LEAN MANAGEMENT PRACTICES AND OPERATIONAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

BY

GERTRUDE MANGA MWACHARI

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DECLARATION

I declare that this research project is my original work and has never been submitted to any other University

Signature…….. Date……...……

Gertrude M Mwachari

D61/83069/2015

This project has been submitted for examination with our approval as the University supervisors.

Signature ……. Date …….

Dr. Stephen Odock

Lecturer, Department of Management Science,

School of Business,

University of Nairobi.

Signature ……. Date …….

Dr. James Kariuki

Lecturer, Department of Management Science,

School of Business,

University of Nairobi.

DEDICATION

This work is dedicated to all those who assisted me in one way or another to carry out this research, to my family for their support and encouragement and to the Almighty God for the wisdom and gift of life that has seen me through to the end of this research.

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TABLE OF CONTENTS

DECLARATION ..... **ii**
DEDICATION ..... **iii**
ACKNOWLEDGEMENT ..... **iv**
ABBREVIATIONS AND ACRONYMS ..... **xi**
ABSTRACT ..... **xii**

CHAPTER ONE: INTRODUCTION **1**
1.1 Background of the Study 1
1.1.1 Lean Management Practices 2
1.1.2 Operational Performance 3
1.1.3 Lean Management Practices and Operational Performance 4
1.1.4 Commercial Banks in Kenya 5
1.2 Research Problem 5
1.3 Research Objectives 7
1.4 Value of the Study 7

CHAPTER TWO: LITERATURE REVIEW **9**
2.1 Introduction 9
2.2 Theoretical Foundation of the Study 9
2.2.1 Queuing Theory 9
2.2.2 Knowledge Based View 10
2.2.3 Theory of Constraints 11
2.3 Elements of Lean Management 12
2.3.1 Value Stream Mapping 12
2.3.2 Total Quality Management 12
2.3.3 Lean Leadership 13
2.4 Challenges Faced in Implementation of Lean Management Practices 14
2.5 Empirical Review 15
2.6 Conceptual Framework 16

CHAPTER THREE: RESEARCH METHODOLOGY 17
3.1 Introduction 17
3.2 Research Design 17
3.3 Population of the Study 17
3.4 Data Collection 17
3.5 Operationalization of Study Variables 18
3.6 Data Analysis 19

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION 21
4.1 Introduction 21
4.2 Demographic Information 21
4.2.1 Period of Operation 21
4.2.2 Number of Employees 22
4.2.3 Years of Service 22
4.2.4 Value Stream Mapping 23
4.2.5 Total Quality Management 23
4.2.6 Lean Leadership 24
4.2.7 Summary of Adoption of Lean Management Practices 24
4.3 Operational Performance 25
4.3.1 Operational Cost 25
4.3.2 Operational Speed 26
4.3.3 Operational Quality 26
4.3.4 Operational Flexibility 27
4.4 Lean Management Practices and Operational Performance 28
4.4.1 Diagnostic Tests 29
4.4.2 Lean Management Practices and Operational Cost 31
4.4.3 Lean Management Practices and Operational Speed 33
4.4.4 Lean Management Practices and Operational Quality 34
4.4.5 Lean Management Practices and Operational Flexibility 35
4.4.6 Lean Management Practices and Overall Operational Performance 37
4.5 Challenges of Adoption of Lean Management Practices 38

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS 40
5.1 Introduction 40
5.2 Summary of Study Findings 40
5.2.1 Extent of Adoption of lean management practices 40
5.2.2 Lean Management Practices and Operational Performance 41
5.2.3 Challenges faced during implementation of Lean Management Practices 41
5.3 Conclusions of the study 42
5.4 Recommendations of the study 43
5.5 Limitations of the Study 43
5.6 Suggestion for Further Studies 43
REFERENCES 45
Appendix I: Introduction letter 52
Appendix II: Questionnaire 53
Appendix III: List of Commercial Banks in Kenya 58

LIST OF TABLES

Table 4.1: Period of Operation 21
Table 4.2: Number of employees 22
Table 4.3: Years of Service 22
Table 4.4: Value Stream Mapping 23
Table 4.5: Total Quality Management 23
Table 4.6: Lean Leadership 24
Table 4.7: Lean Management Practices 25
Table 4.8: Operational Cost 25
Table 4.9: Operational Speed 26
Table 4.10: Operational Quality 27
Table 4.11: Operational Flexibility 27
Table 4.12: Mean of each commercial bank 28
Table 4.13: Test for Normality 29
Table 4.14: Collinearity Statistics 30
Table 4.15: Autocorrelation Test 30
Table 4.16: Test for Heteroscedasticity 31
Table 4. 17(a): Model Summary 31
Table 4.17 (b): ANOVA 32
Table 4.17 (c): Coefficients for the Model for Operational Cost 32
Table 4.18 (a) Model Summary 33
Table 4.18 (b): ANOVA 33
Table 4.18 (c): Coefficients for the Model for speed..... 33
Table 4.19 (a): Model Summary..... 34
Table 4.19 (b): ANOVA 34
Table 4.19 (c): Coefficients for the Model for Quality 35
Table 4.20 (a): Model Summary..... 36
Table 4.20 (b): ANOVA 36
Table 4.20 (c): Coefficients for the Model for Flexibility 36
Table 4.21 (a): Model Summary..... 37
Table 4.21 (b): ANOVA 37

Table 4.21(c): Coefficients for the Model for Overall Operational Performance 38
Table 4.22: Challenges of Adoption of Lean Management Practices..... 39

LIST OF FIGURES

Figure 2.1: Conceptual Framework 16

ABBREVIATIONS AND ACRONYMS

ANOVA: Analysis of Variance

CBK: Central Bank of Kenya

JIT: Just in Time

KPIs: Key Performance Indicators

LMP: Lean Management Practices

SOP: Standard Operating Procedures

SPSS: Statistical Package for Social Sciences

TOC: Theory of Constraints

TQM: Total Quality Management

VSM: Value Stream Mapping

ABSTRACT

Lean management practices have emerged as critical success factors that drive focus in not only cutting costs but also simultaneously improving services to customers. These practices enable organizations to improve processes and structures through eliminating product and process wastes. Today, organizations that adopt lean management practices are responsive to business needs and deliver positive results. The main objective of this research was to identify the relationship between lean management practices and operational performance. This study employed a cross sectional descriptive survey design. Cross sectional design was considered most suitable because information was collected at a specific time over a short period. This study also adopted a census survey due to the small population of commercial banks in Kenya which was 39. Out of the 39 questionnaires, 30 were received, resulting to a response rate of 76.9% which was regarded sufficient. Data analysis done using SPSS generated descriptive statistics and correlation results. The outcome showed that the three lean management practices; VSM, TQM and lean leadership had a significant relationship with operational performance. Value stream mapping practices were implemented to a moderate extent whereas TQM and lean leadership were implemented to a great extent in commercial banks in Kenya. Whereas there was a neutral agreement among the respondents that adoption of these practices had led to a decrease in costs, respondents agreed that operational speed and operational flexibility equally improved. They further strongly agreed on improvement in quality of services offered. Additionally, respondents highlighted that regulatory control to ensure compliance that made it difficult to remove some non-value adding activities was the most experienced challenge during implementation. To conclude, the study recommends implementation of these practices together at the same time. This is because they all have their individual strengths and implementing them as one system together will result to overall benefits that can be replicated organization wide.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Technological spread, consumer requirements and trade liberalization is what describes the present business environment. Survival of companies is being continuously tested when these changes are directed on available limited resources, consumers as well as market leadership in their spheres of operations. To sustain profitability, managers are taking giant steps that ensure they are competing well on the local font as well as globally. As they do so, they are also required to acknowledge that the eventual buildup of a successful organization broadly relies on the ability to amalgamate the company's systems and relations based on lean (Kallrath & Maindl, 2006)

Lean management practices have emerged as critical success factors that drive focus in not only cutting costs but also simultaneously improving services to customers. Their application has resulted to several benefits including better quality of services, bigger market share, increased profit margins, revenue growth and even faster response to the ever-changing market conditions (Chowdhury, 2013). Companies that make use of lean management practices are effective in time management since information flows seamlessly with minimum or zero interruptions (Emiliani, 2006). This plays a major role in improving operational performance in an organization as it involves the alignment of business units to ensure they are incorporated in the achievement of the core business goals.

This study was steered by the queuing theory. This theory is applied in the management of queues and waiting lines (Singh & Sharma, 2009). Its applicability in lean management ensures identification of improvement opportunities that shorten waiting time and improve speed of delivery. It is also guided by the theory of constraints (TOC) that focuses on identifying limiting factors that hinder an organization from achieving a set of performance goals. This theory when applied in lean management assists in effective identification of organization's goal, identification of constraints in the operations, identification of ways of dealing with them to achieve maximum performance and the development of indicators to facilitate the improvement of processes (Goldratt & Cox, 2004). The knowledge based

view theory recognizes that knowledge is the most vital asset in any company and can be shared among individuals in an organization to ensure sustainability.

Advancement in financial sector, changing customer demographics combined with technology are also extensively transforming the banking environment (Grigoroudis, Politis, & Siskos, 2002). The banking sector has further been tied up by internal and international regulations that have been relatively slow in improving internal efficiencies. Today banks have been forced to have an intense understanding of how customers comprehend value and re-look at the way in which their costs are managed. To be successful in improving productivity and optimizing costs there needs to be a paradigm shift in the way their operations are carried out.

