaction and improved bottom line results as shown by a mean of 1.76, A systematic approach to improvement is needed to improve performance as measured by quality, cost, delivery and customer satisfaction as shown by a mean of 1.78, Lean Six Sigma provides the concepts, methods and tools for changing processes as shown by a mean of 2.94, the findings concurs with the study conducted by George, (2002). Considered Lean Six Sigma as an accurate and efficient methodology to support the development of a system of integrated quality management in any business in order to perform virtually free of errors and waste of time. Badri *et al.* (1995) found that although service sector organizations consistently had a lower level (of practice) compared with manufacturing organizations, both organizations agreed on the importance of training, product/service design, supplier quality management, and employee relations but there was a strong negative correlation with their levels of practice regarding quality departments and quality data and reporting.

4.4 Lean Six Sigma Project Implementation Process

The study sought to establish whether Lean Six Sigma Project process affect implementation of Lean Six Sigma

From the finding 58% of the respondent indicated that Lean Six Sigma Project process affects implementation of Lean Six Sigma whereas 42% were of contrary opinion. Respondents were requested to indicate their level of agreement with the above statements, with a Yes or No answer. This implies that Lean Six Sigma Project process affects implementation of Lean Six Sigma. It should however be noted that a good proportion of the respondents believe the process does not affect. The study requested to indicate the extent to which Lean Six Sigma Project process affect implementation of Lean Six Sigma. From the findings 52% of the respondents indicated to a great extent 28% of the respondents indicated to a very great extent, whereas 20% of the respondents indicated to moderate extent, this implies that the Lean Six Sigma Project process affect implementation of Lean Six Sigma to a great extent.

Table 4.2: Factors affecting implementation of Lean Six Sigma

Attributes	Mean	Standard deviation
Strategic focus on the customer	1.60	0.27
Effective use of technology	1.60	0.27
Change in organizational culture and structure	1.68	0.27
Reward systems	1.68	0.27
Clear performance metrics	1.70	0.23
Expanding Six Sigma to HRM	1.70	0.26
Top-down top management commitment	1.72	0.25
Change in communication plan and channels	1.72	0.28
Emphasis on the quality and product specifications	1.76	0.26
Trust in organization and project selection	1.78	0.23
Extensive education and training in Six Sigma	1.80	0.24
Prioritization	2.44	0.23

To determine the extent to which the above factors affect implementation of Lean Six Sigma, respondents were requested to indicate their level of agreement with the above statements, with a scale of 1 – 5 where; 1 is where they strongly agree and 5 strongly disagree. The study sought to establish the extent to which the above factors affect implementation of Lean Six Sigma. From the findings, the following factors effects were indicated to a great extent; effective use of technology, strategic focus in the customer as shown by a mean of 1.60 in each case, change in organizational culture and structure, reward systems, as shown by a mean of 1.68 in each case, expanding Six Sigma to HRM, clear performance metrics as shown by a mean of 1.70 in each case, change in communication plan and channels, Top-down top management commitment as shown by a mean of 1.72 in each case, emphasis on the quality and product specifications as shown by a mean of 1.76, Trust in organization and project selection as shown by a mean of 1.78 and finally Prioritization as shown by a mean of 2.44.

4.5 Benefits of Lean Six Sigma

The study requested the respondent to indicate their level of agreement with the above statements relating to the perceived benefits in Lean Six Sigma.

Respondents were requested to indicate their level of agreement with the statements below, with a scale of 1 – 5 where; 1 is where they strongly agree and 5 strongly disagree. From the findings majority of the respondents agreed that, Proper deployment of Six sigma increase sales returns as shown by a mean of 1.70, Proper deployment of Six sigma leads to increased savings as shown by a mean of 1.72, Six sigma sustains savings over time hence sustaining improvement as shown by a mean of 1.80, The benefits are sustainable over a long period of

time as shown by a mean of 1.82, Lean Six sigma benefits are both in financial and efficiency form as shown by a mean of 1.88 Six sigma creates process improvements that enhance customer satisfaction and the financial performance The benefits of Lean Six Sigma are realised both in the short and long-term, as shown by a mean of 1.90 in each case and that The benefits are visible to all staff as shown by a mean of 1.96, finally respondents were moderate that benefits are visible to all staff.

