

**A SURVEY OF THE SIX SIGMA MANAGEMENT PRACTICES  
IN THE BANKING INDUSTRY IN KENYA**

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## DECLARATION

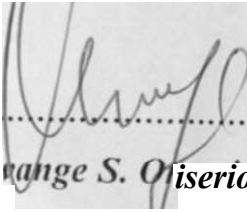
I hereby declare that the work contained in this project is my original work, and has not previously in its entirety or in part been presented at any other university for a degree. All the references cited in the text have been duly acknowledged.

Date..

*Mwangi Joseph*

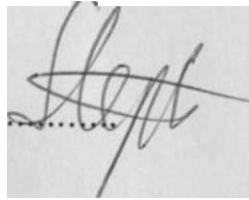
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This project has been submitted with my approval as University supervisor.



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Date.

## DEDICATION

*To my mum, Esther Nyambura Mwangi. your love and sacrifice know no boundaries. I am grateful for the greatest inheritance that you could ever give us, education.*

*To my siblings, tVanjiku. Wachu. Ng'anga and Malm, your love, support and encouragement means the world to me.*

*To my Uncle, Njoroge, your insight, advice and support, I greatly appreciate.*

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To God my Father, you have blessed me with everything that I own in this world. Glory be to your Name. \*

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To all my family members, friends and colleagues who in one way or the other were instrumental towards this project. I will always cherish your support.

## **ABSTRACT**

The study sought to explore the six sigma management practices in the banking industry in Kenya. Emphasis was on the following research questions: extent of integration of six sigma practices with business strategy for competitiveness? and challenges hindering effective implementation of six sigma practices.

Primary data was collected through questionnaires and distributed to senior managers in the banks operating in Kenya. Data collected was analyzed by use of descriptive statistics and SPSS (12.0) was used for the purpose of the analysis. Results obtained indicate that the use of six sigma management practices in the banking industry is quite low. This is the case when it comes to identifying critical-to-quality customer requirements (through market research) before embarking on quality improvement initiatives, use of tools and techniques in the whole process of quality management, adherence to project implementation variables, and development of parameters to measure effectiveness of various processes used in delivery of services to customers. Most ideas for quality improvement were from employees. The critical challenges faced by most organizations are among others, failure to understand customer needs, inadequate employee needs, lack of appropriate data to measure service gaps, inappropriate culture/resistance to change, weak leadership/commitment by top management and inappropriate organization structures/bureaucracies.

The study's major limitation was the low response rate considering the size of the banking industry in Kenya. However, on the positive side, the study can be used as the foundation in which six sigma can be implemented in the banking industry as well as other service industries in Kenya for competitiveness.

Key words:

Six sigma, Management Practices. Key challenges.

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## CHAPTER ONE: INTRODUCTION

### 1.1 Background

In the recent years, it has become imperative for organizations to continuously seek ways of competing on all the fronts of cost, quality, flexibility and dependability in a bid to gaining competitive edge over their rivals without any tradeoffs on these factors. This has led to development of continuous improvement methodologies designed to enable the organizations attain these objectives such as the six sigma which has the specific goals of improving the business value by removing the non-value added processes, reducing errors in processes, reducing cycle time of critical processes, improved customer value by providing faster delivery to customers, reducing hassle for customers, providing consistent and reliable service every time and building better customer relationships. It also enhances improved employee value by building employee relationships, creating opportunities for employees to acquire new skills and expertise and building employee pride and confidence (Antony, 2006).

### 1.2 Six Sigma

The term six sigma is a measure indicating the deviation in the performance characteristic of a service from its mean performance. The basic goal of a six sigma strategy is to reduce variation within the tolerance or specification limits of a service performance characteristic. In order to improve the quality of a typical service, it's imperative to measure or quantify variation and then develop potential strategies to reduce variation (Antony, 2006).

The concept of six sigma was introduced by Bill Smith in 1986, a senior engineer and scientist within Motorola's communication division, in response to problems associated with high warranty claims. The company was losing a large portion of their business and productivity through the cost of non-duality due to defects and unreliable support systems in the field (McClusky, 2000; Rath and Strong, n.d.).

The success of the efforts at Motorola was not just achieving six sigma quality level (a process yield of 99.99 percent), rather, the focus was on reducing defect rate in processes through the effective utilization of powerful and practical statistical tools and techniques. This would lead to



improved productivity, improved customer satisfaction, enhanced quality of service, reduced cost of operations or cost of poor quality (Antony and Banuelas, 2002).

Six sigma's main focus is first the identification of the voice of the customer through diligent market research, followed by a structured method of problem solving and/or project implementation through the define, measure, analyze, improve and control (DMAIC) process. This is achieved through the application of extensive statistical tools and techniques to eliminate variance and waste in service processes (Snee, 2002). This ensures that service quality is based on customer needs specifications and that these processes that lead to service quality are efficient, effective and have no variations and wastes within them in order to minimizing the cost of providing quality service (Jiju, 2006). In addition, other six sigma practices are a structured methodology of project selection within the organization based on identified customer requirements and entail identifying sources of ideas for the projects, tools and techniques for project selection, and factors considered important in project selection for implementation. Also, other important aspects of six sigma practices are the identification service parameters important to customer satisfaction and other tools and techniques used in project implementation (Jiju and Banuelas, 2006).

Six sigma is a powerful business management strategy that has been exploited by many world class organizations such as General Electric (GE), Motorola, Honeywell, Bombardier, ABB, and Sony to name a few from the long list. In the financial sector, six sigma has resulted in documented benefits in the following institutions. Citibank group- (Rucker, 2000): Private Bank reduced internal call backs by 80%, external call backs by 85% and credit processing time by 50%. Global Equipment Finance reduced the cycle time from customers placing an order to service delivery and the credit decision cycle by 67% (i.e. from three days to one day). Copeland Companies reduced statement processing cycle time from 28 to 15 days. Fidelity Investments began using six sigma in 2002 as part of a program to move process analysis efforts to lean/six sigma (Nourse and Hays, 2004). The goal of the process was to improve customer satisfaction by 'reducing variation caused by defects and waste and non value added activities'. JP Morgan Chase (Global Investment Banking) - Six sigma has enabled JP Morgan Chase to reduce flaws in its customer-facing processes such as account opening, payment handling, and cheque book

ordering. This has resulted in increased customer satisfaction and improved efficiency and cycle time by over 30%. 4

### **1.3 The Banking Industry in Kenya**

The banking industry in Kenya is comprised of forty five (45) commercial banks and two (2) non banking financial institutions. The branch network stands at six hundred and ninety (690), an increase by 20% in a span of one year, and a wide Automated Teller Machines (ATM) coverage across the country (Central Bank of Kenya, 2007).

This rapid expansion has been as a result of several factors which are; first, there has been renewed interest in Small and Medium Enterprises (SMEs) segment which was previously seen as unprofitable business but which has been revitalized with the increased growth in the economy. Second, a large percentage of the population of Kenyans has been 'unbanked'. A recent study conducted by the Central Bank of Kenya and other stakeholders indicate that despite the expansion of the banking industry, 38% of Kenyans are entirely financially excluded from the sector and are without access to any financial services and are thus classified as 'unbanked'. This has resulted in banks' expanding their marketing activities in a bid to increase their customer base from this population by offering them a myriad of products and services. Third, better economic prospects has resulted in increased demand for more banking products such as agricultural loans, loans to informal sector, assets financing, mortgage financing and the need to invest in technology and technology-based products (Central Bank of Kenya, 2006).

The effectiveness of this expansion has been hindered in most cases due to quality related issues. The most pressing quality issues in the banking sector in Kenya are; first, a lack of consistency in processes and procedures has meant that despite the expansion and growth being experienced in the industry, many banks are still struggling to integrate different platforms, systems and procedures in their operations. Second, most banks rarely invest in market research to identify the levels of customer satisfaction, which is an important factor in enhancing customer loyalty and retention. Third, there exist numerous roadblocks to quality where in some companies, outdated organizational structures characterized by functional divisions and product silos

undermine the efforts to provide timely and seamless customer service. In others archaic back office procedures continue to require numerous hands-off and approvals. This increases the probability of mistakes and increases the turnaround time for services. Fourth, there is a growing gap between marketing and operations. Today's demanding consumers want low cost, high quality financial services and more customized accounts. Many companies fail to live up to their service mission and fall considerably short of their customers' expectations in delivery of quality service.

#### **1.4 Statement of the problem**

The banking industry in Kenya has always faced numerous challenges with many banks struggling to stay afloat. Stiff competition amongst banks and against other financial institutions such as Savings and Credit Co-operative Societies (Sacco's) and microfinance institutions, increased cost of operations leading to diminished profits, rapid changes in technology, high rates of staff turnover, strict regulation by authorities, high expectation by customers on quality and diversity of services or banking products on offer and high levels of non performing loans due to inadequate vetting procedures of potential borrowers are a few of a myriad challenges that face the industry. Banks have responded to these challenges by; re-branding and re-furbishing their premises to enhance corporate image, changing the business hours, extensive advertising, engaging strategic partners, launching a wide array of products and services, as well as training of staff on quality customer service.

However, despite these initiatives by the banks to overcome the challenges, research done on service quality in the banking industry in Kenya has shown that there still exists a service gap, where customers' perception of service quality differ from their expectations. Kandie (2002), investigated customers' perception and expectation of quality service in selected banks in Kenya. The study utilized the SERVQUAL model and established that customers' perception and expectation of service quality in banking was markedly different. This meant that bank's investment in quality was not necessarily viewed as contributing to quality by their customers. No literature exists to indicate adoption of six sigma practices in banking industry in Kenya despite this being a robust quality and cost improvement methodology which has been successfully applied in other service industries around the world. Additionally, little literature

exists as to the challenges that hinder effective implementation of six sigma practices in the banking industry in Kenya.