1.1.1 Lean Management Practices

Lean is all about making processes and structures better in an organization through eliminating product and process wastes that consequently reduce costs. Organizations adopt lean management practices that are responsive to business needs and deliver positive outcomes to all stakeholders. A lean organization is created when provision of goods and services is achieved with less resources (Juran & Godfrey, 1998). Customers desire consistent value from products and services that can result from application of lean management practices supported by simple tools and processes.

In today's business environment, lean focuses on value rather than cost issues, which largely signifies a more strategic and general approach that is less specific and tactical. This therefore makes the lean concept less dependent on the context and hence suitable for application in enhancing operational efficiency in both manufacturing and service delivery organizations. Successful implementation of lean practices like value streaming mapping, total quality management and lean leadership requires strong management commitment and support considering that lean is a continuous program that takes time to implement.

Value steam mapping is a lean practice that involves determining the value created within an organization based on integrated improvements on a process scope that are progressively added in the final service or product. According to McManus and Millard

(2002), value stream mapping reduces waste in processes, and increases efficiency, which is important in ensuring rapid response to customer needs. It encompasses voice of the customer tools, lean office and visual management. Total quality management is a structured way of combining elements of quality and people management. It includes standardization, operational reviews and problem-solving skills. Lean leadership also forms part of lean management practices that describes employees working together and committing to making every day changes towards improvement. Lean leadership involves making sure that there is long term development of employees in all levels, policy implementation, improvement in organizational culture as well as appropriate allocation of resources. Lean management in the banking sector encompasses improvement in the efficiency of the process, organizational capabilities and performance management as well as improvement in the behavior and the mindset of the employees.

1.1.2 Operational Performance

Voss, Blackmon, Hanson, and Oak (1995) explain that operational performance indicate characteristics of an organization's processes that are measurable such as retaining of market share, queuing time, turnaround time, cost of service delivery, inventory management and waste reduction. General measures of operational performance include compliance with regulations and waste reduction. Neely, Gregory and Platts (2005) indicate that regulatory performance, efficiency and effectiveness are the also indicators of operational performance. Madiavale (2016) indicates that the measures of operational performance in the banking industry include compliance with regulations, efficiency in service delivery, service quality and efficient resource utilization.

Operational performance impacts key performance indicators (KPIs) in any organization such as customer service level and net profit. According to Ndubai, Mbeche and Pokhariyal (2016) operational performance measures such as timeliness, costs, flexibility, efficiency and effectiveness. Timeliness involves the speed of delivery of products. It suggests the time taken from request of a service to the actual receipt of it. Customer turnaround time and on time launch of new products are some of the indicators of speed (Slack 2007). Cost on the other hand represents the cash obligation to an organization that enables it to carry out its services

as well as make a profit from it. Additionally, operational flexibility is also an operational performance measurement that gives the organization the ability to be versatile. Customers from time to time require operations to change in a way they are capable to offer volume, mix or even movement flexibility (Addis & Holbrook, 2001).

Ladhari (2009) describes service quality as a measurement to assess whether the services delivered to a customer match or exceed their expectations. This can be done through considering the SERVQUAL model that focus on reliability, tangibility, responsiveness and assurance quality characteristics. Performance of promised service consistently denotes reliability quality in a service whereas amenities layout for use by customers describes tangibility aspect of operational quality (Olsen & Johnson, 2003). Knowledge of employees that provides them with the capability to feedback on customer queries demonstrates assurance to the customer (Maylor, 2003). Operational quality is also indicated by the ability of help customers and promptly offer a service which describes the responsiveness of service delivery.

1.1.3 Lean Management Practices and Operational Performance

Lean management entails getting rid of waste from processes to boost efficiency. Several studies have linked lean practices to operational performance (Shah & Ward, 2007). For instance, according to Radnor, Holweg, and Waring (2012) lean implementation in the healthcare system has reduced cost, increased flexibility and reduced patient waiting time through examining the flow of activities and flagging waste.

According to Movahedi, Miri-Lavassani and Kumar (2016) lean encourages on time product developments. This in turn assists in ensuring availability of products to consumers that are up to date and fit their requirements. Lean also stimulates utilization of machinery and equipment that is less capital intensive resulting to less rigidity (Schonberger & Kopfer, 2008). As a result, product creation and adoption cycles are condensed and improvement features added in newer product more frequently.

1.1.4 Commercial Banks in Kenya

The Companies Act 2015, Banking Amendment Act, 2016, the Central Bank of Kenya Act1966, and the diverse guiding principles published by CBK govern banks. CBK comes up with policies, implements them as well as promotes availability of cash, proper functioning of the financial system and solvency of organizations in Kenya. During the period ended December 2017, there were 42 commercial banks in Kenya. However, Imperial Bank Limited was placed under receivership in October 2015. In addition, Chase Bank (K) Limited was placed under receivership in April 2016 while Charterhouse Bank Limited was placed under-statutory management in June 2006 (Central Bank of Kenya, 2017).

The banking industry in Kenya has in the last one decade been characterized by profound changes and transformations. For instance, the CBK introduced legislative reforms aimed at stabilizing the interest rates, which culminated in the passing of the Banking (Amendment) Act, 2016. The Act, which came into force with effect from September 2016, imposed limits on the interest rates chargeable by commercial banks on credit facilities and the rates payable on customer deposits respectively, with a view to influencing the overall cost of credit and enhancing access (Central Bank of Kenya, 2017).

These changes, and others, have forced commercial banks to make changes in their business models from traditional brick and mortar model to technological business models making use of agency banking, mobile banking, and internet banking among other banking platforms. These changes according to Kathaara (2014) also enable commercial banks to effectively identify and manage potential risks, improve efficiency in service delivery, implement substantial changes to the way services are delivered and concentrate on how these services can be enhanced in a way that it can increase value to both the customers and the banks.

1.2 Research Problem

Lean practices have facilitated firms to considerably increase their competitive edge (Ramachandran, 2013). Investment in lean practices has enabled companies to be more flexible and profitable. According to Ochieng 'ondiek and Kisombe (2013) the most widespread advantages widely connected to lean practices implementation are lead time improvement, quality, turnaround time, manufacturing cost coupled up with improvement in

labor productivity. Piercy and Rich (2009) registered major improvement in operational measures through adoption of lean practices in services. Lean practices that can be applied in service firms such as lean leadership, total quality management and value stream mapping are same as those adopted by manufacturing firms (Allway & Corbett, 2002)

Commercial banks in Kenya are facing challenges due to stiff competition, influence of technology and globalization. Due to these challenges, banks have been keen to reduce their operating costs through options such as downsizing their branch networks, reducing the number of employees or even relocating call centers overseas. Despite these options having resulted in huge improvements in their income/cost ratios and their profitability, they do not guarantee improvement in performance because they are still experiencing challenges in their processes. Therefore, lean implementation can be considered as a viable and sustainable solution that might offer sustainable improvements.

Thrulogachantar (2011) conducted a research work on lean and established that lean was positively linked to performance of the electrical and electronics manufacturing service companies in Malaysia. In addition, Rahman (2010) in a study on influence of lean tactics and performance operationally in Thailand discovered that flow management, Just in Time and waste reduction have a major influence. Furthermore, Panwar, Jain and Rathore (2015) examined the link between lean practices and OP in India revealed that lean had a positive connection with measures such as timely deliveries, waste elimination, inventory and cost reduction.

Wamalwa, Onkware and Musiega (2014) investigated operational performance in Mumias and concluded that lean manufacturing tools such as mistake proofing, cause and effect diagram, load balancing as well as takt time have a positive effect on performance. Wafukho (2011) established that there was improved productivity and effectiveness in service delivery on implementing lean sigma strategy at GlaxoSmithKline. Yala (2016) also investigated lean and manufacturing firms' performance and established demand management, waste management, cross enterprise collaboration, cultural practices and standardization as the key lean tools implemented by manufacturing firms in Kenya.

In the banking industry, Madiavale (2016) examined how operational performance of microfinance institutions in Mombasa was impacted by implementation of lean and established their significant relation on operational KPIs. In addition, Ndaita, Gachie and Kiveu (2015) examined the concept of lean operations at National Bank of Kenya and found that their implementation led to cost reduction, error rates reduction and turnaround time reduction. However, these studies have been limited to microfinance institutions and the National bank of Kenya as a case study and hence their conclusions cannot be generalized to the whole sector in Kenya. In addition, these studies did not look at how lean leadership influences operational performance. Having understood the importance of efficient operations management in an organization, this study sought to respond to these questions; to what extent is lean management practiced by banks, what are the effects of lean management to operational performance and what challenges are faced during adoption of lean management by commercial banks?

1.3 Research Objectives

This research aims to investigate the relationship between lean management practices and operational performance of commercial banks.

The specific objectives are:

i. To determine the extent to which lean management is practiced by Commercial Bank in Kenya.
ii. To establish the effect of lean management on operational performance of Commercial Banks in Kenya.
iii. To determine challenges faced in the implementation of lean management by Commercial Banks in Kenya.

1.4 Value of the Study

This research elaborates how various lean management practices influence operational performance in the banking industry. Commercial bank managers and decision makers would use this study as a basis of making informed decisions especially those involving reducing costs in their end-to-end processes.