Table 4.3: Statements relating to the perceived benefits in Lean Six Sigma

Attributes	Mean	Standard deviation
Proper deployment of Six sigma increase sales returns	1.70	0.29
Proper deployment of Six sigma leads to increased savings	1.72	0.31
Six sigma sustains savings over time hence sustaining improvement	1.80	0.25
The benefits are sustainable over a long period of time	1.82	0.30
Lean Six sigma benefits are both in financial and efficiency form	1.88	0.27
Six sigma creates process improvements that enhance customer satisfaction and the financial performance	1.90	0.21
The benefits of Lean Six Sigma are realised both in the short and long-term	1.90	0.19
The benefits are visible to all staff	1.96	0.23
The benefits of Lean Six Sigma are realised in the short term only	3.40	0.98

The benefits of Lean Six Sigma are realised in the short term only as shown by a mean 3.40.

The finding concurs that, in order to increase the benefits of Lean Six Sigma, the organization should prepare its levels in all ways, by selecting and training personnel as well as ensuring well-rounded skills in all analysts. Measure the success in terms of financial

benefits, since it facilitates the acceptance by employees and help them to relate to Six Sigma project outcome (Goh, 2000). Other less important factors are: strategic focus in the customer, emphasizing the quality and product specifications, in human resources management (HRM) and in buyer-supplier relationships, emphasizing the Six Sigma performance levels; clear performance metrics, to maintain a goal-oriented approach (although it may be difficult to identify the variables); expanding Six Sigma to HRM and organizational process thinking and measuring (Waterbury and Bonilla, 2008).

4.5 Challenges of Lean Six Sigma Model

The study established that there were challenges associated with, Lean Six Sigma Model, some of the challenges are that it takes a lot of time to train people and then work through all of the steps (DMAIC) each time a problem needs to be solved, there are almost always a lot of missteps when first starting a Six Sigma program that confuses and frustrates employees at all levels, Not typically part of the organizations structure or culture so very hard to adjust and change to the Six Sigma Methodology, The longtime factors frustrate many people - do not typically see immediate results. The findings of how to fix the problem are sometimes not done as management does not want to do it (fix it) the way the Six Sigma team identifies. The accountants have a hard time justifying the cost savings as the reports are not typically part of the business book keeping system. Many people do not want to be bothered by the "discipline" that Six Sigma tries to instill into the organization. Unfortunately, there is still a limitation in the spread of Six Sigma in services, since its use in other services besides health care and financial services is relatively unexplored. In fact, limited application can also be

found in call centers, human resources and in product support services (Chakrabarty and Tan, 2007).

Table 4.4: Level of agreement on various challenges

Attribute	Mean	Standard deviation
Organizations achieve success through the integrated functioning of people, processes, and technology	1.50	0.27
Organizational competency also includes the concepts of a learning organization, an ability to work in teams.	1.60	0.27
The strength of organization development lies in organization behavior and dynamics, and the application of action research to improve performance and effectiveness	1.68	0.27
In order to adopt Lean Six Sigma to achieve higher quality performance in the long term, the bank must develop a unique combination of resources and competencies	1.70	0.29
The bank's competencies comprise a combination of skills, knowledge and experience that enables a the bank to implement a change program successfully	1.70	0.23
The bank needs to have the necessary assets, skills and resources in order to achieve a better competitive position in the market place	1.80	0.25
For Lean Six Sigma to be successful, it must have both technically and interpersonally competent facilitators managing the program	1.82	0.30
Lean Six Sigma offers advantages as a complement to use with other, less technical organizational development techniques when interventions are required to improve operational processes	1.90	0.19
A particular skill of a Lean Six Sigma program is the ability to influence cultural change and workplace change for better performance and high yields	1.96	0.23