Thus in line with the above discussion, the study will seek to establish whether six sigma practices are integrated with the business strategies for competitiveness in the banking industry in Kenya and the challenges that hinder effective implementation of competitive practices in the banking industry in Kenya.

Thus the study sought to establish answers to the following questions;

- I. To what extent are the six sigma practices integrated with the business strategy for competitiveness in the banking industry?
- II. What are the challenges that hinder effective implementation of six sigma practices in the banking industry in Kenya?

### **1.5 Objectives of the study**

The objectives of this study were to;

- I. Establish the extent to which six sigma practices are integrated with the business strategy for competitiveness in the banking industry.
- II. Determine the challenges that hinder effective implementation of six sigma practices in the banking industry in Kenya.

### **1.6 Significance of the study**

The proposed study is of significance to the following stakeholders;

Top Management of the Banks; the study will aid in sensitizing the top management about the applicability of six sigma to the banking industry as a source of competitive advantage.

Employees of the banks; knowledge of how these tools can be utilized to improve performance in terms of delivering quality service to the customers will be a great motivator to the employees

of the institutions. The employees are also empowered to identify sources of waste and variations in service delivery and take corrective actions.

Other organizations; the study will also be important to other organizations especially in the service industry as they will be in a position to learn how they can improve their services by implementing the six sigma principles.

Academics; researchers and other students of the management science will find this study useful especially in replicating the findings to other industries which are service based in a bid to improve quality of service delivery.

## CHAPTER TWO: LITERATURE REVIEW

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### 2.1 Quality in services

The proposition that services are fundamentally different from manufacturing and that these differences contribute to increased complexity of service quality is well accepted. Generally, the differentiating factors include customer participation, inseparability, perishability, site selection dictated by location of customers, labor intensiveness, intangibility and difficulty in measuring output (Fitzsimmons and Fitzsimmons, 1994; Lovelock and Gummesson, 2004). A recent study examined those differences and concluded that transference of ownership may be a more useful differentiator (Lovelock and Gummesson, 2004).

Much of the research into service quality has focused on identifying measures for service quality and identifying results of good service quality. Overall, expected organizational results include increased productivity and increased profits due to reduced costs (Thompson et al, 1985; Zeitham et al, 1988; Kandampully and Duddy, 1999). High levels of service quality may help an organization in the creation of a comparative advantage, an important factor in the increasingly global market place (Kandampully and Duddy, 1999; Sharma and Gadenne, 2002). From a customer's perspective, good service quality should lead to long term customer relationships (measured by repatronage and cross-sales), customer willingness to recommend the service to others and to a good image (Gonroos. 1990. p. 260).

The measurement of service quality is complex because it's dependent on customer perceptions and evaluation of the service (Wycoff. 1984; Gonroos. 1990). Gonroos (1990) defines service quality in terms of the point in the service process where the interaction between customers' and employees occurs and concludes this point is what determines whether customers' expectations have been met and whether customers will be satisfied with service quality.

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Service quality has been measured using single item measures such as satisfaction with overall service quality, however, research is showing that the service quality construct is more complex and may be accurately assessed by using multiple items (Dabholkar et al. 1996).

## **2.2 Dimensions of service quality**

Gonroos (1982, 1984) identified two dimensions of service quality related to the service provision: functional quality and technical quality. Technical quality was defined as the outcome of the service encounter or what the customer is left with, when the production processes and buyer-seller interactions are over. In many instances, the organization can obtain an objective measure of this type of quality (Gonroos 1990). The second aspect of service quality, functional quality, is a measure of how quality is experienced by the customer and dependent on the perceptions of the customer (Gonroos 1990), and the organization may have difficulty in quantifying this measure or evaluating it objectively.

Rust and Oliver (1994) built on the Gonroos model by incorporating the ideas of the service outcome (technical quality) and service encounter (functional quality) into a model that added service environment as a third dimension of service quality. Additionally, Kang and James (2004) model adds image as a third component. The study found out that both functional and technical influence customer perceptions of overall service quality. Image proved to be a mediating variable on customer perception of quality because "interaction between a consumer and an organization's representatives does have an important influence on consumer's image of the organization and subsequent evaluation of service quality".

Dabholkar et al. (2000) determined that although customers evaluate factors such as reliability, personal attention, comfort and features they also form a separate assessment of overall service quality that cannot be measured by simply adding together the scores for the initial factors. Their study identified links between service quality and customer satisfaction and between customer satisfaction and behavioral intentions. They suggest that it's more important to measure customer satisfaction separately from service quality when trying to determine customer evaluations of service. It was determined that customer satisfaction is a much better predictor of behavioral intentions, whereas service quality is more closely related to specific evaluations about service (Dabholkar et al. 2000, p. 1\*66).

### **2.3 Quality improvement initiatives**

The business environment has evolved dramatically over the last few decades, which has caused almost every aspect of organizations and management to change accordingly. Atkinson and Brown (2001), Corrigan (1998), Lockamy (1998) and Ncely (1998) have outlined similar elements which have caused and indeed contributed to the changes in the business environment. This include the changing nature of work, increased competition, specific improvement initiatives, national and international quality awards, changing internal and external demands (stakeholders), accelerated technological advancement, changing organizational roles, increased awareness of the importance of quality in service to customers and acceleration of globalization.

During this time period, myriads of business improvement philosophies, approaches, and methodologies have continuously been developed. This development has been based on various combinations of business practices and academic theory (McAdam and McGreedy, 1999). These approaches include; reengineering, benchmarking, balanced scorecard, TQM, Lean management and the six sigma among others.

Reengineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance such as cost, quality, service and speed. The major emphasis is to organize processes around outcomes and not tasks, have those who use the output of the process performing the process, merge information processing work into the real work that produces information and putting the decision point where the work is performed and build control into the process.

Benchmarking is the process of improving performance by continuously identifying, understanding (understanding and analyzing), and adopting outstanding practices and processes found inside and outside the organization and implementing the results (American Productivity and Quality Centre, 1997). It's a disciplined process that begins with a thorough search to identify best practice organizations, continues with the careful study of ones own practices and performance, progresses through site visits and interviews and concludes with an analysis of results, development of recommendations and implementation (Garvin. 1993).



The balanced scorecard is a performance measurement tool used to overcome shortcomings of traditional performance measurement systems which tend to be based on cost efficiency, are short term oriented and entail trade offs between competitive priorities (Kaplan & Norton, 1992). The balanced scorecard allows managers to look at a business from four important perspectives of customers, employees', business processes and financials. Total quality management is a company-wide culture characterized by increased customer satisfaction through continuous improvements in which all employees actively participate (Dahlgaard et al.. 1998a). It focuses on leadership, employee involvement, training and education, rewards and recognition and teamwork, all in a bid to enhancing customer satisfaction (Thiagarajan and Zani, 1997).

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## **2.4 Six sigma**

The six sigma approach to quality is said to have began with Bill Smith, a revolutionary engineer at Motorola, in 1987 (Evans & Lindsay, 2005). However, six sigma took off as significant quality movement in the mid 90's when Jack Welch, CEO of General Electric "...went nuts about six sigma and launched it," calling it the most ambitious tool the company had ever taken on (Welch, 2001). Six sigma has taken the corporate world by storm and represents the thrusts of numerous efforts in manufacturing and service organizations to improve products, services and processes (Evans & Lindsay, 2005). Evidence of the power of six sigma way is already visible in the huge gains tallied by some very high profile companies and some not so high profile ones (Pande et al, 2000).

To define six-sigma in simple terms is not possible because it encompasses the methodology of problem solving and focuses on optimization and cultural change. It accomplishes this goal by utilizing an extensive set of rigorous tools, uncompromising use of statistical and advanced mathematical tools/applications and a well defined methodology that produces significant results quickly. The success of this methodology within an organization has significant momentum that can only lead to fundamental organizational cultural transformation.

Six sigma is a quality movement, a methodology, and a measurement. As a quality movement, six sigma is a major player in both the manufacturing and service industries throughout the world. As a methodology, it's used to evaluate the capability of a process to perform defect free where a defect is defined as anything that results in customer dissatisfaction. Six sigma's breakthrough strategy combines improved metrics and a new management philosophy to significantly reduce defects thereby strengthening a firm's market position and improving the profit line.

It entails designing, improving and monitoring business activities to minimize or eliminate waste while optimizing customer satisfaction and increasing financial stability (Pande et al, 2001). Six sigma is customer focused and has the potential to achieve exponential quality improvement through the reduction of variation in system processes and defect rate. This leads to improved productivity, improved customer satisfaction, enhanced quality of service, reduced cost of operations or cost of poor quality etc.

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It can be argued that six sigma emerged from the fertile environment created by the TQM (often called continuous quality improvement or CQI). Some quality researchers suggest that the origins of many six sigma principles and tools are found in the teachings of quality thinkers like Edward Deming (Pande et al, 2001), often called 'father' of TQM. Evans and Lindsay (2005) point out that although the term TQM is not used much anymore, the principles are still alive in many organizations and underlie the six sigma philosophy. What were the principles of TQM/CQI that laid down the ground work for the emergence of six sigma?