This study makes a great contribution to theories related to LMP in banks. The three theories of the study; knowledge based view, queuing theory and theory of constraints (TOC), mainly focus on the production processes in manufacturing industries. This study provided information on how these theories would be applied in the services industries, and more specifically in the banking industry. Other researchers and academicians conducting studies on lean management practices in the service industry can obtain research material that can be used as empirical literature.

Government institutions such as Central Bank of Kenya (CBK) and policy makers in government can formulate policies and to identify opportunities derived from implementing lean practices that they can replicate in government practices. The study has added more information to the already existing knowledge on lean management practices application among commercial banks.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

A review of the literature on the relationship between lean management practices and OP is covered in this chapter. Specifically, this chapter covers theoretical review, lean management practices and operational performance, empirical review as well as the conceptual framework.

2.2 Theoretical Foundation of the Study

Lean practices are components of lean systems with underlying theories that enable organizations to influence its operations. According to Westbrook (1995) operations management academics need to embrace the relationship between theory and practice in order to show its influence in the achievement of competitive advantage. The theories linked to lean implementation and performance of commercial banks includes queuing theory, theory of constraints and knowledge based view theory.

2.2.1 Queuing Theory

Demand for a service in a service organization is mostly unpredictable and often depends on the date of the month, which day of the week it is, or even the time of the day. Many service companies such as hotels and hospitals require daily work scheduling to deliver the service when demanded. This is because poor staff-customer scheduling results in waste in the form of long customer waiting long times, loss of productivity, and consequently, waiting cost (chowdhury, 2013). Operations managers need to recognize peak times and non-peak cycles to settle on the staffing requirements putting into consideration variability in demand levels from past or real-time data. Using queuing theory and a control system that can simulate the system ensures close monitoring to enable model and analyze a real-time queuing situation, consider scheduling options and the matching the level of service being offered to provide a superior scheduling combination based on the desired service level.

Extension of the applicability of the queuing theory to the service sector has enabled banks identify improvement opportunities through shortening the waiting experience in the banking industry, provide better understanding into service system in congestion analysis and resource

planning and explore the automated queuing system where customers are served on first in first out basis (Mital, 2010). Kamau (2014) indicates that queuing significantly influences customer satisfaction and hence loyalty. ‘When the queues are long in the banking halls customers get disgruntled and upset for their lost time. Some of the commercial banks in Kenya have adopted queue management systems that provide information to the customers on the approximate duration of waiting and the number of people ahead of them.

2.2.2 Knowledge Based View

This theory considers knowledge as a principle asset in an organization Thompson and Walsham (2004), knowledge in an organization can be found in different areas including records, documents, policies, standards, procedures as well as the untapped tacit expertise and experience of individual employees. Knowledge is used in an organization to improve service delivery. It can be demonstrated in many forms and transferred from one person to another within and outside the organization hence ensuring continuity and continuous improvement. According to Madiavale (2016) knowledge management simplifies decision making by providing managers with the data needed to come up with better, more up to date high-quality resolutions that are beneficial to their organization. It also helps them put together a learning organization by making learning routine with continuous improvement through critical reviewing of tasks, identifying successes and failures and documenting them for future reference.

Jayaram and Xu (2016) further alludes that knowledge management encourages a change of culture that is open to managers sharing ideas and insight that could be sources of innovations. Through the implementation of knowledge based view theory, employee-training gaps can be identified. Managers in turn use these gaps to come up with training programs specific to each employee’s job and linked to the overall direction and key priorities of the company. This is in line with lean leadership that focuses on leadership development.

Knowledge based view theory was relevant in this study as it highlights the role of continuous learning in ensuring operational performance. By using lean leadership, organizations use available knowledge to improve processes used in service delivery. This in turn leads to an

improvement in efficiency, cost reduction, effectiveness and reliability of services. In addition, the application of value stream mapping, total quality management and lean leadership requires knowledge and experience.

2.2.3 Theory of Constraints

This theory involves recognizing constraints and coming up with ways to manage them with an aim to improve organizational performance. TOC is based on the principle organizations constantly face constraints that restrict the achievement of higher performance levels. This theory therefore focuses on identifying the most limiting factors that hinder an organization from achieving a set of objectives and then improving them until they are no longer limiting (Goldratt & Cox, 2004).

To facilitate process improvements, the theory of constraints outlines concepts applicable to effectively identify key priorities in an organization, establish the constraints to achieving targeted performance on the performance indicators that directly link to the key priorities, and develop practical ways of cascading and measuring to facilitate process improvements and bring visibility on performance. Identification of constraints in banks can be done through three TOC set of measurements; throughput, operating expense and inventory. Unlike manufacturing where constraints would be found in capacity or equipment, constraints in service companies are commonly found in policies and procedures. The TOC can be effective where a well laid out standardized process is established which can clearly reveal problem areas common to employees in the organization (Jaideep, Hung & Manu, 1996).

In this study, the theory of constraints was used to show the connection between lean management and operational performance. The theory of constraints involves identification of constraints in service delivery processes. These constraints mainly include slow machines and movement from one office to another seeking approval when servicing customers. These constraints may negatively influence cost of delivery and waiting time for each customer. However, putting into practice lean management practices would improve on material flow between tellers and managers and hence reduce movement from one office to another when serving a customer.

2.3 Elements of Lean Management

Lean management practices bring together several elements to form a unified whole, which aligns the various parts of an organization to make a change of great magnitude (Hult, Ketchen, Cavusgil & Calantone, 2006). They comprise, a plan reliant on a group of practices to be implemented and lean thinking ways of working, that focus on reducing costs both internally as well as outside the company (Magu, 2015). The elements of lean management used in this study are discussed in the following subsections.

2.3.1 Value Stream Mapping

This is a lean practice that enables organizations document a process in a way that will help set up and execute the transformation necessary to attain a seamless flow with less resources. It comprises documenting a process flow with symbols of both materials and information movements inside a facility. The existing state map signifies the current situation, whereas the second one represents the ideal pull service delivery system that is meant to be adopted (Bonaccorsi, Carmignani & Zammori, 2011).

The value stream mapping approach is superior to other mapping techniques because it implements a structured way of visualizing a process to communicate priorities of an organization, identify type of waste and document the relationship between the actual step by step processes and the documented governing policies used to oversee these processes. It is a process that involves employees at different levels of the organization through a methodology that makes it easier to quickly identify areas with waste in a snapshot (Ali & Schneider, 2003). Employees are therefore tasked to identify activities to be removed so as to optimize the flow (Tapping & Shuker, 2003). Of importance to note however is the fact that before the mapping is done, data is collected from various departments including customers in form of customer feedback, complaints and suggestions and this forms a fundamental input into this whole process.

2.3.2 Total Quality Management

This practice entails the application of excellent management practices that involve people, systems and their interaction with different departments' end to end flows. TQM require

organizations to develop operational processes with the customer in mind and at the same time commit their resources in positioning themselves to meeting their customers' expectation profitably.

The adoption of the total quality management approach is to ensure that quality is managed in the different functional areas of operation without giving room for mistakes in other functional processes. This can be done through people which are a central part of TQM. Top management commitment and employee involvement are facets of TQM that have a bigger bearing to the success of an organization (Singh & Dhalla, 2010). While this cover the organization internally, external collaboration with third parties such as suppliers is also integral to TQM. Moreover, continuous improvement that strives to ensure that an organization makes continuous small improvements every day is also a fundamental quality philosophy.

2.3.3 Lean Leadership

This is a systematic practice meant for sustainable application and day to day advancement of lean implementation (Dombrowski & Mielke, 2013) It describes teaming up all employees in running the day to day operations of their organizations. This includes a focus on the customer needs in all the processes coupled up with employees and leaders long term development. Improvement culture is a fundamental principle under lean leadership that requires leaders to constantly challenge the current processes to improve them. Lean leaders need to pick employees' ideas and apply them in their organizations.

In self-development, a teacher or a mentor is the guide for both leaders and workers. In most cases, short term courses are used to achieve constant self-development. Apart from self-development, use of every day coaching can be applied by lean leaders to develop others as well (Krijnen, 2007). Employees qualifications is an important requirement as it enables staff to take part in the small improvement initiatives for processes in the organization that goes along with continuous development of employees and leaders. Qualification is not restricted to level of education, but it also incorporates knowledge and skills in specific areas.

Most of the learning and coaching in lean leadership happens every day and takes place where the actual job happens such as at the shop floor. Strategy deployment is also part of lean leadership that focuses the continuous improvement activities of each team cascaded at different levels that are reviewed in weekly and monthly meetings to ensure that improvement actions are tracked and moving in the right direction. Through this, all the team members become aligned and involved in the achievement of the big picture (Dombrowski, Mielke & Schulze, 2011).

2.4 Challenges Faced in Implementation of Lean Management Practices

The principles from lean manufacturing are practically applicable to the service sector however lean implementation in services needs to be done differently because of the context under which service processes function. Preceding studies highlight a range of challenges in implementation of lean management practices. For example, according to to Seidel, Saurin, Marodin and Ribeiro (2017), resistance to change is a significant factor impacting lean implementation in companies. This is mostly due to improper change management techniques and inability to shift corporate culture to implement new tools. This forces organizations to ensure that managers are visible and directly connected to the new structures that enable active participation of all involved employees (Chauhan & Singh, 2012)

In manufacturing, outlining value in a process may be straightforward to achieve (Young & McClean, 2008). Conversely, nature of the service processes makes it cumbersome to easily determine the customer needs. Multi-site companies such as banks additionally find it difficult to deploy lean practices in all branches due to complexity in monitoring and controlling the progress achieved in each branch.