Respondents were requested to indicate their level of agreement with the statements below, with a scale of 1 – 5 where; 1 is where they strongly agree and 5 strongly disagree. Majority of the respondents agreed that organizations achieve success through the integrated functioning of people, processes, and technology as shown by a mean of 1.50. Organizational

competency also includes the concepts of a learning organization, an ability to work in teams as shown by a mean 1.60, the strength of organization development lies in organization behavior and dynamics, and the application of action research to improve performance and effectiveness as shown by a mean of 1.68. The bank's competencies comprise a combination of skills, knowledge and experience that enables a the bank to implement a change program successfully, in order to adopt Lean Six Sigma to achieve higher quality performance in the long term, the bank must develop a unique combination of resources and competencies, as shown by a mean of 1.70, the bank needs to have the necessary assets, skills and resources in order to achieve a better competitive position in the market place as shown by a mean of 1.80, for Lean Six Sigma to be successful, it must have both technically and interpersonally competent facilitators managing the program as shown by a mean of 1.82. Lean Six Sigma offers advantages as a complement to use with other, less technical organizational development techniques when interventions are required to improve operational processes as shown by a mean 1.90, and that a particular skill of a Lean Six Sigma program is the ability to influence cultural change and workplace change for better performance and high yields as shown by a mean of 1.96. The findings above concurs with findings by Hooper and Devine, (2002), they say that a particular key skill of a Lean Six Sigma program facilitator is an ability to influence cultural change and workplace change taking place from project improvement activities and this would be related to the seniority of the role they play in the organization.

To overcome the challenges of implementing Six Sigma, the organisation will needs a structured approach to assessing the status of the organization, prepare the organisation at all levels in all ways, selecting and training personnel, ensuring well-rounded skills in all

analysts, listening to feedback in an unbiased way and using structured measurement methods to assess if the method is truly adding the desired benefits to the business.

4.6 Practices in implementation of Lean Six Sigma

The study sought to examine the level at which respondents agreed with statements relating to training.

Table 4.5: Statements relating to training

Attributes	Mean	Std deviation
Identifying and training staff so as to create a pool of champions, yellow and green belts who can be deployed across the organization	1.70	0.23
Benchmarking its own processes against the market	1.70	0.26
General training of all staff in matters relating to Lean Six Sigma	1.76	0.29
Employment of 5's in improving the working environment	1.76	0.26
Involving of external professional in implementation	1.84	0.29
Use of the DMAIC methodology	1.86	0.29
Adequate training of the Executive of Lean Six Sigma	1.88	0.23
Use of Six Sigma methodology	1.88	0.27
Use of Lean Methodology	1.90	0.22
Mapping of all processes to identify areas of improvement	1.94	0.27

Respondents were requested to indicate their level of agreement with the statements below, with a scale of 1 – 5 where; 1 is where they strongly agree and 5 strongly disagree. From the

findings majority of the respondents agreed to; Identifying and training staff so as to create a pool of champions, yellow and green belts who can be deployed across the organization, Benchmarking its own processes against the market, as shown by a mean of 1.70 in each case. General training of all staff in matters relating to Lean Six Sigma, Employment of 5's in improving the working environment as shown by a mean of 1.76 in each case, Involving of external professional in implementation as shown by a mean of 1.84, Use of the DMAIC methodology as shown by a mean of 1.86 Use of Six Sigma methodology, Adequate training of the Executive of Lean Six Sigma as shown by a mean of 1.88, Use of Lean Methodology as shown by a mean of 1.90, and finally by Mapping of all processes to identify areas of improvement as shown by a mean of 1.94. Welch and Welch (2005) points out that "Perhaps the biggest but most unheralded benefit of Six Sigma is its capacity to develop a cadre of great leaders." Bottom line improvements provide the cash needed to fuel innovation and growth. Lean Six Sigma works better than previous approaches because it integrates the human and process aspects of process improvement (Snee, 2000).

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

From the analysis and data collected, the following discussions, conclusion and recommendations were made. The responses were based on the objectives of the study. This study therefore seeks to establish the practices relating to implementation of Lean Six Sigma in the banking industry, establish the benefits of implementing the Lean Six Sigma programme, and establish the challenges in implementing the Lean Six Sigma programme.

5.2 Summary of the Findings

The study established that Lean Six Sigma is needed because organizations and individuals need a methodology for improvement and problem solving, When combined with other aspects of Lean Six Sigma produce a deployment approach that is better than the deployment approaches used by other improvement initiatives, Lean Six Sigma works better than previous approaches because it integrates the human and process aspects of process improvement, Lean Six Sigma is an effective leadership development tool in that it prepares leaders for their role leading to change and that Lean Six Sigma provides the concepts, methods and tools for changing processes.