TQM, an umbrella term for company-wide quality improvement efforts came from the work of Edward Deming and his direction in the rebuilding of Japanese production beginning in the 1950s and lasting for three decades. Deming brought his quality approach to the United States in 1980. TQM became a successful quality measurement in the United States during the 1980s, building a foundation upon which virtually all quality movements have emerged. Its philosophies were built around the view that businesses are composed of processes that start with customer needs and end with highly satisfied customers (The Edwards Deming Institute). Some of these are;

Both TQM and six sigma expect no less than total organization wide involvement i.e. a complete change in culture to total and continuous quality improvement. Both initiatives place strong emphasis on leadership (Walton, 1986). Deming believed that if top management is not totally committed to continuous quality improvement in every way, it's a waste of time to adopt and practice TQM. Legend has it that Deming walked out of a high level meeting with Ford executives because the CEO did not attend and he felt that by not attending, the CEO was demonstrating that he had not truly adopted the new philosophy nor had he instituted leadership (Deming, 1986).

TQM as advanced by Deming advocates for training as well as vigorous programs of education and retraining. This aids the employee in knowing, understanding and being able to implement continuous quality improvement ideas and tools (Deming, 1986). With six sigma, there is a very significant requirement that six sigma training be taken by a high proportion of organization employees as demonstrated by the "belt system". Some employees spend weeks learning six sigma techniques/philosophies and become designated as 'black belts' who then assume responsibility for leading six sigma projects in the organization. Most other employees in a six sigma organization attend at least minimal training and are designated as 'yellow' or 'green' belts. This intensive and differentiated training is an integral part of six sigma approach (Linderman, et al, 2003). Six sigma heavy reliance on training employees in CQI techniques stems from its roots in TQM and in some ways is not a new concept but rather an expansion of the initial TQM training that was implemented in many organizations.

Last but not least, integral parts of the TQM process were error or abnormal outcome (special cause variation) investigation and root cause analysis which included considerable emphasis on statistics, quality tools, and data analysis. The 'measure' and 'analysis' phase of the six sigma DMAIC process place a strong emphasis on gathering data and determining root cause (Black & Revere, 2006).

## **2.5 Six Sigma vs. TQM Inadequacies**

TQM as implemented in major organizations had significant shortfalls. First, although TQM provided excellent quality tools, and an organization wide mindset to improve quality, it didn't have quantifiable dollar benefits that could be tied to the bottom line. Without financial gains.

the cost benefit of implementing and/or improving TQM could not be justified (Foloran, 2003). In addition, along with not seeing measurable returns, the board of directors and/or top management didn't often understand TQM nor did they view it strategically (Evans and Lindsay, 2005).

Lazarus and Novicoff(2004) suggested that TQM did not always remove the root cause of errors and thus many improvement gains were lost over time as the process returns to its original baseline performance. Benedetto (2003) agrees with these authors and suggest that TQM didn't work well for processes that required major changes.

Six sigma in part developed in response to TQM inadequacies and at the same time introduced substantially new concepts and approaches (Ettinger. 2001). These include time and money deliverables, the six sigma metric, and critical to quality customer focus.

#### **2.5.1 Time and money deliverables**

One of the failures of TQM was that CEOs, whose compensation was largely being driven by the bottom line, often couldn't identify measurable quality improvements in a company financials over a given period of time other than the company was doing better with quality. This is because with TQM, quality improvement was open ended and open financed and was a never ending effort with few identifiable results. In six sigma doable quality improvement projects are identified based on critical to quality parameters and goals are established based on customer requirements, not internal considerations (Linderman et al, 2003; Samuels & Adomitis, 2003). A time table for deliverable improvements is set up where six sigma projects run for only four to six month. These projects are often overseen by a full time dedicated employee trained as a 'black belt' along with a team of cross functional employees. The resulting quality improvement impact is assigned a monetary figure. While TQM created 'constancy of purpose' and promoted 'improving constantly forever' the product or service, six sigma establishes deliverable quality improvement in a specific time frame.

### **2.5.2 The six sigma metric**

The ability of a process to perform error free is an underlying philosophy of six sigma. Six sigma seeks to identify, in a studied process, variation that creates all errors or poor outcomes. In order to find measurements that are meaningful in discovering variability, six sigma team members apply root-cause techniques purposely digging deeper than other quality improvement efforts that have gone before. In addition, six sigma has introduced a metric that can be used to locate where a process, outcome, or organization is in its quality measurement effort as compared to others. This is the sigma level under which an organization or its processes are currently operating. Many organizations have been operating at a sigma level of between 2.0 and 3.0 and want to improve (Breyfogle and Cupello. 2001; Revere et al. 2004). The sigma metric provides a starting place for improvement and affords the development of a process to evaluate errors and outcomes to make systematic changes to increase reliability (Johnstone et al, 2003). Thus with six sigma. the sigma level can used as a benchmark against which a company can compare its improvement efforts.

### **2.5.3 Critical to quality customer focus**

The overall purpose of TQM in organizations was to improve a process, outcome, or service so that customers would perceive it as having quality and thereby resulting to loyal customers, and increased market share. This was mainly measured through customer satisfaction questionnaires and monitored through control charts. Six sigma places a much stronger emphasis on customers and at its every stage, there is a focus on customers. This is done through CTQ- critical to quality concept in which only processes outcomes or service characteristics vital to customer satisfaction are investigated for improvement (Black and Revere, 2006).

## **2.6 Six sigma in service industry**

Six sigma as a business strategy has been well recognized as an imperative for operation and business excellence. It helps to improve business processes by reducing waste, by reducing costs resulting from poor quality and by improving the levels of efficiency and effectiveness of the processes (Hoerl and Slice. 2002). Ultimately, these process improvements should lead to

improved customer satisfaction with product and increased firm profitability (Antony and Banuelas, 2001).

Manufacturing companies based six sigma efforts on an established base of measurable processes and established quality control programs. This powerful business management strategy has been exploited by many world class organizations such as General Electric (GE), Motorola, Honeywell, Bombardier, ABB, Sony etc, (Antony, 2006). Services, because they produce intangible products usually with direct customer contact or participation, tend to have processes that are sometimes not very well understood and controlled and tend to develop less quantitatively-oriented quality improvement programs. Service companies, if they can successfully implement and use six sigma methods to make process improvement, should achieve many of the same results as manufacturing companies (Hensley and Dobie, 2006).

The benefits of six sigma that are experienced in manufacturing environment should be translatable to services. This is because some of the projects that are addressed in manufacturing have service counterparts. For instance, although they may be called different things, services have scrap and rework just like manufacturing and these signs of an inconsistent process cost money just as in manufacturing (Bisgaard and Freiesleben, 2004). Using six sigma to lower these costs, by the development of a system to track quality improvement progress should lead to the creation of a more consistent process of service delivery. Consistency of process should lead to other benefits including improved quality levels, reduced waste, increased focus on the customer and increased profitability (Harry and Schneider, 2000; Bane, 2002; De Feo and Bar-el, 2002).

Thus according to Hoerl and Snee (2002), the three rudimentary principles of statistical thinking are; all work occurs in a system of interconnected processes, all processes exhibit variability, and all processes create data that explain variability and it's an organization's responsibility to understand the sources of variability and devise effective strategies to reduce or eliminate variability. Thus the service industry is a good candidate for six sigma initiatives.

### **2.6.1 Benefits of six sigma in service oriented companies**

Service oriented companies adopting six sigma will have the following benefits (Jiju, 2006); First, management and decision making in an institution is based on facts. With an emphasis on measurement and variation as key diagnostic tools, six sigma adds statistical rigor to improvement projects. This helps managers make decisions based on data and hard facts, not perceptions or gut feelings, and more accurately establish what level of performance can be achieved and promised to customers. Hence costs associated with fire fighting and misdirected problem solving efforts with no structured or disciplined methodology could be significantly reduced. Second, increased understanding of customer needs and expectations, especially the critical to quality (CTQ) service performance characteristics which will have the greatest impact on customer satisfaction and loyalty. Third, translate strategy into action. By providing predictive, in-process performance measures (leading indicators) that can be linked to business goals and outcomes, six sigma helps companies bridge the gap between strategy and operations. Some companies have used six sigma successfully to link their business and unit level scorecards to their corporate goals. Fourth, improved knowledge across the organization on various tools and techniques for problem solving, leading greater job satisfaction for employees. Fifth, develop a strong process orientation. Organizations that are traditionally organized by products or functions learn to identify the core business processes critical to customer satisfaction. The focus shifts to improving the quality and reliability at a business process level, based on a clear and more comprehensive understanding of their customers' requirements. This results to reduced number of non-value adding operations through systematic elimination leading to faster delivery of service. Sixth, reduced variability in service performance leading to more predictable and consistent level of service. Seventh, transformation of organization culture from being reactive to being proactive. Eighth, improved cross functional teamwork across the entire organization.

### **2.6.2 The six sigma methodology for service processes**

The main objective of six sigma is to create a predisposition in the mind of the customers that will cause them to purchase and use products and services of an organization over and over. This is because an organization is able to understand the customers by continuously satisfying what they require and expect of the organization (Taylor, 2006). Six sigma accomplishes this through 'the voice of the customer and secondly through the structured performance improvement

methodology called DMAIC which entail definition of the problem (D). measurement (M) of the problem i.e. (defects which are responsible for the problem), data analysis (A) to discover the root causes of the problem i.e. analysis of the defects, improvement (I) of processes to remove the root causes of defects and controlling (C) or monitoring processes to prevent the perennial problem (Antony, 2006).

### **2.6.2.1 The voice of the customer**

The voice of the customer is defined as the market place's positive or negative predisposition towards a company's products and services. It's the markets articulation of a buyer's needs, attitude and perception with respect to a company's products and service offerings. Companies that fail to hear and respond to their customers' voice have and will suffer real and negative consequences through loss of profitability and market share. A company that hears its customers voice endeavors to influence their customers purchase decisions by fulfilling product and service requirements that successfully satisfies their customer wants, needs, and expectations (Taylor, 2006).