Financial ability amidst cost cutting measures adopted by companies is also another challenge. Funding is important to take care of expenses such as material resources, human resources, technical utilities, consulting and employee training which all vital elements for lean implementation (Achanga, Shehab, Roy & Nelder 2006), Moreover, variability of

services has forced organizations to adopt agile thinking as a solution to deal with the customer demand variability challenge (Hines & Rich, 2004).

2.5 Empirical Review

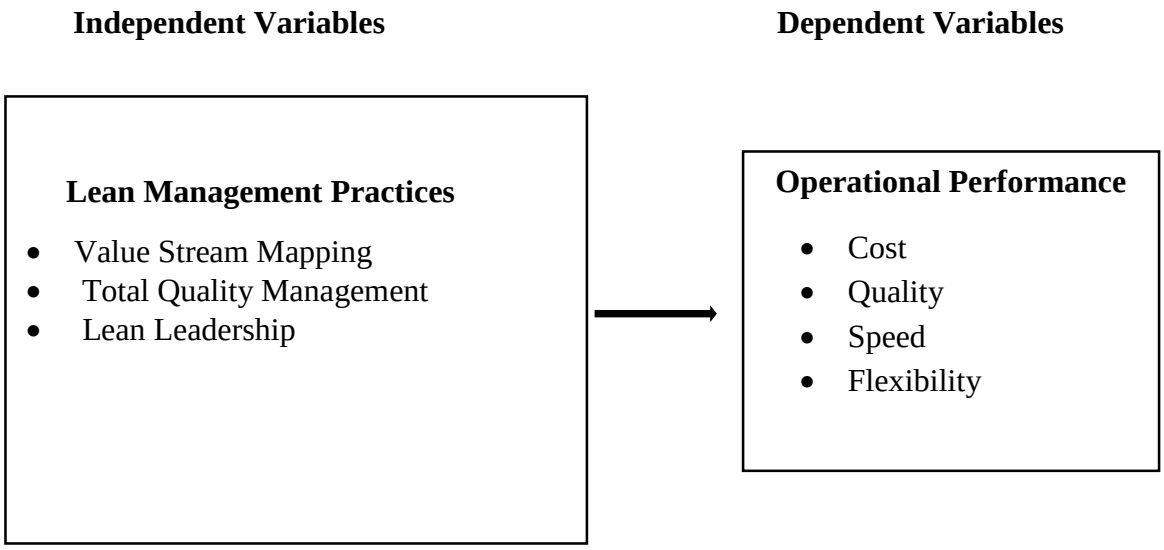
Leadership of an organization have their interests on sustainable performance of the organization which can be accomplished through implementation of LMP. Organizations that put in place efficient and effective implementation programs enable its employees and its customers to easily adopt to change and embrace lean tools. Pratanna (2015) examined how hospitals in Thailand have adopted lean management practices such as continuous improvement (kaizen). The paper investigated lean and organizational commitment in the medical sector. The results indicated that the necessary resources of operational performance in a healthcare setting include human resource management, a focus on patient movement from one stage to another and social capital.

Wamalwa, Onkware and Musiega (2014) investigated on operational performance and concluded that lean manufacturing has a definite outcome on manufacturing performance. Yala (2016) further investigated the lean supply chain management and established demand management, waste management, cross enterprise collaboration, cultural practices and standardization as the key lean tools implemented by manufacturing firms in Kenya.

Ahlstrom (2004) analyzed the relevance of lean management practices in the service industry. The research indicated the tenets of lean practices that can be incorporated in the service industry to improve its performance. Nonetheless, Ahlstrom (2004) indicated that without adequate allocation of resources and proper implementation the benefits cannot be realized. This empirical literature review shows that lean practices can be well executed in service organizations to improve performance. However, their application to the entire organization and effect on an organization's performance has not been clearly outlined. This study therefore sought to assess the application of lean management practices in commercial banks in Kenya and its effect on operational measures.

2.6 Conceptual Framework

This is a diagrammatic illustration of assumed relationships involving various concepts. (Mugenda & Mugenda, 2003). Independent variables are lean management practices (total quality management, value stream mapping and lean leadership) while the dependent variable is operational performance. Figure 2.1 shows the hypothesized influence of total quality management, value stream mapping and lean leadership on operational performance.



Source: Author (2018)

Figure 2.1: Conceptual Framework

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology that was considered in carrying out the study. It encompasses the research design, population of the study, data collection and data analysis.

3.2 Research Design

This study made use of a cross sectional research design. This is because this design involves obtaining information about the status of a given phenomenon to provide a detailed description on the existing conditions and variables under study without making any change in the variables (Creswell, 2014). Descriptive research design tends to give explanation on the status of the phenomenon.

3.3 Population of the Study

Total count of all commercial banks operating in Kenya as at December 2017 was 42. However, three commercial banks were excluded. Imperial Bank Limited and Chase Bank (K) Limited are under receivership and Charterhouse Bank Limited is under-statutory management. Therefore, 39 commercial banks were targeted for the study. A census was conducted since the population is small.

3.4 Data Collection

The study made use of primary data collected from operation managers or their equivalents in the 39 commercial banks through closed ended questionnaires. Sections in the questionnaires included; section A that comprised of demographics, section B lean management practices, section C operational performance and section D challenges faced during implementation of lean management practices.

3.5 Operationalization of Study Variables

Main Variable	Sub Variable	Indicator	Supporting Literature
Lean Management Practices	Value Stream Mapping	• Documented current state processes • Employee involvement in process formulation • Non- value adding activities elimination • Customer feedback as an input in process formulation	Ali & Schneider, 2003 Grewal, 2008; Tapping & Shuker, 2003)
	Total Quality Management	• Top Management Commitment • Continuous Improvement • Employee Involvement • Supplier Partnership Practices	Bon & Mustafa, 2013; Kaynak, 2003 Kamal, 2012)
	Lean Leadership	• Commit to self-development • Create Vision and Align goals • Daily accountability • Coach & Develop Others	Emiliani, 2008; Liker & Convis, 2011; Krijnen, 2007
Operational Performance	Cost	• Automated processes • Use of online services • Levels of inventory • First time right	Porter 1998; Bon & Mustafa, 2013

Main Variable	Sub Variable	Indicator	Supporting Literature
	Quality	• Responsiveness • Tangibility • Reliability • Assurance	Ladhari, 2009; Chowdhary & Chowdhary, 2005; Olsen & Johnson, 2003; Maylor, 2003
	Speed	• Customer turnaround time • On time launch of new products • Adequate knowledge to handle customer queries	Slack, 2007; Bon & Mustafa, 2013
	Flexibility	• Service customization • Varied modes of service delivery • Quick adaptation to changing demand	Addis & Holbrook, 2001; Bon & Mustafa, 2013

3.6 Data Analysis

Completeness, consistency and accuracy checks were done on the questionnaires. Data was edited, coded and entries made into the statistical package for social sciences software (SPSS). The first and third objective were analyzed quantitatively using descriptive measures of mean and standard deviation. The second objective was analyzed through multiple linear regression to establish the relationship between the variables.

The correct use of regression model required the study to establish a linear relationship between variables, data distribution is normal and that the variance for error terms is similar across all the independent variables i.e. homoscedastic. To test for normality, data symmetry was measured through Kolmogorov-Smirnov and Shapiro-Wilk's test.

Homoscedasticity assumption was checked through Koenker test to ascertain if the variance of errors is the equal in all levels of the independent variables. Additionally, multicollinearity was tested through getting the variance inflation factor (VIF). Durbin Watson test was applied to test for autocorrelation for each model.

The regression model was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Whereby;

Y = Operational performance

B_0 = Constant

β_1- β_3=Coefficients of determination

X_1 = Value stream mapping

X_2 = Total quality management

X_3 = Lean leadership

ε = Error term

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

This chapter focused on analysis of the data, interpretation and presentation of findings. The chapter began by looking at the demographics. Afterwards, analysis of the extent of adoption of lean management practices by commercial banks was done, impact on operational performance and finally challenges faced during adoption.

4.2 Demographic Information

This study was a census survey of 39 commercial banks. To collect data, 39 questionnaires were issued out to be completed by one respondent in each bank. Out of the 39 questionnaires, 30 were received and analyzed. This represents 76.9% response rate and implies that the response rate obtained was adequate and enabled generalization of the findings. A response rate of above 65% is sufficient (Mugenda & Mugenda,2003). The demographic summary was discussed in following sub sections.

4.2.1 Period of Operation

This section sought to determine the number of years commercial banks under study had been operating. As shown in the table 4.1, 60% of the banks have been in operation for over 20years. 26.7% between 5-10 years and 13.3%b between 11-15 years. This revealed that majority of the banks have existed for more than 5 years hence have had ample time to implement lean management practices.

Table 4.1: Period of Operation

	Frequency	Percent
5-10years	8	26.7
11-15years	4	13.3
Over 20years	18	60
Total	30	100

Source: Researcher Data, 2018

4.2.2 Number of Employees

Staff count in an organization signifies its size. Based on table 4.2, 43.3% of the banks had more than 1000 employees. 40% indicated between 201 and 500 employees whereas 16.7% indicated between 100 and 200 employees. Since majority of the banks had a large number of employees, this signified their large size and potential to adopt these practices.