The study further revealed that establish the following factors affect implementation of Lean Six Sigma to a great extent , Effective use of technology, strategic focus in the customer,

Change in organizational culture and structure, Reward systems, Expanding Six Sigma to HRM, Clear performance metrics, Change in communication plan and channels, Top-down top management commitment, Emphasis on the quality and product specifications, Trust in organization and project selection and finally Prioritization.

The study revealed that Proper deployment of Six sigma increase sales returns, Proper deployment of Six sigma leads to increased savings, Six sigma sustains savings over time hence sustaining improvement and the benefits are sustainable over a long period of time. It also brought out that Lean Six Sigma benefits are both in financial and efficiency form , Six sigma creates process improvements that enhance customer satisfaction and the financial performance, the benefits of Lean Six Sigma are realised both in the short and long-term and that the benefits are visible to all staff. Finally, respondents were moderate that the benefits of Lean Six Sigma are realised in the short term only. The study revealed that, in order to increase the benefits of Lean Six Sigma, the organization should prepare its levels in all ways, by selecting and training personnel as well as ensuring well-rounded skills in all analysts.

The study established that there were challenges associated with ,Lean Six Sigma Model, some of the challenges are that it takes a lot of time to train people and then work through all of the steps (DMAIC) each time a problem needs to be solved, there are almost always a lot of missteps when first starting a Six Sigma program that confuses and frustrates employees at all levels, not typically part of the organizations structure or culture so very hard to adjust

and change to the Six Sigma Methodology, the longtime factors frustrate many people - do not typically see immediate results.

The study revealed , that Organizations achieve success through the integrated functioning of people, processes, and technology, Organizational competency also includes the concepts of a learning organization, an ability to work in teams, the strength of organization development lies in organization behavior and dynamics, and the application of action research to improve performance and effectiveness, the bank's competencies comprise a combination of skills, knowledge and experience that enables a the bank to implement a change program successfully, In order to adopt Lean Six Sigma to achieve higher quality performance in the long term, organizations must develop a unique combination of resources and competencies, the bank needs to have the necessary assets, skills and resources in order to achieve a better competitive position in the market place, for Lean Six Sigma to be successful, it must have both technically and interpersonally competent facilitators managing the program, Lean Six Sigma offers advantages as a complement to use with other, less technical organizational development techniques when interventions are required to improve operational processes, and that a particular skill of a Lean Six Sigma program is the ability to influence cultural change and workplace change for better performance and high yields.

The study established that there was need of identifying and training staff so as to create a pool of champions, yellow and green belts who were deployed across the organization, benchmarking its own processes against the market, general training of all staff in matters relating to Lean Six Sigma, employment of 5's in improving the working environment,

Involving of external professional in implementation, use of the DMAIC methodology of Six Sigma methodology, adequate training of the Executive of Lean Six Sigma, use of Lean methodology, and mapping of all processes to identify areas of improvement,

5.3 Conclusions

The study concludes that Lean Six Sigma is needed because organizations and individuals need a methodology for improvement and problem solving, if the methodology is well applied, it can produce a better approach than other deployment approaches used by other improvement initiatives because it integrates the human and process aspects of process improvement,

The study further concludes that factors like effective use of technology, strategic focus in the customer, change in organizational culture and structure, reward systems, expanding six sigma to HRM, clear performance metrics, change in communication plan and channels, top-down top management commitment, emphasis on the quality and product specifications, trust in organization and project selection and prioritization affects the implementation of Lean Six Sigma.

Proper deployment of Lean Six Sigma leads to increased sales returns, leads to increased savings, helps to sustain savings over long period time hence sustaining improvement, creates process improvements that enhances customer satisfaction and financial performance.

The study further concludes that among the challenges associated with implementation process were, it takes a lot of time to train people and then work through all of the steps (DMAIC), there are almost always a lot of missteps when first starting a Lean Six Sigma program that confuses and frustrates employees at all levels. The long time factors frustrate

many people - do not typically see immediate results. The findings of how to fix the problem are sometimes not done as management does not want to do it (fix it) the way the Six Sigma team identifies.

5.4 Recommendations

From the finding and conclusions the study recommends that banks should consider adopting Lean Six Sigma management methodology, this will bring improvement at all levels of an organization. Once Lean Six Sigma is embedded in the corporate culture, the organizations processes will continue to show improvement. This is so because; new problems can be quickly identified and corrected due to the close monitoring.