These companies develop product specifications that meet customer needs, service levels that influence their customers' attitude and marketing objectives that favorably influence their customers' perception. To clearly define what a customer needs, desires, and expects is fundamental to six sigma. Six sigma drives the expression of customer needs, desires, and expectations into explicit requirements. In six sigma. these are called critical to quality (CTQ) customer requirements and can range from general to very specific but always relate to a customer's objectives. Generally speaking, for 'service providers' CTQs fall into the following dimensions;

*Financial*, the cost of the company's service relative to the market place's alternatives.  
*Responsiveness*, the degree to which a company reacts promptly to a customer's needs and desires.  
*Reliability*, the degree to which the company consistently does what it promises.  
*Timeliness*, the provision of service within the customers stated or agreed upon time frame.



*Courteousness*, the degree to which employees' use suitable professional behavior and manners while working.

By clearly defining customer needs, desires, and expectations upfront, six sigma causes a company to set up specific and measurable customer requirements that enable it to establish the desired levels of performance for its customers and its own service delivery support operations (Taylor, 2006).

#### **2.6.2.2 The DMAIC - A structured method for service process**

As a problem solving methodology or process improvement framework six sigma makes use of a series of well defined steps. This is the DMAIC process which entail definition of the problem (D). measurement (M) of the problem i.e. (defects which are responsible for the problem), data analysis (A) to discover the root causes of the problem i.e. analysis of the defects, improvement (I) of processes to remove the root causes of defects and controlling (C) or monitoring processes to prevent the perennial problem (Antony. 2006).

##### *a) Define Phase (D)*

The purpose of the define stage of the DMAIC process is to create and establish a clear and compelling reason for improving a service or process. Often times, a compelling issue may be obvious and by virtue of its impact on the business may cause a six sigma project to be chartered (Taylor, 2006). The following steps must be carried out in the define phase (Antony, 2006);

First, define the problem (as a project) both succinctly and specifically. Second, identify stakeholders. Third, understand the link between the problem at hand and the criticality of the problem from the perspective of the customers. Fourth, carry out a simple mapping of the processes both up and down stream to determine where the problem lies. Fifth, establish the process inputs, outputs, and various controls of the processes. Sixth, form a six sigma project charter which clearly illustrates the role of people and their responsibilities for the project. Define the resources required for the project and the allowed time frame for the project at hand. The charter should reveal the scope of the project, the project boundaries and the key benefits to

the internal or external customers. Seventh, identify the project sponsor and stakeholders and determine whether this project is worth an effort using cost benefit analysis. Eighth, identify all customers' (both internal and external) and justify how this problem is linked to customer satisfaction.

*b) Measurement Phase (M)*

The purpose of the measurement phase is to factually understand the nature and extent of the problem. Additionally, this stage provides the ground work for the 'Analysis stage of the project by narrowing the problem to its major factors. Major activities of this step support fact based decision making by gathering data and obtaining a full intellectual grasp of the situation (Taylor, 2006). The following items should be considered during the measurement phase of the six sigma methodology (Antony, 2006);

First, determine the current performance level of the service process. Second, decide what to measure (critical-to-quality) and how to measure. Third, establish a simple measurement system study (if applicable). Fourth, determine how well the process is performing compared to others through benchmarking exercise. Fifth, identify the strengths and weaknesses and determine the gaps for improvement.

A

*c) Analysis Phase (A)*

The purpose of the phase is to identify and verify the root cause of the problem. It entails collecting and analyzing relevant data to identify causes and confirm the impact on the problem (Taylor, 2006). The following salient points must be looked at during this phase (Antony, 2006);

First, uncover the root causes of defects in processes. Second, understand the root causes of variability which lead to defects and prioritize them for further investigation. Third, understand the nature of data and the distribution or patterns of data. Fourth, determine the key service process variables that may be linked to defects. Fifth, financially quantify the improvement opportunity (i.e. estimate of potential financial benefits).

*<l) Improve Phase (I)*

The purpose of this phase is to generate and implement viable solutions that will rid the process of root causes. These solutions must be effective at performing corrective action on special causes and be feasible enough to create a favorable cost benefit position (Taylor. 2006). The improvement phase of the methodology encompasses the following issues (Antony. 2006);

First, develop potential solutions to fix the problems and prevent them from recurring. Second, evaluate the impact of each potential solution using a criteria-decision matrix. Solutions that have a high impact on customer satisfaction and bottom line savings to the organization need to be examined to determine how much time, effort, and capital will need to be expended for implementation. Third, assess risks associated with potential solutions. Fourth, validate improvement (i.e. reduce defect rate or improve sigma quality level of the process) by pilot studies. Fifth, reevaluate the impact of chosen potential solution.

*e) Control Phase (C)*

The purpose of the control phase is to maintain control of the implemented solution and the future performance of the process. At this stage, the team may install specialized charts and statistical process control methods to track process outcomes, monitor process stability, and cost recovery of the solution (Taylor. 2006). The control phase of the methodology should comprise the following item (Antony<sup>A</sup>. 2006):

First, develop corrective actions to sustain the improved levels of service process performance. Second, develop new standards and procedures to ensure long term gains. Third, implement process control plans and determine the capability of the process. Fourth, identify a process owner and establish his or her role. Fifth, verify benefits, cost savings or avoidance. Sixth, document new methods. Seventh, close project, finalize documentation and share key lessons learned from the project. Eighth, publish the results internally (monthly bulletins) or externally (conferences or journals) and recognize the contribution made by the team leaders.

### **2.6.3 Tools and techniques for service process performance improvement**

Tools and techniques are practical methods, skills, means or mechanisms that can be applied to particular tasks which foster positive change and improvement (McQuarter et al, 1995). A tool has a clearly defined role and is often narrow in focus. Examples of service process performance

tools include process maps, cause and effect analysis, affinity diagrams, run charts etc. in contrast, a technique has a wider application and requires specific skills, creativity, and training. Statistical process control (SPC) is a technique as it utilizes various tools (e.g. control charts, histograms, root cause analysis etc).

Successful implementation of six sigma requires stringent application of tools and techniques at different stages of the methodology. These tools and techniques are generally employed by the project teams and specifically trained 'black belts' with technical expertise to tackle process or quality related problems (Pande et al. 2000).

Its vital to note that effective implementation of tools and techniques in a service environment is heavily dependent on effective and planned training, uncompromising support from senior management, a cooperative environment, etc. (Antony. 2006). The table below shows six sigma tools and techniques that should be used and at what stage in the six sigma methodology they should be applied.

Six sigma tools and techniques for service processes

Tools/Technique	Define	Measure	Analyze	Improve	Control
Process mapping (2)	Y	N	N	N	N
Brainstorming (2)	Y	N	Y	Y	N
Root Cause Analysis (2)	N	N	Y	Y	N
Quality Costing (1)	Y	Y	N	Y	N
Hypothesis Testing (2)	N	N	Y	N	N
SIPOC (2)	Y	N	N	Y	N
SERVQUAL (2)	N	Y	N	Y	N
GANTT Charts (2)	Y	Y	Y	Y	Y
Benchmarking (1)	N	Y	N	N	N
Control Charts (2)	N	N	N	N	Y
Cost Benefit Analysis (2)	Y	N	N	N	N
Histograms (2)	N	Y	Y	N	N
Service FMEA (1)	N	Y	N	N	N
QFD(1)	Y	N	N	N	N
Affinity Diagram (2)	N	N	Y	N	N
Project Team Charter (1)	Y	N	N	N	N
^Regression & Correlations (2)	N	N	Y	N	N

NOTE: Y= Applicable and N= Not applicable; (1) = Technique and (2) = Tool

Antony, J. (2006), "Six sigma for service processes," *Business Process Management Journal*. Vol. 12 No. 2, pp 234-248.

## 2.7 Project selection process within six sigma program

The selection of the right projects in a six sigma program is a major factor in the early success and long term acceptance within any organization. If there is no rigorous and disciplined approach to selecting projects, there is a high probability that they efforts will flounder (Adams. 2003). The project selection process should be about listening to three important voices; the voice of the process, the voice of the customer, and the voice of the strategic business goal. The following guidelines may be used to select six sigma projects (Antony. 2006).

First, linkage to strategic business plan and organizational goals. Second, sense of urgency; how important is the proposed project for improving the overall business performance (both financial and service process performance improvements). Third, select projects that are doable in less than six months. If the project scope is broader, the time to completion increases, the cost of the project deployment will increase. This would lead to frustration among key players due to lack of progress, diversion of manpower away from other activities, delay in realization of financial benefits, etc. Fourth, project objectives must be clear, succinct, specific, achievable, realistic, and measurable. Fifth, establish the project selection criteria which may entail putting the following into consideration during the project selection process; impact on customer needs and expectations, financial impact on the bottom line, duration of the project considered, resources required for projects under consideration, expertise and skills required to carry out the projects, probability of success of projects under consideration and risks involved in projects. Sixth, projects have the support and approval of the senior management. Seventh, define project deliverables in terms of their impact on one or more critical characteristics in the service such as critical to quality, critical to cost or critical to delivery. Eighth, projects must be selected based on realistic and good metrics (DPMO, sigma quality level, capability indices, etc). Ninth, project reviews must be carried out on a regularly scheduled basis to drive the projects to a successful completion and closure. Six sigma champions or sponsors should view the project review process as a mechanism to identify stumbling blocks (if any), present in the system and the milestones ahead to obtain a clear picture of what progress has been made by the team.