Table 4.2: Number of employees

	Frequency	Percent
100-200	5	16.7
201-500	12	40.0
Above 1000	13	43.3
Total	30	100.0

Source: Researcher Data, 2018

4.2.3 Years of Service

Table 4.3 indicated that 46.73% of the respondents have worked in their respective banks for less than 5 years. 40% indicated between 5-10 years whereas 13.3% indicated between 11-15 years. This revealed that all the respondents had good knowledge on bank operations.

Table 4.3: Years of Service

	Frequency	Percent
Less than 5years	14	46.7
5-10years	12	40.0
11-15years	4	13.3
Total	30	100.0

Source: Researcher Data, 2018

4. 3 Extent of Adoption of Lean Management Practices

First objective looked into the extent to which banks have adopted lean management. The respondents were required to indicate on a Likert scale the extent of adoption of these practices in their organization. The scale range was between 1 and 5 with 1 indicating to no extent and 5 to a very great extent. The results were discussed in the following sub sections.

4.2.4 Value Stream Mapping

The findings of the extent of adoption of value stream mapping lean management practice were presented in the table 4.4.

Table 4.4: Value Stream Mapping

	Mean	Std. Deviation	Rank
Current state processes are documented	4.03	.765	2
Employees are involved in documenting processes	3.70	.837	3
Customer feedback is an input in process formulations	4.10	.845	1
Non- value adding activities are eliminated in processes	3.33	.844	4
Average	3.40	.59843	

Source: Research Data (2018)

Based on the output in table 4.4, customer feedback as an input in process formulation had overall mean of 4.10 implying that this was the most adopted practice under value stream mapping. Second most adopted value stream mapping practice was current state processes are documented with a mean of 4.03 followed by employees' involvement in documenting processes with a mean of 3.70. Overally, a mean of 3.4 revealed that value stream mapping practices were adopted to a moderate extent by commercial banks in Kenya.

4.2.5 Total Quality Management

This section sought to establish degree of adoption of total quality management practices in commercial banks. The findings are presented in the Table 4.5.

Table 4.5: Total Quality Management

	Mean	Std. Deviation	Rank
Top management is involved in lean implementation	3.93	.740	1
Top management promotes a culture of continuous improvement	3.93	.868	1
Employees actively participate in achievement of improvement goals	3.70	.952	2
Suppliers are treated as long term partners for the organization	3.40	.894	3
Average	3.74	.59264	

Source: Research Data (2018)

The study established that top management involvement in lean implementation and promotion of continuous improvement culture by top management were the most adopted practices under total quality management with a mean tie of 3.93. This was closely followed by employee's actively participating in the achievement of improvement goals with a mean of 3.70 and suppliers being treated as long term partners for the organization with a mean of 3.40. Overall results revealed a mean of 3.74 denoting that total quality management practices are adopted to a great extent by commercial banks in Kenya.

4.2.6 Lean Leadership

The study also sought to establish the extent of adoption of lean leadership as a lean management practice. The results are as indicated in table 4.6.

Table 4.6: Lean Leadership

	Mean	Std. Deviation	Rank
Leaders are role models of lean principles to their employees	3.77	.858	3
Employees are responsible for generating ideas for improvement	3.47	1.042	5
The organization promotes learning and knowledge sharing	4.00	.830	1
Employees objectives are aligned to overall objectives	3.90	.845	2
Meetings are structured to ensure follow up on improvement assignments	3.60	1.070	4
Average	3.75	.73706	

Source: Research Data (2018)

The general output resulted to a mean of 3.75 indicating that lean leadership was adopted to a great extent mainly attributed to promoted learning and knowledge sharing that had an overall mean of 4 followed by the alignment of employees' objectives to the overall objectives which had a mean of 3.90. On the other hand, employee's responsibility to generate improvement ideas was least adopted practice with a mean of 3.47.

4.2.7 Summary of Adoption of Lean Management Practices

From the analysis of the three lean management practices individually, a look at the overall picture based on a combination of all revealed the following findings.

Table 4.7: Lean Management Practices

	Mean	Std. Deviation	Rank
Value Stream Mapping	3.40	.59843	3
Total Quality Management	3.74	.59264	2
Lean Leadership	3.75	.73706	1
Average	3.63	.56206	

Source: Research Data (2018)

The study established that the most adopted lean management practice is lean leadership with a mean of 3.75, followed closely by total quality management with a mean of 3.74 and finally value stream mapping with a mean of 3.40. The overall mean is 3.63 indicating that lean management practices are adopted to a great extent by commercial banks in Kenya.

4.3 Operational Performance

Respondents were requested to show the extent to which they agree or disagree that operational performance in their organizations has improved as a result of adoption of lean management practices. This was measured on a scale of 1-5 where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree. The results are shown in the following sub sections.

4.3.1 Operational Cost

The various parameters under cost were analyzed and subsequent descriptive statistics tabulated in the table 4.8.

Table 4.8: Operational Cost

Operational Cost Indicators	Mean	Std. Deviation	Rank
Service delivery cost has reduced	3.57	.858	2
Distribution cost has reduced significantly	3.43	1.006	3
Inventory levels have gone down	3.33	1.028	4
Services are performed right first time	3.67	.758	1
Average	3.5000	.65981	

Source: Research Data (2018)

The most improved indicator of operational cost is the performance of services right first time with a mean of 3.67. Reduction in service delivery cost came second with a mean of

3.57 followed by significant reduction in distribution cost that had a mean of 3.43. The overall mean of 3.5 signified that respondents had a neutral agreement on cost improvement.

4.3.2 Operational Speed

Speed was analyzed based on different indicators and subsequent descriptive statistics tabulated in the table 4.9.

Table 4.9: Operational Speed

Operational Speed Indicators	Mean	Std. Deviation	Rank
Customer turnaround time has reduced	3.70	1.208	2
New products are launched on time	3.37	.850	3
Employees have adequate knowledge to handle customer queries	3.87	.776	1
Average	3.6444	.72679	

Source: Research Data (2018)

Table 4.9 symbolized that majority of the respondents strongly agree with the statement that employees have adequate knowledge to handle customer queries. This is because this statement had a mean of 3.87. The second most agreeable is reduction in customer turnaround time with a mean of 3.70 followed by new products is launched on time with a mean of 3.37. Generally, the overall mean of 3.64 showed that respondents agreed that speed of service as an operational performance measure has improved in commercial banks in Kenya.

4.3.3 Operational Quality

The various parameters under quality were also analyzed and subsequent descriptive statistics presented in the table 4.10.

Table 4.10: Operational Quality

Operational Quality Indicators	Mean	Std. Deviation	Rank
Customer complaints have reduced	3.80	.887	3
Equipment are sufficient and visible for customer usage	3.67	.711	4
There are sufficient staff at any given time to provide service	3.47	.730	5
Materials for customer use are up to date	3.87	.776	2
The bank keeps accurate customer records	4.17	.648	1
Average	3.7933	.53943	

Source: Research Data (2018)

The overall mean of 3.79 indicated that respondents strongly agreed that operational quality has improved in commercial banks in Kenya. This resulted from a strong consensus from the respondents that banks kept accurate customer records that had a mean of 4.17 and materials for customer use were up to date with a mean of 3.87 Respondents in addition strongly agreed to a reduction in new customer complaints as this has a mean of 3.80.

4.3.4 Operational Flexibility

The analyzed parameters under operational flexibility indicated results as tabulated in the table 4.11.

Table 4.11: Operational Flexibility

Operational Flexibility Indicators	Mean	Std. Deviation	Rank
Services are customized to meet specific customer needs	3.67	.711	2
There are varied modes of service delivery available	3.87	.629	1
The bank can quickly adapt to changing demand	3.47	1.008	3
Average	3.67	.55364	

Source: Research Data (2018)

From the table 4.11, availability of varied modes of service delivery was the most agreeable statement by most respondents with a mean of 3.87. Respondents also agreed that service customization to meet specific customer needs with a mean of 3.67 also brought about service flexibility. This was followed by quick adaptation by banks to changing demand with a mean of 3.47. The overall mean of 3.67 showed that respondents agree that flexibility in service delivery has improved in commercial banks in Kenya.

4.4 Lean Management Practices and Operational Performance

Each lean management practice was analyzed against operational performance. The mean of each bank was tabulated. This is shown in the table 4.12.