In endeavoring to stimulate the process implementation of Lean Six Sigma, the study recommends that, the organizations needs to look at the bigger picture rather than assume the method itself is the solution, the management should make sure that the right framework is in place to make the method work, the management should also put in place valid measures for the method in order to test whether it's really adding any value to projects or not.

To overcome the challenges of implementing Lean Six Sigma projects, the organizations the organization needs a structured approach in assessing the status of the organization, it should prepare the at all levels of management i.e. by selecting and training personnel, ensuring well-rounded skills in all analysts, listening to feedback in an unbiased way and using structured measurement methods to assess if the method is truly adding the desired benefits to the organization.

5.5 Limitations of the Study

The main limitation of study is its inability to include more commercial banks in the Country. This is a study focusing on CfC Stanbic Bank. This is due to the levels of adoption in the country. The study could have covered more commercial banks across country so as to provide a more broad based analysis. The study encountered problem by carrying a study across the departments and the branches of CfC Stanbic Bank of Kenya in Nairobi.

The respondents approached seemed to be reluctant in giving information fearing that the information sought would be used to intimidate them or print a negative image about them or the Bank. Some respondents would even turn down the request to fill questionnaires. The study handled the problem by assuring them that the information they give would be treated confidentially and it would be used purely for academic purposes.

Bankers operate on tight schedules; respondents were not able to complete the questionnaire in good time and this overstretched the data collection period. To mitigate this limitation, the study made use of network to persuade targeted respondents to fill up and return the questionnaires.

The researcher also encountered problems in eliciting information from the respondents as the information required was subject to areas of feelings, emotions, attitudes and perceptions, which cannot be accurately quantified and/or verified objectively.

This led to slowness in responsiveness due to the veil of confidentiality surrounding the banking institutions. The researcher encouraged the respondents to participate without

holding back the information they might be having as the research instruments would not bear their names.

5.6 Suggestions for Further Study

The study sought to establish implementation of Lean Six Sigma a case study of CfC Stanbic bank. The study recons that an in-depth study should be done across several industries would the ideal to determine the practices, challenges and benefits of implementation of Lean Six Sigma.

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APPENDICES

Appendix I: Questionnaire

This questionnaire is designed to collect data on the implementation of Lean Six Sigma in the in CfC Stanbic bank. The data shall be used for academic purpose only and it will be treated with confidentiality it deserves. Kindly respond to the statements in this questionnaire in the most truthful and objected way possible. Your participation in facilitating this study will be highly appreciated.

Kindly tick in the space provided with the correct answer or supply the required information where, required, please specify and elaborate.

Part A: Demographic Information

1. Indicate your age bracket

20-30 yrs []

31-40 yrs []

41-50 yrs []

51 and above []

2. State your highest level of education

College []

University []

Postgraduate []

3. For how long have you been working in your organization?

Less than 3 years []

3 to 9 years []

9 to 12 years []

Above 12 years []

Part B

SECTION B: Implementation of Lean Six Sigma in CfC Stanbic

Section 1: Objective of Lean Six Sigma

1. In your opinion do the objectives of Lean Six Sigma affect its implementation?

Yes [] No []

2. To what extent do the objectives of Lean Six Sigma affect its implementation?

To a very great extent []

To a great extent []

To a moderate extent []

To a little extent []

To no extent []

3. In your opinion what are the various objectives of Lean Six Sigma?

.....

.....

4. What is your level of agreement with the following statements?

(Where; 1-strongly agree and 5 strongly disagree)

Attribute	1	2	3	4	5
Lean Six Sigma is a business strategy and methodology that increases process performance resulting in enhanced customer satisfaction and improved bottom line results					
Lean Six Sigma is an effective leadership development tool in that it prepares leaders for their role leading to change					
Lean Six Sigma works better than previous approaches because it integrates the human and process aspects of process improvement					
When combined with other aspects of Lean Six Sigma, produce a deployment approach that is better than the deployment approaches used by other improvement initiatives					
Lean Six Sigma is needed because organizations and individuals need a methodology for improvement and problem solving					
A systematic approach to improvement is needed to improve performance as measured by quality, cost, delivery and customer satisfaction					
Lean Six Sigma provides the concepts, methods and tools for changing processes					

5. In your view, what do you recommend that the CfC Stanbic do in order to meet the objectives of Lean Six Sigma?

.....
.....
.....