## **2.8 Key success factors for the implementation of six sigma in service industries**

A number of authors (Pande et al, 2000; Eckes. 2000; Breyfogle et al, 2001; Antony and Banuelas, 2002) have written about the success factors for implementing six sigma in world class organizations. The identification of success factors will encourage their consideration when companies are developing an appropriate implementation plan. If any of the critical success factors are missing, during the development and implementation stages of a six sigma program, it would be the difference between a successful implementation and waste of resources, efforts, time and money. The following factors have been identified from existing literature;

First, strong leadership and management commitment. Second, organizational culture change. Third, aligning six sigma projects to corporate business objectives. Fourth, selection of team members and teamwork. Fifth, six sigma training. Sixth, understanding the voice of the customer and the DMAIC methodology, tools, techniques and key metrics. Seventh, linking six sigma to customers. Eighth, accountability (tying results in financial terms to the bottom line). Ninth, communication of the six sigma program to the entire organization. Tenth, development of a supplier plan.

## **2.9 Assessing organizational readiness to implement six sigma**

The variables that impact the implementation of a six sigma program are the current use of quality programs in the service organization and organizational understanding and measurement of the processes. These variables when considered together can help an organization to assess its readiness for a six sigma program and also to estimate the time and effort required to successful implementation (Hansley and Dobic, 2005).

### **2.9.1 Organizational readiness with improvement programs**

The underlying premise is that organizations learn from their experiences (Senge. 1990; Hoerl and Snee, 2002). Learning is a means of coping with change (Sheehan, 2004). The first variable to be considered is whether or not an organization has an established quality improvement program that has been implemented successfully. The programs tend to vary from generalized quality improvement efforts to the use of statistical process control. The fact that the organization has made a successful effort to establish and maintain a program over time indicates

that the company has commitment to quality improvement and probably has developed an organizational culture that supports quality efforts.

### **2.9.2 Organizational understanding of processes**

It's generally accepted that before an organization can make improvement to its processes, it must understand how the process work and be able to measure their performance (Deming. 1986; Harvey. 1998). Failure to understand why problems occur is often the source of poor quality (Ramakumar and Cooper, 2004).

The service organization's efforts at measuring processes also vary. Some organizations have expended time and effort in developing ways in which to measure the processes that ultimately impact customer satisfaction with the service. Other organizations may try to do a good job but not actually measure outcomes from their processes. Because six sigma programs rely on measurement from processes, those organizations with these measurement systems in place are more likely to be ready for a six sigma implementation.

### **2.10 Challenges faced by organizations trying to implement competitive practices in Kenya**

A

The following are some of the challenges that organizations face in their pursuit of implementing competitive practices or quality initiatives (Goh. 2002; Hoerl. 2002; Antony. 2006).

First, lack of strong leadership and total commitment from the top executives. Second, high costs involved in implementing the quality initiatives discourage top executives from approving budgetary allocation for them in light of other pressing organizational needs. Third, implementation of most quality initiatives is time consuming and thus it entails keeping the staff involved away from their normal duties for prolonged periods. This is expensive to the organizations and this is why the quality initiatives are not so popular with most organizations. Fourth, lack of an appropriate organization culture change in most organizations where there is always resistance to change by employees on anything disturbing the status quo. Fifth, inadequate training to employees on quality initiatives to be implemented resulted to failure

during the implementation stages. Sixth, inadequate market research to define service quality from customers' perspective and thus most quality programs implemented seem ineffective as they do not address the real problems. Seventh, inappropriate organization structures and bureaucracies which stifle team work and interdepartmental interactions. Eighth, most organizations do not have quality data available to measure the quality of service to customers for improvement or the effectiveness quality programs under implementation. Ninth, owing to dynamic market demands, the critical-to-quality factors of today will be different tomorrow, which acts as a disincentive for most organizations to pursue quality programs only for the results to be rendered obsolete upon completion. Tenth, there lacks a standardized approach to selection and prioritization of projects and programs to pursue where this is purely based on subjective judgment. This means projects not critical to quality could be pursued at the expense of those that are. without any potential gains to the organization.



## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Research design**

The study utilized a survey research design for data collection in order to gather information on the extent of use of six sigma practices in the banking industry as well as establish the challenges facing the institutions in implementation of six sigma practices.

### **3.1 Population of the study**

The population for this study was derived from all the forty five (45) banks in Kenya under the regulatory supervision of the Central Bank of Kenya. These banks were categorized into three (3) tiers based on their capital, as large, medium and small banks categories. The criterion of using core capital as a measure of size of the institutions was justified on the premise that most banks could have been unwilling to divulge information on other parameters due to competition. This being a census, no sampling was required. The target respondents were the senior managers of these institutions.

### **3.2 Data collection**

The study relied on primary data which was collected by way of a semi-structured questionnaire that had both open ended and closed questions. The open ended questions were aimed at obtaining qualitative data on improvement initiatives being employed by the banks as well as get other suggestions from the respondents. The closed questions were aimed at obtaining quantitative data for statistical analysis.

The questionnaire was divided into five parts. Part A was designed to collect the respondents' general information. Parts B, C, and D were designed to collect data on the level of integration of six sigma practices with business strategy of the institutions. Part B intended to establish the existence of quality improvement initiatives in the institutions. Part C and D aim was to establish the process of project selection and other six sigma practices in the organization as well as the statistical tools and techniques employed by the institutions. Part E sought to establish the challenges that the institutions face in implementation of six sigma practices.

The drop and pick later method was used in order to ensure that the researcher was available to clarify some questions that were not clear to the respondents.

### **3.3 Data analysis and presentation**

Data collected through the questionnaires was edited for accuracy, uniformity, consistency, and completeness and arranged to enable coding and cross tabulation before final analysis. Coding and cross tabulation of data will followed to enable the responses to be statistically analyzed. Descriptive statistics were used to analyze data. These were used to analyze the use of six sigma practices especially the tools and techniques applied in project selection, the criteria considered important in selecting projects for implementation, the service parameters important for customer satisfaction, and the project implementation variables considered by organizations in project implementation. Descriptive statistics was also used to rank the various challenges identified in implementation of six sigma practices. Measures of central tendency (mean) and dispersion (standard deviation) were used to achieve these objectives. This was achieved by use of Microsoft Excel and SPSS (version 12.0) programs.

# CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND CONCLUSIONS

## 4.1 Introduction

This chapter discusses the study findings. The data analysis was guided by two objectives: one, the extent to which six sigma management practices are used in the banking industry in Kenya and two, the critical challenges encountered by the Kenyan banks in implementation of six sigma practices. From the initial target population of forty five banks operating in Kenya, twenty responded. This represented a response rate of forty five (44) percent.

### 4.1.1 Organizational profile of the target respondents

The target banks were categorized using the core capital and the number of employees to represent the size of the organization as well as on the ownership structure as to whether the institution is locally incorporated or a multinational bank. The results for core capital of the banks are represented in Table 4.1.1.

**Table 4.1.1 Banks' Core Capital**

Capital (Shs)	Frequency	Percent
Less than 5 Billion	13	65
Between 5 and 15 Billion	3	15
Above 15 Billion	4	20
Total	20	100

Source: Research Data

The results indicate that 65% (13 out of 20) of the banks that responded to the study had a core capital of less than five billion whereas 15% (3) of the banks had core capital of between 5 and 15 billion. Only 20% (4) of the banks had a core capital exceeding 15 billion.

Table 4.1.2 summarizes findings on the number of employees in the banks that responded

**Table 4.1.2 Number of Employees**

Number of Employees	Frequency	Percent
Below 100	4	20
Between 100 and 500	10	50
Between 500 and 1000	1	5
Above 1000	5	25
Total	20	100

Source: Research Data

From the Table 4.1.2, it can be noted that 5 banks (25%) had more than 1000 employees. Most banks had between 100 and 500 employees (50%).

Results on ownership structure for the respondent banks are summarized in Table 4.1.3.

**Table 4.1.3 Ownership Structure**

Ownership Structure	Frequency	Percent
Locally	16	80
Multinational	4	20
<b>Total</b>	<b>20</b>	<b>100</b>

Source: Research Data

Results indicate that of the twenty banks that responded, 16 (80%) were locally incorporated in Kenya whereas 4 (20%) were multinationals.

## **4.2 Implementation of quality management initiatives**

The study sought to identify whether banks had implemented any quality management programs(s) to improve on quality of service delivery to their customers. If they had, they were expected to list the quality management initiatives implemented and the duration for which they have been implementing these systems. The findings are summarized in Tables 4.2.1, 4.2.2 and 4.2.3.

Table 4.2.1 summarizes results for the implementation of quality management initiatives.

**Table 4.2.1 Implementation of a Quality Management Initiative**

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
No	13	65
Yes	7	35
<b>Total</b>	<b>20</b>	<b>100</b>

Source: Research Data

From the responses obtained, seven (7) of the banks (35%) had implemented quality management initiatives whereas thirteen (13) of the banks (65%) indicated that they had not implemented any quality management initiatives.

Its worthwhile to note that of banks with quality improvement initiatives in place, four (4) were multinationals with three (3) having core capital in excess of fifteen (15) billion. Four (4) of these banks' had the number of employees exceeding one thousand (1000). On the other hand, of the other three (3) banks jpcally incorporated only one had a core capital exceeding fifteen (15) billion and two of these had the number of employees being above five (500) hundred.

Table 4.2.2 summarizes the quality improvement initiatives in place in the banks.