Table 4.12: Mean of each commercial bank

Commercial Banks	X_1	X_2	X_3	Y_1	Y_2	Y_3	Y_4	Y
1	5.00	4.50	5.00	5.00	5.00	5.00	4.33	4.83
2	3.25	2.75	3.20	3.25	2.67	2.80	3.00	2.93
3	3.50	4.25	4.00	3.00	4.00	4.40	4.33	3.93
4	4.00	4.75	4.80	3.50	4.67	4.20	4.00	4.09
5	4.50	3.75	4.80	3.75	3.33	3.40	3.33	3.45
6	3.75	3.00	3.20	4.00	3.33	3.60	3.33	3.57
7	4.00	4.75	3.00	3.25	2.67	3.00	3.00	2.98
8	3.00	2.75	2.40	2.75	2.00	3.40	2.33	2.62
9	4.25	4.25	4.00	3.50	4.67	4.20	3.67	4.01
10	4.25	4.00	4.20	3.75	4.33	4.20	3.67	3.99
11	3.00	4.25	3.20	3.25	3.33	4.40	4.33	3.83
12	3.25	3.50	3.40	3.50	2.67	3.80	3.67	3.41
13	3.00	2.75	2.60	3.00	3.33	3.40	3.67	3.35
14	3.75	3.00	3.00	3.50	4.00	4.00	5.00	4.13
15	3.75	3.50	3.20	3.00	3.67	2.80	2.33	2.95
16	4.00	3.75	4.00	4.25	4.00	4.00	3.67	3.98
17	5.00	3.75	4.80	4.00	3.33	4.00	4.00	3.83
18	3.75	3.25	3.60	3.50	4.00	3.60	3.67	3.69
19	3.25	3.75	3.00	3.25	3.67	3.40	3.33	3.41
20	3.00	3.50	3.60	2.50	3.33	3.40	4.00	3.31
21	4.50	4.00	5.00	3.75	3.67	4.00	4.00	3.85
22	4.00	3.75	4.20	3.00	3.00	4.00	4.00	3.50
23	3.50	4.00	3.60	2.25	2.67	3.20	3.33	2.86
24	4.00	3.25	3.20	4.25	4.67	4.40	4.00	4.33
25	3.00	3.50	3.60	2.50	3.33	3.40	4.00	3.31
26	4.00	4.50	4.60	4.75	4.67	4.40	3.67	4.37
27	4.75	4.75	4.80	4.75	4.33	4.60	3.67	4.34
28	3.75	3.25	3.60	3.50	4.00	3.60	3.67	3.69
29	4.00	3.75	3.60	3.50	3.67	3.80	3.67	3.66
30	3.00	3.75	3.20	3.25	3.33	3.40	3.33	3.33

Source: Research Data (2018)

Key: X_1=Value stream mapping, X_2=Total quality management, X_3=Lean Leadership, Y_1=Cost, Y_2=Speed, Y_3=Quality, Y_4=Flexibility, Y=Operational Performance

4.4.1 Diagnostic Tests

Before subjecting the data to regression analysis, it is usually important to subject it to diagnostic tests to confirm that the data does not violate key assumptions of regression analysis. This was done and the results were discussed in the following sub sections.

4.4.1.1 Test for Normality

Table 4.13 shows the Shapiro-Wilk's Test and the Kolmogorov-Smirnov tests that were conducted on the independent variables. Since the sample size is less than 2000, the Shapiro-Wilk was used. Based on the output, the residuals for all the 5 models are normally distributed since p values were more than the level of significance 0.05.

Table 4.13: Test for Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Lean Management Practices and Cost	.101	30	.200*	.976	30	.707
Lean Management Practices and Speed	.160	30	.048	.941	30	.096
Lean Management Practices and Quality	.129	30	.200*	.961	30	.336
Lean Management Practices and Flexibility	.130	30	.200*	.937	30	.075
Lean Management Practices and Operational Performance	.137	30	.160	.965	30	.424

Source: Researcher (2018)

4.4.1.2 Test for Multicollinearity

Variance inflation factor (VIF) is one of the means of establishing multicollinearity. It provides an assessment of the extent the variance of an estimated regression coefficient will increase if the predictors in a model are correlated. Table 4.14 shows the VIF for each variable.

Table 4.14: Collinearity Statistics

Variables	Cost VIF	Speed VIF	Quality VIF	Flexibility VIF	Operational Performance VIF
Value Stream Mapping	2.586	2.586	2.586	2.586	2.586
Total Quality Management	1.674	1.674	1.674	1.674	1.674
Lean Leadership	3.301	3.301	3.301	3.301	3.301

Source: Researcher (2018)

From the table 4.14, it can be observed that all the VIFs in each of the five models are less than 10. This implies that multicollinearity is not likely to be a problem in any of the models.

4.4.1.3 Test for Autocorrelation

To check for autocorrelation, a Durbin Watson test was conducted and the results are as follows.

Table 4.15: Autocorrelation Test

Model	**Durbin-Watson**	**d_l**	**d_u**	**Conclusion**
Lean management practices and Cost	2.011	1.006	1.421	No Autocorrelation
Lean management practices and Speed	2.001	1.006	1.421	No Autocorrelation
Lean management practices and Quality	2.534	1.006	1.421	No Autocorrelation
Lean management practices and Flexibility	2.395	1.006	1.421	No Autocorrelation
Lean management practices and Operational Performance	2.339	1.006	1.421	No Autocorrelation

Source: Research Data (2018)

From table 4.15, Durbin Watson test statistic for all the models (2.011, 2.001, 2.534, 2.395 and 2.339) is greater than $d_u = 1.421$. This implies that autocorrelation is absent in all the models.

4.4.1.4 Test for Heteroscedasticity

Based on the macro syntax by Gwilym Pryce on Breusch-Pagan and Koenker that was done, the output revealed outcomes as depicted in table 4.16.

Table 4.16: Test for Heteroscedasticity

Model	Koenker Test Statistic	P Value	Conclusion
LMP and cost	3.208	0.361	Heteroscedasticity absent
LMP and speed	7.316	0.062	Heteroscedasticity absent
LMP and quality	7.470	0.058	Heteroscedasticity absent
LMP and flexibility	5.795	0.122	Heteroscedasticity absent
LMP and Operational Performance	7.331	.062	Heteroscedasticity absent

Source: Research Data (2018)

Since the p-value for all the models (0.361, 0.062, 0.058, 0.122, and 0.062) were larger than the 0.05 significance level, the null hypothesis (Data is homoscedastic) is accepted implying all 5 models are homoscedastic. The above tests confirm that the model was reliable and could be used for prediction purposes.

4.4.2 Lean Management Practices and Operational Cost

Operational cost was regressed on lean management practices and the results are as shown in tables 4.17.

Table 4. 17: Regression Analysis Results for Lean Management Practices and Operational Cost

Table 4. 17(a): Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.721[a]	.520	.464	.48295	2.011

Source: Research Data (2018)

Table 4.17 (b): ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	6.561	3	2.187	9.376	.000[b]
Residual	6.064	26	.233		
Total	12.625	29			

Source: Research Data (2018)

Table 4.17 (c): Coefficients for the Model for Operational Cost

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.490	.681		.719	.479
Value Stream Mapping	.827	.241	.750	3.432	.002
Total Quality Management	.001	.196	.001	.003	.998
Lean Leadership	-.034	.221	-.038	-.155	.878

Source: Research Data (2018)

From the table 4.17(a), coefficient of correlation (R) is 0.721 ($t=5.507$, $p<0.05$). This coefficient is significant at 0.05 implying that the relationship between lean management practices and operational cost is significant. The table also showed that coefficient of determination, R^2 is 0.52 implying 52% of the variation in operational cost is explained by the variation in lean management practices. It was also inferred from table 4.17 (b) that the model relating lean management practices and operational cost is significant ($F=9.376$, $p=0.000$) since the p value is less than 0.05.

From the table 4.17(c), the model will appear as follows:

$$Y=0.490+0.827X_1+0.001X_2-0.34X_3$$

Where Y=operational cost, X_1 represents value stream mapping practices, X_2 represents total quality management and X_3 lean leadership practices. The coefficients imply that a one-unit increase in the extent of adoption of value stream mapping and TQM will increase the operational cost by 0.827 and 0.001 units respectively. In addition, a one-unit increase in extent of adoption of lean leadership will decrease the operational cost by 0.34 units.

4.4.3 Lean Management Practices and Operational Speed

Operational speed was regressed on lean management practices and the results are as shown in table 4.18.

Table 4.18: Model Regression Analysis Results for Lean Management Practices and Operational Speed

Table 4.18 (a) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.571[a]	.327	.249	.62988	2.001

Source: Research Data (2018)

Table 4.18 (b): ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.003	3	1.668	4.203	.015[b]
Residual	10.315	26	.397		
Total	15.319	29			

Source: Research Data (2018)

Table 4.18 (c): Coefficients for the Model for speed

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.812	.889		.913	.370
Value Stream Mapping	.359	.314	.295	1.141	.264
Total Quality Management	.211	.255	.172	.825	.417
Lean Leadership	.183	.288	.185	.634	.532

Source: Research Data (2018)

From the table 4.18(a), it is observed that the coefficient of correlation (R) is 0.571 ($t=3.683$, $p<0.05$). This coefficient is significant at 0.05 level of significance implying that the relationship between lean management practices and operational speed is significant. The table also shows that the coefficient of determination, R^2 is 0.327 implying that 32% of the variation in operational speed is explained by the variation in lean management

practices. It can also from table 4.18(b) be inferred that the model relating to lean management practices and operational speed is significant (F=4.203, p=0.015). This is because the p value is less than 0.05.

From the table 4.18(c), the model will appear as follows:

$Y=0.812+0.359X_1+0.211X_2+0.183X_3$

The model shows all the three variables are positively related to operational cost as shown by the coefficients values. This means that if adoption of value stream mapping, TQM and lean leadership is increased by one-unit each, operational speed will consequently increase by 0.359 units, 0.211 and 0.183 units respectively.