Section 2: Lean Six Sigma Project process in CfC Stanbic

6. In your opinion, does Lean Six Sigma Project process affect implementation of Lean Six Sigma?

Yes [] No []

7. To what extent does Lean Six Sigma Project process affect implementation of Lean Six Sigma?

To a very great extent []

To a great extent []

To a moderate extent []

To a little extent []

To no extent []

8. To what extent do the following factors affect implementation of Lean Six Sigma?

(Where 1-very great extent and 5-no extent)

Attributes	1	2	3	4	5
Top-down top management commitment					
Extensive education and training in Six Sigma					
Change in communication plan and channels					
Change in organizational culture and structure					
strategic focus in the customer					
Emphasis on the quality and product specifications					
Clear performance metrics					
Expanding Six Sigma to HRM					
Reward systems					
Effective use of technology,					
Trust in organization and project selection					
Prioritization					

9. How does Lean Six Sigma Project process affect implementation of Lean Six Sigma?

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.....

Section 3: Benefits of Lean Six Sigma

1. In your opinion, what are the benefits of Lean Six Sigma?

.....

 What is your level of agreement with the following statements?

(1-strongly agree and 5 strongly disagree)

Attributes	1	2	3	4	5
Six sigma creates process improvements that enhance customer satisfaction and the financial performance					
Proper deployment of Six sigma increase sales returns					
Proper deployment of Six sigma leads to increased savings					
Six sigma sustains savings over time hence sustaining improvement					
The benefits of Lean Six Sigma are realised in the short term only					
The benefits of Lean Six Sigma are realised both in the short and long-term					
Lean Six sigma benefits are both in financial and efficiency form					
The benefits are visible to all staff					
The benefits are sustainable over a long period of time					

2. In your view, what do you recommend the bank to do in order to increase the benefits of Lean Six Sigma?

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Section 4: Challenges of Lean Six Sigma Model

3. What are the main challenges of the Lean Six Sigma Model?

.....

.....

4. What is your level of agreement with the following statements?

(1-strongly agree and 5 strongly disagree)

Attribute	1	2	3	4	5
In order to adopt Lean Six Sigma to achieve higher quality performance in the long term, the bank must develop a unique combination of resources and competencies					
The bank needs to have the necessary assets, skills and resources in order to achieve a better competitive position in the market place					
Organizations achieve success through the integrated functioning of people, processes, and technology					
Lean Six Sigma offers advantages as a complement to use with other, less technical organizational development techniques when interventions are required to improve operational processes					
For Lean Six Sigma to be successful, it must have both technically and interpersonally competent facilitators managing the program					
The bank's competencies comprise a combination of skills, knowledge and experience that enables a the bank to implement a change program successfully					

The strength of organization development lies in organization behavior and dynamics, and the application of action research to improve performance and effectiveness					
Organizational competency also includes the concepts of a learning organization, an ability to work in teams.					
A particular skill of a Lean Six Sigma program is the ability to influence cultural change and workplace change for better performance and high yields					

5. In your view, what do you recommend the bank to do in order to overcome the challenges of the six sigma model?

.....

.....

.....

Section 5: Practices in implementation of Lean Six Sigma

In your opinion which practices has the bank employed in implementation of Lean and Six Sigma

.....

.....

6. What is your level of agreement with the following statements?

(1-strongly agree and 5 strongly disagree)

Attributes	1	2	3	4	5
Adequate training of the Executive of Lean Six Sigma					
Involving of external professional in implementation					
General training of all staff in matters relating to Lean Six Sigma					
Use of the DMAIC methodology					
Identifying and training staff so as to create a pool of champions, yellow and green belts who can be deployed across the organization					
Use of Lean Methodology					
Use of Six Sigma methodology					
Benchmarking its own processes against the market					
Mapping of all processes to identify areas of improvement					
Employment of 5's in improving the working environment					

7. What are some of the practices would you want to see implemented in order to get the full benefits of the six sigma model within the bank?

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Thank you for your time