**12.2 Tabic Quality management Initiative implemented**

<b>Type</b>	<b>Frequency</b>	<b>Percent</b>
Customer Service Level Standards	1	15
ISO Certification	3	42
Organization Customized	2	28
Reenginccring	1	15
<b>Total</b>	<b>7</b>	<b>100</b>

Source: Research Data

The results further show that, of the banks that had implemented quality management initiatives in their organizations, 3 banks (42%) had implemented ISO Certification related quality management initiatives, 2 (28%) banks had implemented organization specific quality programs,

whereas business process re-engineering and customer service level standards were preferred by one bank each.

The research also sought to determine the duration for which the banks have been implementing the respective systems the results are summarized in Table 4.2.3

**Table 4.2.3 Duration of implementation**

<b>Years</b>	<b>Frequency</b>	<b>Percent</b>
Between 1 and 5	5	71
Between 6 to 10	2	29
<b>Total</b>	<b>7</b>	<b>100</b>

Source: Research Data

Results indicate that 71% (5 out of 7) of the banks had been implementing these quality initiatives for a period ranging between 1-5 years whereas 29% (2 out of 7) had been doing so for a period ranging between 6-10 years. Thus the quality initiatives seem to be a relatively recent approach to management in the banking industry in Kenya.

From these analyses, it emerges that none of the banks has implemented the six sigma quality initiative in its entirety as a quality management program. Additionally, there is no indicator as to the readiness to implement six sigma in banks that have not implemented any quality improvement initiative. Based on the premise that organizations learn from their experiences (Senge, 1990; Hocrl and Snee, 2002) and that learning is a measure of coping with change, key consideration for organizational readiness for six sigma program is whether an organization has successfully implemented a quality improvement initiative. The initiatives can vary from generalized quality improvement efforts to use of statistical process control tools. However, results show that a number of banks have implemented a quality improvement initiative and are deemed prepared for a six sigma program.

<sup>1</sup>urther. Deming (1986) and Harvey (1998) propose that before an organization can make improvements to its processes, it must understand how its processes work and be able to measure **their** performance. Six sigma programs rely on measurement from processes, hence <sup>o</sup>rganizations with measurement systems in place are more likely to be ready for six sigma

\*

implementation than those without. Based on the premise of the above arguments, banks were asked whether they had developed process maps for all service delivery processes and procedures and if in place, what were the measures developed to determine process effectiveness in achieving service quality. The responses are illustrated in Table 4.2.4.

**Table 4.2.4 Service Processes' mapping**

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
No	6	30
1 Yes	14	70
<b>Total</b>	<b>20</b>	<b>100</b>

Source: Research Data

The study findings indicate that 14 (70%) banks have developed process maps for their service delivery processes and procedures.

Table 4.2.5 illustrates the responses obtained on the existence of parameters to measure process effectiveness.

**Table 4.2.5 Existence of parameters to measure Process Effectiveness**

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
No	13	65
Yes	7	35
<b>Total</b>	<b>20</b>	<b>100</b>

Source: Research Data

In addition, of the 14 banks that have developed process maps for their service delivery processes and procedures, only 7 banks (35%) have developed measures or parameters to determine service process effectiveness. Conclusions can therefore be made that only seven (7) of these banks are more likely to be ready for six sigma implementation by virtue of having measurement parameters on the effectiveness of their processes.

### **4.3 The extent of use of six sigma management practices in the banking industry in Kenya**

Current study sought to investigate the use of each six sigma practices in the banks. Pande (2000) argues that successful implementation of six sigma requires stringent application of tools and techniques at different stages of the methodology.

#### **4.3.1 Voice of the Customer**

Institutions need to conduct market research on a regular basis (Taylor. 2006). This is based on the premise that customers' needs change with time and thus its ideal to keep abreast with them. The banks in the survey were asked whether they were conducting market surveys to establish their customers' needs. Results are summarized in Table 4.3.1

##### **4.3.1 Table Method of carrying out market research**

Method	Frequency	Percent
Internal	11	65%
External	5	29%
Both internal & external	1	6%
Total	17	100

Source: Research Data

Results indicate that 17 (85%) of the banks indicated that they were conducting market research whereas 3 (15%) banks indicated that they don't conduct market research. The banks were also asked to indicate the mode of market research.

The results indicate that of the banks that conducted market research, 11 (65%) indicated that the market surveys are conducted by the institution (using established departments in the organization) while only 5 (29%) indicated that they utilize external research firms to do market research on their behalf. Only one (1) respondent indicated that they conduct market research both internally and externally.

- The respondents were also asked to indicate their source of ideas for quality improvement projects/initiatives in the banks. A likert scale was used, with the extensively used source scoring



4 points and sources not used scored 0 points. These sources were analyzed by computing mean scores and standard deviation. These results are illustrated in table 4.3.2

management initiatives		
: Source	Mean	Standard Deviation
Employees	3	1.25
Customers	2.9	1.29
Competitors	2.8	1.23
Technology	2.65	1.34
Process wastes	1.85	1.3
Suppliers	1.65	1.18

Source: Research Data

From the results, employees as a source of ideas for quality improvement projects/initiatives had the highest mean score (3) followed by customers (2.9), competitors (2.8) and technology (2.65). Waste from processes and suppliers had mean scores (1.85) and (1.65) respectively.

The results from the research indicate that most of the quality initiatives implemented in the organization are not derived from the customers needs but from what the employees perceive to be the customers needs. This is further supplemented by the fact that the majority of the banks conducted market research internally without engaging external research firms. The banks also relied on their competitors as a source of ideas for quality improvement initiatives. Whereas it is necessary to benchmark against competitors, customer needs vary across institutions and thus most quality initiatives implemented in one bank may not necessarily meet customer needs of another. Thus in most cases it can be said that banks utilize the push strategy as opposed to pull strategy when developing quality improvement initiatives to satisfy customer needs. Pull strategies call for the need to benchmark as well as appreciate the need for research to offer customized solutions to customer problems.

#### **4.3.2 Project Implementation Variables (DMAIC)**

Respondents to the study were asked to indicate the project implementation variables they agreed with for problem solving/quality initiative implementation. The project implementation variables

were ranked on a likert scale with "strongly agrees" scoring 5 points whereas "strongly disagree" scoring 1 point. These were later classified into the various DMAIC processes and analyzed. Results are summarized in Table 4.3.3

Process	Variables	Mean	Standard Deviation
<b>Define (D)</b>	Problem defined as a project	3.59	0.87
	Problem linked to Customer's Perspective	4.33	0.59
	Process mapping Undertaken	4.11	0.76
	Processes, Inputs, Outputs, & Controls Established	4.39	0.50
	Project Charter Established	3.72	0.83
	Stakeholders, Sponsors and C-B-A Undertaken	4.28	1.07
	<b>Overall</b>	<b>4.07</b>	<b>0.34</b>
<b>Measurement (M)</b>	Service performance level established b4 PI	4.39	0.50
	Benchmarking done	3.94	1.00
	Strengths and Weaknesses Identified	4.39	0.61
	<b>Overall</b>	<b>4.24</b>	<b>0.26</b>
<b>Analyze (A)</b>	Root causes of process defects identified	4.33	0.49
	Root causes of service variability prioritized	4.28	0.67
	Potential benefits of service improvement identified	4.44	0.51
	<b>Overall</b>	<b>4.35</b>	<b>0.08</b>
<b>Improve a)</b>	Potential problem solutions identified	4.53	0.51
	Potential Solutions ranked	3.83	0.71
	Risk assessment for potential solutions undertaken	4.24	0.66
	Evaluation of potential solutions impact	4.00	0.79
	<b>Overall</b>	<b>4.15</b>	<b>0.30</b>
<b>Control (C)</b>	Corrective action developed	4.28	0.57
	Process owners identified and roles defined	4.33	0.77
	Impact assessment undertaken	4.39	0.61
	New methods Documented	4.28	0.67
	Results published for all stakeholders	3.44	1.25
	<b>Overall</b>	<b>4.14</b>	<b>0.39</b>

Source: Research Data

The process with the highest mean score was the analyze process (4.35) whereas the lowest mean score (4.07) was attained by the define process. From the results obtained, most of the banks agree that most of the project implementation variables are quite important in quality initiatives implementation. The standard deviation computed from the responses is quite high with control process having the highest at 0.39, followed by define process at 0.34, improve phase and Measurement phases having 0.30 and 0.26 respectively. High standard deviation values indicate

a lack of uniformity/consistency in the use of practices under consideration. However, for quality initiatives to succeed, the DMAIC process has to be strictly followed (Antony, 2006).

### 4.3.3 Use of statistical tools and techniques

The respondents were asked whether their organizations were utilizing any tools and/or techniques in quality improvement initiatives implementation. 10% (2 out of 20) of the respondents indicated that they did not use any statistical tools or techniques whereas 80% (18 out of 20) of the respondents confirmed in the affirmative. The tools and techniques being utilized by the banks were ranked on a likert scale with the "extensively used" tool/technique scoring 4 points and the "not used" tool scoring 0 points. These were analyzed by computing mean scores and standard deviation. The results are indicated in Table 4.3.4

**Table 4.3.4 Tools and Techniques Used by banks**

<b>Tools/Techniques used</b>	<b>Mean</b>	<b>Standard Deviation</b>
Brainstorming	3.15	1.27
Cost Benefit Analysis	2.70	1.66
Root-Cause-Analysis	2.70	1.22
Benchmarking	2.53	1.50
Process Mapping	2.40	1.35
Gantt Charts	2.21	1.58
Project Team Charter	2.11	1.73
Control Charts	1.94	1.63
Quality Costing	1.84	1.42
Service Quality (SERVQUAL) dimensions	1.72	1.60
Histograms	1.44	1.15
Hypothesis Testing	1.22	1.40
Regression & Correlation Analysis	0.95	1.08
Supplier-Input-Process-Output-Customer Analysis	0.94	1.47

Source: Research Data

Results from table 4.3.4 indicate Brainstorming was the most used tool with a mean score of 3.15 whereas root-cause-analysis and cost benefit analysis had a mean score of 2.70. Benchmarking had a mean score of 2.53 whereas process mapping and Gantt charts had mean scores of 2.40 and 2.21 respectively. Additionally, high standard deviation values indicate a lack of uniformity and consistency in utilizing these tools for decision making by banks.