4.4.4 Lean Management Practices and Operational Quality

Operational quality was regressed on lean management practices and the results are as shown in table 4.19

Table 4.19: Model Regression analysis results for Lean Management Practices and Operational Quality

Table 4.19 (a): Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.616[a]	.379	.308	.44883	2.534

Source: Research Data (2018)

Table 4.19 (b): ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3.201	3	1.067	5.297	.006[b]
Residual	5.238	26	.201		
Total	8.439	29			

Source: Research Data (2018)

Table 4.19 (c): Coefficients for the Model for Quality

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.588	.633		2.508	.019
Value Stream Mapping	.159	.224	.177	.711	.484
Total Quality Management	.216	.182	.237	1.185	.247
Lean Leadership	.212	.205	.290	1.033	.311

Source: Research Data (2018)

The coefficient of correlation is (R) is 0.616 (t=4.1363, p<0.05) as shown in table 4.19(a). The relationship between lean management practices and operational quality is significant as inferred by the level of significance 0.05. In addition, the coefficient of determination, R^2 is 0.379 implying that 37% of the variation in operational quality is explained by the variation in lean management practices. It can also be deduced from table 4.19 (b) that the model relating to lean management practices and operational speed is significant (F=5.297, p=0.006). This is because of a p value of less than 0.05.

From the table 4.19(c), the model will appear as follows:

$Y=1.588+0.159X_1+0.216X_2+0.212X_3$

Based on the model, when no practice is adopted, the value of quality is 1.588. When adoption of value stream mapping increases by one-unit, operational quality increases by 0.159 units. When TQM and lean leadership also increase by one unit each, operational quality increases by 0.216 and 0.212 units respectively.

4.4.5 Lean Management Practices and Operational Flexibility

Operational flexibility was regressed on lean management practices and the results are as shown in table 4.20.

Table 4.40: Model Regression Analysis Results for Lean Management Practices and Operational Flexibility

Table 4.20(a): Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.388[a]	.150	.052	.53893	2.395

Source: Research Data (2018)

Table 4.20 (b): ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.337	3	.446	1.535	.229[b]
Residual	7.552	26	.290		
Total	8.889	29			

Source: Research Data (2018)

Table 4.20 (c): Coefficients for the Model for Flexibility

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.946	.760		3.874	.001
Value Stream Mapping	-.189	.269	-.204	-.701	.489
Total Quality Management	-.024	.219	-.026	-.110	.913
Lean Leadership	.407	.247	.542	1.650	.111

Source: Research Data (2018)

The coefficient of correlation is (R) is 0.388 ($t=2.2269$, $p<0.05$) as shown in table 4.20(a). The relationship between lean management practices and operational flexibility is insignificant as inferred from the level of significance 0.05. Additionally, the coefficient of determination, R^2 is 0.152 implying that only 15% of the variation in operational flexibility is explained by the variation in lean management practices. It can also be concluded from table 4.20(b) that the model relating to lean management practices and operational flexibility is insignificant ($F=1.535$, $p=0.229$). This is because the p value is more than 0.05. Therefore, there is no relationship between VSM, TQM, lean leadership and operational flexibility.

From the table 4.20(c), the model will appear as follows:

$Y=2.946-0.189X_1-0.24X_2+0.407X_3$

Based on the model, increase in adoption of value stream mapping by one-unit results to a decrease in operational flexibility by 0.189 units, increase in adoption of TQM by one unit also results to a decrease of 0.24 units. However, increase in lean leadership adoption by one-unit results to increase in operational flexibility by 0.407 units.

4.4.6 Lean Management Practices and Overall Operational Performance

Regression analysis was conducted for the lean management practices and overall operational performance and the results were tabulated as shown in the table 4.21.

Table 4.51: Model Summary Regression Results of Lean Management Practices and Overall Operational Performance

Table 4.21 (a): Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.657[a]	.432	.366	.40659	2.339

Source: Research Data (2018)

Table 4.21 (b): ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3.266	3	1.089	6.585	.002[b]
Residual	4.298	26	.165		
Total	7.564	29			

Source: Research Data (2018)

Table 4.21(c): Coefficients for the Model for Overall Operational Performance

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.459	.574		2.543	.017
Value Stream Mapping	.289	.203	.339	1.425	.166
Total Quality Management	.101	.165	.117	.611	.547
Lean Leadership	.192	.186	.277	1.031	.312

Source: Research Data (2018)

The table 4.21(a) shows that the coefficient of correlation (R) is 0.657 (t=4.6129, p<0.05). This coefficient is significant at 0.05 significance level implying that the relationship between lean management practices and overall operational performance significant. The table also shows that the coefficient of determination, R^2 is 0.432 implying that 43% of the variation in overall operational performance is explained by the variation in lean management practices. It can also from table 4.21(b) be inferred that the model relating to lean management practices and operational performance is significant (F=6.585, p=0.002). This is because the p value is less than 0.05.

From the table 4.21(c), the model appears as follows:

$Y=1.459+0.289X_1+0.101X_2+0.192X_3$

The model shows all the three variables are positively related to operational performance as shown by the coefficients values. This means that increase in adoption of value stream mapping, TQM and lean leadership by one-unit each, consequently increases operational performance by 0.289 units for VSM, 0.101 units for TQM and 0.192 units for lean leadership.

4.5 Challenges of Adoption of Lean Management Practices

The third objective of the study was to establish the challenges faced during adoption of lean management practices. To achieve this objective, the respondents were required to indicate on a Likert scale the extent to which they faced the challenges. The results are as presented in the table 4.22.

Table 4.22: Challenges of Adoption of Lean Management Practices

	Mean	Std. Deviation	Rank
Complexity of services make it difficult to agree on standardized way of working among employees	2.87	.776	2
Difficulty in determining quality required due to nature of services	2.67	.844	3
Complexity in monitoring implementation progress at the various branches	2.53	.900	4
Cultural diversity making it difficult to achieve a unified organizational culture	2.47	.937	6
Resistance to change by employees	2.50	1.009	5
Poor technological infrastructure to implement new tools	2.30	1.119	7
Regulatory controls to ensure compliance making it difficult to remove some non-value adding activities	2.97	1.159	1

Source: Research Data (2018)

The most experienced challenge banks faced during implementation of lean management practices is regulatory controls to ensure compliance that made it difficult to remove some non-value adding activities with a mean of 2.97. The second most experienced is complexity of services that made it difficult for employees to agree on standardized ways of working with a mean 2.87 followed by difficulty in determining quality required due to nature of services. The least considered indicator is poor technological infrastructure to implement new tools with a mean of 2.30.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter contains summary of the study, conclusion, recommendations and areas for further research. Data analysis, summary and conclusions were made in line with the study objective which investigated the relationship between lean management practices and operational performance of commercial banks in Kenya.

5.2 Summary of Study Findings

Demographic characteristics of the respondents indicated that a good number of the banks have existed for twenty years and above hence had adequate time to deploy lean practices. Staff count is high indicating potential of these banks to adopt these practices. In addition, respondents had a good knowledge of bank operations as they had worked for the banks for a considerable length of time.

5.2.1 Extent of Adoption of lean management practices

The first objective of this study sought to establish the extent of adoption of lean management practices by commercial banks. Results showed that value stream mapping, total quality management and lean leadership have been adopted, however at varying levels. Total quality management and lean leadership were the most adopted lean management practices whereas value steam mapping was only adopted to a moderate extent. Notably, promotion of learning and knowledge sharing, top management involvement in lean implementation and promotion of a culture of continuous improvement by top management were most adopted indicators in lean leadership and total quality management.

This study showed that lean management practices adoption remains key for organizations such as banks. Commercial banks should therefore put a key focus on those that have been moderately implemented such as value stream mapping to increase their adoption and create the combined effect required to improve the overall operational performance.

5.2.2 Lean Management Practices and Operational Performance

The second objective in this study sought to find out lean management practices impact on each operational performance indicator and the overall operational performance. Based on the findings, value stream mapping, TQM and lean leadership impacted operational cost significantly. It was also noted that a considerable change in operational cost could be explained by change in lean management practices. The results also indicated a significant effect of the lean management practices on operational speed where a considerable increase in lean leadership would lead to highest increase in operational speed.

Operational quality had an equally significant relationship with lean management practices where total quality management increase in adoption would have the highest overall impact on operational quality. For operational flexibility, only a small percentage of its variation could be explained by value stream mapping, TQM and lean leadership. This meant no significant relationship between operational flexibility and lean management practices in services.

Generally, a significant relationship exists between overall lean management practices and operational performance of commercial banks. This meant that lean management practices are considered as a basis of operational performance because they enable organization reduce costs, become more competitive and meet customer needs. Hence continuous adoption of all lean management practices is paramount for banks especially those not fully implemented to boost operational performance.

5.2.3 Challenges faced during implementation of Lean Management Practices

The study sought to also find out the challenges that banks face during implementation of lean management practices. Based on the findings, regulatory controls to ensure compliance that made it difficult to remove some non-value adding activities was the most experienced challenge that affected banks to a moderate extent. The second biggest challenge is the fact that complexity of services made it difficult to agree on standardized way of working among employees also affected commercial banks to a moderate extent. The respondents however highlighted that poor technological infrastructure to implement new tools had the least impact on them.

5.3 Conclusions of the study

The underlying objective of lean implementation is to improve operations performance through waste elimination. This study is evidence that lean practices are considered key to improving operational performance in many organizations. Different past studies point out positive relationship between lean and dimensions of operational performance. According to Abdallah and Matsui (2007), there is a positive impact between lean management practices and quality performance. The effect of lean practices on cost performance was widely investigated by researchers and there is an agreement that the effect is positive and significant (Fullerton & McWatters, 2001). This study therefore has shown that certainly adoption of lean management practices specifically value stream mapping, total quality management and lean leadership has a positive impact on operational cost, quality and speed.