Thus from the findings, conclusions can be made that the extent of use of tools and techniques by the banks is quite low as indicated by the low mean scores attained for respective tools and techniques. These tools and techniques are critical as they form the basis of either success or failure in implementation of six sigma programs as these are applicable to the various stages of the DMAIC process (Antony, 2006).

**4.4 Challenges encountered by banks implementing six sigma practices**

Organizations pursuing competitive practices face numerous challenges in their implementation (Goh and Hoerl, 2002; Antony, 2006). Banks were asked to indicate the challenges they encountered from the "very critical" to the "not critical". These challenges were ranked on a likert scale with the "very critical" scoring 5 points and the "not critical" scoring 1 point. The challenges were analyzed by computing the mean score and standard deviation. Results are tabulated in Table 4.4.1

**Table 4.4.1 Challenges in Implementing Six Sigma Practices**

Challenge	Mean	Standard Deviation
Failure to understand customer needs	3.86	1.17
Inadequate employees training	3.71	1.07
Lack of appropriate data to measure service caps	3.64	1.45
Inappropriate culture / resistance to change	3.64	1.15
Weak Leadership/Commitment by top executives	3.43	1.45
Inappropriate Organization Structures/ Bureaucracies	3.43	1.28
Time constraints	3.43	1.09
Standardized approaches to quality initiatives	3.31	1.25
Highly dynamic market demands	3.00	1.11
High costs involved	2.86	0.86

Source: Research Data

Failure to understand customer needs had the highest mean score (3.86) followed by inadequate employee training (3.71). Lack of appropriate data to measure service gaps and inappropriate culture/resistance to change had mean scores (3.64) each. Weak leadership/commitment by top executives, inappropriate organization structures/bureaucracies, and time constraints had mean scores of 3.43. High costs involved had the lowest mean score of 2.86.

From the findings, conclusions can be made that failure to understand customer needs which is a contextual challenge to implementation of six sigma practices. This can be largely attributed to failure to engage external and independent organizations to carry out market research and over reliance on employees and competitors as a source of ideas for quality initiatives. Amongst the critical challenges is lack of appropriate data to measure service gaps which is caused by the failure of banks to develop parameters to measure process effectiveness despite most of them having developed process maps for all the processes involved in delivery of services to customers'.

Scholars such as Pande et al, (2000) Eckes, (2000) Breyfogle et al, (2001) Antony and Banuelas, (2002) observe that successful implementation of six sigma calls for amongst other things strong leadership and management commitment, organizational culture change, and employee training. Current study shows that most banks are facing critical challenges in form of inappropriate culture/resistance to change, weak leadership/commitment by top executives and inappropriate organization structures/bureaucracies. Further results indicate that most banks faced constraints in form of time and resources (personnel and costs) for the implementation of six sigma practices.

# **CHAPTER EIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

## **5.1 Introduction**

This chapter provides the summary of the study findings, conclusions and recommendations arising thereof. The chapter concludes with limitations to the study, and suggestions for further study.

## **5.2 Summary of the study findings**

The study utilized the exploratory study design where the objectives were to find answers to two questions namely; establish the extent to which six sigma practices are integrated with the business strategy for competitiveness in the banking industry in Kenya? Determine the challenges that hinder effective implementation of six sigma practices in the banking industry in Kenya? To achieve these objectives, the 45 banks were used as the study population.

The findings of the study indicate that none of the banks had implemented six sigma in its entirety, as a quality improvement initiative. Six sigma practices entail listening to two important voices; voice of the customer and voice of the processes. The voice of the customer is accomplished through market research. Most of the banks were conducting market research without engaging external researchers to enhance the objectivity of the exercise. Only five (6) out of twenty (20) banks indicated use of external parties for market research. This is further explained by the fact that the most commonly used source of ideas for quality improvement initiatives is the employees and thus most of the initiatives could fall short of what the customers' expect.

The voice of the process is accomplished by extensive use of tools and techniques and through the structured method of project implementation known as the DMAIC process. The research findings show that the banks were using some tools and techniques with varying intensity when

dealing with quality management initiatives. However, the level of use the tools and techniques is quite low given the low mean scores and high standard deviation values computed. Additionally, the banks did not strongly agree with the DVIAIC process variables of project implementation as shown by the relatively high standard deviations computed. Additionally, despite most of the banks indicating that their institutions' had developed process maps for all the processes involved in service delivery to customers, only a few indicated that they had actually developed parameters to measure process effectiveness. Measuring process effectiveness in a six sigma setting is essential as it forms the basis of implementation of the improvement, analysis, and control phases of the DMAIC process.

The various challenges that the organizations face were identified and ranked based on their criticality with sub classes of very critical, quite critical, critical, least critical and not critical. Failure to understand customer needs, inadequate employee training, lack of appropriate data to measure service gaps, inappropriate culture/resistance to change, weak leadership/commitment by top executives and inappropriate organization structures/bureaucracies being the critical challenges.

### **5.3 Conclusions and recommendations**

The research findings indicate that extent of use of six sigma practices in most organizations is quite low. Additionally, there has been no deliberate effort by organizations to ensure that obstacles that hinder effective implementation of six sigma practices as well as other quality management initiatives are addressed.

Stiff competition in the banking industry in Kenya will call for the implementation of six sigma as a quality management initiative in order to enhance the competitive edge of the banks. In assessing organizational readiness to implement six sigma and estimate the time and effort required for successful implementation, two variables are considered (Hansley and Dobie. 2005). These are current use of other quality improvement programs and organizational understanding and measurement of processes. The programs tend to vary from generalized quality improvement efforts to the use of statistical process control. The fact that an organization has made a

successful effort to establish and maintain a program over time indicates that the company has commitment to quality improvement and probably has developed an organization culture that supports quality effort. On the other hand, it's generally accepted that before an organization can make improvement to its processes, it must understand how the processes work and be able to measure their performance (Harvey, 1998; Deming, 1986). This is essential since six sigma programs rely on measurement from processes and those organizations with these measurement systems in place are more likely to be ready for a six sigma implementation.

#### **5.4 Study limitations**

The major limitation encountered was the low response rate (45%) given that the banking industry in Kenya is quite small with only 45 banks. Most of the banks approached for information cited strict confidentiality on provision of sensitive information and thus could not divulge information which could be beneficial to the competitors. Thus it's possible that the results of the study could have been greatly representative of the banking industry in Kenya if the response rate had been higher, if not 100%.

#### **5.5 Suggestions for further study**

The study has set the ground work for research into the use of six sigma as a quality improvement initiative. Similar research should be replicated in other service industries both in the public and private domain as the results will greatly enhance the adoption and application of six sigma as a quality improvement initiative in the service industry in Kenya. Additionally, research should be done on the role played by the operations department as well as other departments in the banking industry in Kenya with regard to implementation of quality improvement initiatives.



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A

Appendix 1: Questionnaire

This questionnaire is designed to collect data on the extent to which banking institutions in Kenya are implementing quality improvement initiatives and especially six sigma to enhance competitiveness. Collected data shall be used for academic purposes only, and thus shall be treated with strict confidence.

Your participation in facilitating this study is highly appreciated.

PART A: GENERAL INFORMATION

1. Name of the Institution
2. Title of the Respondent
3. Core capital of the Institution (Please tick appropriately)

Tier 1: Above Kshs 15 billion

Tier 2: Between Kshs 5 billion and Kshs 15 billion

Tier 3: Less than Kshs 5 billion

4. How many people does your institution employ?

Below 100

Between 100 and 500

Between 500 and 1000

Above 1000

5. Is the institution?

- i) A locally incorporated bank, with headquarter based in Kenya?
- ii) A locally incorporated subsidiary of a multinational bank operating world wide?

PART B: QUALITY MANAGEMENT INITIATIVES

6. Has your organization implemented any quality management program(s) to improve on quality of service delivery?

Yes  No

Please list the quality management programs implemented

7. For how long has your organization been implementing these quality management initiatives? \_\_\_\_\_years'.

8. Has your organization developed a flow chart/process map for all its service delivery processes and procedures?

Yes [ ] No [ ]

If yes, has your organization developed ways/parameters to measure the processes' effectiveness in achieving service quality?

Yes [ ] No [ ]

9. What are some of the measures/parameters that are used by your organization to determine service processes' effectiveness?

(•) \_\_\_\_\_ (iv) \_\_\_\_\_  
 (») \_\_\_\_\_ (v) \_\_\_\_\_  
 (iii) \_\_\_\_\_ (vi) \_\_\_\_\_

10. Which people are involved in selecting quality improvement projects/ initiatives within your organization?

Top management [ ]  
 Cross functional teams [ ]  
 Top management & cross functional teams [ ]  
 Operational level employees' [ ]

11. Kindly indicate how potential quality improvement projects are identified in your organization by ticking (V) appropriately in the space provided below.

Source of Ideas For Quality Improvement Projects	S V <u>	S o w v) « -J	V £ W "3 v)	I v) c S	Q "3? g -a U 3
i. Customers	r l	r l	r i	r /	r l
ii. Suppliers					
iii. Employees					
iv. Benchmarking (Competitors)					
v. Developments in technology					
vi. Waste from processes					
vii. Competitors					
Others (specify)					
viii.					
ix.					

12. Does your institution employ any tools or techniques to identify potential quality improvement projects from the sources listed above?

[ ]  
 Yes [ ] No [ ]

13. Please indicate the tools/techniques utilized in your organization for project selection by ticking (V) appropriately in the space provided below.

Tools/Techniques For Project Selection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Brainstorming					
ii. Critical-to-Quality tree					
iii. Cross Functional Quality Teams					
iv. Interviews with stakeholders					
v. Customer visits					
Others (please specify)					
vi.					
vii.					

14. Kindly indicate the criteria that mostly influence the selection of quality improvement projects to implement in your organization by ticking (V) appropriately in the space provided below.

Criteria Considered in Selecting Projects For Implementation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Customer Impact;							
ii. Financial Impact							
iii. Top management commitment							
iv. Connected to business strategy							
v. Core competence of the organization							
vi. Expertise/skills required to implement the project.							
Others (kindly specify)							
VII.							
viii.							

15. Does your organization develop project objectives before project implementation?

Yes [ ] No [ ]

If yes, what are some of the common goals/objectives that most projects seek to achieve?

**PART C: SIX SIGMA PRACTICES**

16. Does your organization carry out market research/customer surveys to gauge the level of customer satisfaction with services provided?

Yes [ ] No [ ]

If yes, who conducts the market research to gauge customer satisfaction?

17. How often does your institution conduct market surveys on customer satisfaction?

- More than once a year ]
- Once a year
- Every 2-3 years
- Every 5 years
- Never

18. Please indicate the service parameters that customers consider important by ticking (V) appropriately in the space provided below.

**Service Parameters Important to Customer Satisfaction**

e n u 2 C.      s u 2 C.      e n u 2 C.      e a u 2 C.      s n u 2 C.  
 << I I      < J JS      E      -f' u C. E      L ^ u c. E  
 u< E      > E

- i. Financial: services are provided at the lowest cost.
- ii. Responsiveness: the bank takes minimal time to respond to customer needs and desires.
- iii. Reliability: the bank consistently delivers on its promises to customers.
- iv. Timeliness: the bank delivers on its promises to customers within the agreed upon time frame.
- v. Courteousness: the bank's employees use suitable professional behavior and manners when serving the customers.

19. Does your institution follow a standard approach towards project implementation?

Yes [ ] No [ ]

If yes, has the institution documented project implementation procedures to be followed?

Yes [ ] No [ ]

20. Please indicate the project implementation variables that your organization consider important by ticking (V) appropriately in the space provided below.

Project Implementation Variables	ZL U	U	-	o	Q
	t	s: o	a	5	et
	[ ]	[ ]	[ ]	[ ]	[ ]
i. The problem is always defined as a project.	[ ]	[ ]	[ ]	[ ]	[ ]
ii. The problem to be solved is linked with problem from customers' perspective.	f	i	i	i	.
iii. Process mapping (upstream and downstream) is carried out to determine where problem lies.	.	.	L	.	.
iv. Process inputs, outputs and various controls are established for all processes.	r	r	r	r	r
v. A project charter is established for all projects.	r	r	r	r	r
vi. Project sponsor(s) and stakeholders are identified and a cost-benefit-analysis of the project done.	i	i	i	i	L
vii. The current performance level of service processes is determined before project implementation.	r	.	r	r	r
viii. Benchmarking is done to compare processes' performance with other institutions' processes.	L	.	L	f	L
ix. Strengths and weaknesses are identified to determine gaps for improvement.	f	.	f	.	r
x. Root causes of defects in processes are identified.	r	r	r	r	r
xi. Root causes of service variability leading to defects are identified and prioritized.	f	r	r	.	r
xii. Potential benefit of improving service processes' is determined.	f	.	.	f	.
xiii. Potential solutions to fix the problems are identified.	r	r	r	r	r
xiv. Impact of each potential solution is identified and ranked using criteria-decision matrix.	.	.	.	.	.
xv. Assessment is done of risks associated with potential solutions.	.	.	.	.	.
xvi. Re-evaluation of the impact of potential solutions is carried out.	i	i	i	L	L
xvii. Corrective actions are developed to sustain improved levels of service.	.	.	.	i	i
xviii. A process owner is identified and his/her roles defined to ensure sustenance in improved service levels.	.	.	f	.	.
xix. Verification is done of benefits or cost savings.	r	r	r	r	r
xx. The new methods of doing things are documented.	i	i	i	i	i
xxi. The results are published internally and externally.	r	r	r	r	r

21. Does your organization employ any statistical tools and/or techniques in project implementation?

Yes [ ] No [ ]



22. Kindly indicate the tools and techniques that your organization utilizes in project implementation by ticking ( V ) appropriately in the space provided below.

Tools/Techniques Used In Project Implementation	15 3 Z	5 0 3 3	C it rS fi	-0 41 o L	11 '3! 1-8 W 2
i. Process Mapping	[ ]	[ ]	[ ]	[ ]	[ ]
ii. Brainstorming	[ ]	[ ]	[ ]	[ ]	[ ]
iii. Root-Cause-Analysis	[ ]	[ ]	[ ]	[ ]	[ ]
iv. Quality Costing	[ ]	[ ]	[ ]	[ ]	[ ]
v. Hypothesis Testing	[ ]	[ ]	[ ]	[ ]	[ ]
vi. Supplier-Input-Process-Output-Customer (SIPOC) Analysis	[ ]	[ ]	[ ]	[ ]	[ ]
vii. Service Quality (SERVQUAL) Dimensions	[ ]	[ ]	[ ]	[ ]	[ ]
viii. GANTT Charts	[ ]	[ ]	[ ]	[ ]	[ ]
ix. Benchmarking	[ ]	[ ]	[ ]	[ ]	[ ]
x. Control Charts	[ ]	[ ]	[ ]	[ ]	[ ]
xi. Cost-Benefit-Analysis	[ ]	[ ]	[ ]	[ ]	[ ]
xii. Histograms	[ ]	[ ]	[ ]	[ ]	[ ]
xiii. Project Team Charter	[ ]	[ ]	[ ]	[ ]	[ ]
xiv. Regression and Correlation Analysis	[ ]	[ ]	[ ]	[ ]	[ ]
Others (kindly specify)					
XV.	[ ]	[ ]	[ ]	[ ]	[ ]
xvi.	[ ]	[ ]	[ ]	[ ]	[ ]

23. What are some of the key success factors do you consider necessary in implementation of a continuous improvement initiative?

1. \_

2. \_

3. \_

24. In your view, what do you understand by the term six sigma?

PART D: CHALLENGES FACED IN IMPLEMENTATION OF SIX SIGMA PRACTICES.

25. Please indicate the challenges encountered by your organization in implementation of six sigma practices by ticking (V) appropriately in the space provided below.

Challenges Encountered By Organizations Implementing Six Sigma Practices	δ	U W Z	- ST	« U	SS « .a '5 C C U	R U > a u
i. High costs involved in implementing quality initiatives.						
ii. Time constraint which entail resource allocation from other important tasks of the organization.						
iii. Inappropriate organization culture and resistance to change by employees.						
iv. Inadequate training to employees on quality initiatives implementation.						
v. Failure to understand customer needs through market research.						
vi. Inappropriate organization structures and bureaucracies which hinder change.						
vii. Lack of strong leadership and total commitment from top executives						
viii. Lack of appropriate data to measure service gaps with respect to service quality to customers.						
ix. Highly dynamic market demands which render quality initiatives obsolete in a shorter time span.						
x. Lack of standardized approaches to selection and prioritization of quality initiatives to pursue.						
Other (kindly specify)						
xi.						

-THANK YOU FOR YOUR CONTRIBUTION

1. African Banking Corporation Ltd
2. Bank of Africa
3. Bank of Baroda (K) Ltd
4. Bank of India
5. Barclays Bank of Kenya Ltd
6. CFC Bank Limited
7. Charterhouse Bank Limited
8. **Chase Bank Limited**
9. Citibank, N.A
10. City Finance Bank Ltd
11. Commercial Bank of Africa Ltd
12. Consolidated Bank of Kenya Ltd
13. Co-operative Bank of Kenya Ltd
14. Credit Bank Limited
15. Development Bank of Kenya Ltd
16. Diamond Trust Bank Kenya Ltd
17. Dubai Bank Limited
18. EABS Bank Limited
19. Equatorial Commercial Bank Ltd
20. Equity Bank
21. Family Bank
22. Fidelity Commercial Bank Ltd
23. Fina Bank Limited
24. Giro Commercial Bank Ltd
25. Guardian Bank Limited
26. Habib AG Zurich
27. Habib Bank Limited
28. Housing Finance
29. Imperial Bank Limited
30. Investment and Mortgages Bank
31. Kenya Commercial Bank Ltd
32. K-Rep Bank Ltd
33. Middle East Bank of Kenya Ltd
34. National Bank of Kenya Ltd
35. National Industrial Credit Bank Ltd
36. Oriental Commercial Bank Limited
37. Paramount-Universal Bank Ltd
38. Prime Bank Limited
39. Southern Credit Banking Corp.
40. Savings and loans
41. Stanbic Bank Kenya Limited
42. Standard Chartered Bank Ltd
43. Trans-National Bank Limited
44. Victoria Commercial Bank Ltd
45. Gulf African Bank



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