In this study, lean management practices had an insignificant impact on operational flexibility. This was mainly attributed to the fact that flexibility revolves around meeting the changing customer tastes and preferences, finding the right balance between demand and supply and quick adaptation which can accurately be achieved through use of technology and automation. Organizations therefore need to find how they can integrate lean management practices and automation to achieve operational flexibility and consequently overall operational performance. In addition, it was noted from other studies that due to the multidimensional nature of flexibility, it was more applicable for manufacturing companies with an aim of achieving for example changeover and volume flexibility when producing goods (Gerwin, 1993). This could be difficult to achieve in services industries due their nature.

In addition, Barney (2001) points out that human resource is fundamental for any organizations and forms the foundation for performance prediction. In this study knowledge is considered an enabler to performance therefore achieving operational performance through lean management practices depends on how well organization invest in employee training, continuous learning and coaching so as to close competence gaps and improve execution. The focus of knowledge based view is to tie together the intangible assets to gain operational performance over competition.

5.4 Recommendations of the study

A holistic approach is recommended during implementation of lean management practices. Hence all the three practices have their individual strengths that when implemented together enable achievement of better results. One or two practices may not result to the preferred operational performance compared to all practices implemented and working in union. Banks have a role in ensuring the right resources are put in place that will support implementation of these practices all together.

Compliance is required in banks and this is enforced through regulations. As such banks are forced to look at ways to be compliant but at the same time improve operational performance. While this is not easy to achieve, this study recommends incorporating automation and design thinking with principles and methodologies drawn from lean more so to bring about operational flexibility. This would entail taking advantage of technology, analytics and building competences of people to take part in coming up with improvement solutions. On the other hand, government and related institutions through partnership with these commercial banks have a role to play in ensuring that regulations and policies formulated support implementation of lean as much as they support compliance and risk management.

5.5 Limitations of the Study

Several limitations impacted this study. First, respondents were unwilling to share information touching on their operational performance. The researcher however guaranteed confidentiality to the respondents concerned. Data from this study was mainly collected from commercial banks in Mombasa which makes the study unrepresentative hence reducing its generalizability to the whole banking sector. Lack of knowledge on the subject made it difficult for some respondents to give proper information. This was mainly contributed by lack of experience in the area of the study. The study targeted operational managers, credit managers or branch managers who were too busy and not readily available to provide the information. This made data collection take a long time and tedious.

5.6 Suggestion for Further Studies

This study concentrated on the extent of adoption without deep diving on how these practices were implemented. This is an area that future studies can look into so as to have

an understanding on how this is done across different banks. Future studies can also look into adoption of lean in other service industries such as logistics and shipping so as to determine whether similar findings prevail. Additionally, a deep dive into the integration between automation and lean practices can be done to understand how these two can be incorporated together to result to operational flexibility in service industries.

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APPENDICES

Appendix I: Introduction letter

UNIVERSITY OF NAIROBI
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES
SCHOOL OF BUSINESS
DEPARTMENT OF MANAGEMENT SCIENCE

Telephone: 4184160/1-5 Ext. 220
Email: commerce@uonbi.ca.ke

P.O. Box 30197
Nairobi, Kenya

24th October, 2018

TO WHOM IT MAY CONCERN

RE: INTRODUCTION LETTER

This is to certify that **MWACHARI GERTRUDE MANGA (REG. NO. D61/83069/2015)** is a bona fide student of the University of Nairobi, pursuing a degree in Masters of Business Administration (MBA).

As part of the fulfillment of the requirement of the course, she is undertaking a study titled "***LEAN MANAGEMENT PRACTICES AND OPERATIONAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA.***"

You have been selected as one of the respondents in the study. The purpose of this letter therefore, is to kindly request you to assist and facilitate in carrying out the study in your organization by answering the questions in the attached questionnaire.

Data and information obtained through this exercise is purely for academic purpose and will be treated with utmost confidentiality. In case of any questions or clarifications, she can be reached on 0710234912 or gmwachari@gmail.com.

Your assistance and cooperation will be highly appreciated. Thank you very much in advance.

Yours Faithfully,

UNIVERSITY OF NAIROBI CO-ORDINATOR 24 OCT 2018 SCHOOL OF BUSINESS MOMBASA CAMPUS

Dr. Stephen Odock,
Coordinator, School of Business, Mombasa Campus

Appendix II: Questionnaire

SECTION A: GENERAL INFORMATION

1. Name of the Bank…….

2. How long has the bank been in operation?

   a) 5 – 10 years [ ] b) 11 – 15 years [ ]

   c) 16 – 20 years [ ] d) Over 20 years [ ]

3. What is the current number of employees in the bank in Kenya?

   a) 100 – 200 [ ] b)201 – 500 [ ]

   b) 501 – 1000 [ ] d) Above 1000 [ ]

4. Years of Service in the bank

   a) Less than 5 years [ ] b) 5 – 10 years [ ]

   c) 11 – 15 years [ ] d) Above 15 years [ ]

SECTION B: LEAN MANAGEMENT PRACTICES

5. To what extent does your organization make use of the following lean management practices?

Lean Management Practices	No Extent (1)	Little Extent (2)	Moderate Extent (3)	Great Extent (4)	Very Great Extent (5)
Value Stream Mapping					
1. Current state processes are documented					
2. Cross functional teams are involved in documenting processes					
3. Customer feedback in an input in process mapping					

Lean Management Practices	No Extent (1)	Little Extent (2)	Moderate Extent (3)	Great Extent (4)	Very Great Extent (5)
4. Non- value adding activities are eliminated in processes					
Total Quality Management					
5. Top management is involved in lean implementation					
6. Top management promotes a culture of continuous improvement					
7. Employees actively participate in achievement of improvement goal					
8. Suppliers are treated as long term partners for the organization					
Lean Leadership					
9. Leaders are role models of lean principles to their employees					
10. Employees objectives are aligned to overall objectives					
11. The organization promotes learning and knowledge sharing					
12. Employees are responsible for generating ideas for improvement					
13. Meetings are structured to ensure follow up on improvement assignments					

Lean Management Practices	No Extent (1)	Little Extent (2)	Moderate Extent (3)	Great Extent (4)	Very Great Extent (5)

SECTION C: OPERATIONAL PERFORMANCE

Using a scale of 1 – 5, where 1= strongly agree; 2=Agree; 3=Neutral; 4=Disagree; 5=strongly Disagree, please indicate the extent to which you agree with the following statements

Operational Performance	Strongly Agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly Disagree (5)
Cost					
1. Service delivery cost has reduced due to automation					
2. Online services have reduced distribution cost					
3. Inventory levels have gone down					
4. Services are performed first time right					
Speed					
5. Customer turnaround time has reduced					
6. New products are launched on time					
7. Employees have adequate knowledge to handle customer queries					

Operational Performance	Strongly Agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly Disagree (5)
Quality 8. Customer complaints have reduced					
9. Equipment are sufficient and visible for customer usage					
10. There are sufficient staff at any given time to provide service					
11. Materials for customer use are up to date					
12. The bank keeps accurate customer records					
Flexibility 13. Services are customized to meet specific customer needs					
14. There are varied modes of service delivery available					
15. The bank can quickly adapt to changing demand					
16. Any other (Please Indicate)					

SECTION D: CHALLENGES FACED DURING IMPLEMENTATION

To what extent did your company experience the below challenges during lean implementation?

Challenges	No Extent (1)	Little Extent (2)	Moderate Extent (3)	Great Extent (4)	Very Great Extent (5)
1.Complexity of services make it difficult to agree on standardized way of working among employees					
2.Difficulty in determining quality required due to nature of services					
3.Complexity in monitoring implementation progress at the various branches					
4. Cultural diversity making it difficult to achieve a unified organizational culture					
5.Resistance to change by employees					
6.Regulatory controls to ensure compliance making it difficult to remove some non-value adding activities					
7.Poor technological infrastructure to implement new tools					
8.Any other (please indicate)					

THANK YOU FOR YOUR TIME AND COOPERATION

Appendix III: List of Commercial Banks in Kenya

1. KCB Bank Limited	22. Guaranty Trust Bank Ltd
2. Equity Bank Kenya	23. Victoria Commercial Bank Ltd
3. Co - operative Bank of Kenya	24. African Banking Corporation Ltd
4. Standard Chartered Bank (K) Ltd	25. Sidian Bank Limited
5. Barclays Bank of Kenya Ltd	26. Habib Bank A.G. Zurich
6. Diamond Trust Bank (K) Ltd	27. Development Bank of Kenya Ltd
7. Stanbic Bank Kenya Limited	28. Guardian Bank Ltd
8. Commercial Bank of Africa Ltd	29. First Community Bank Ltd
9. NIC Bank Kenya PLC	30. Credit Bank Ltd small
10. I & M Bank Ltd	31. Consolidated Bank of Kenya Ltd
11. National Bank of Kenya Ltd	32. Jamii Bora Bank Ltd
12. Chase Bank Kenya Ltd	33. Spire Bank Limited
13. Citibank N.A. Kenya	34. SBM Bank (Kenya) limited
14. Bank of Baroda (K) Ltd	35. M - Oriental Commercial Bank
15. Prime Bank Ltd	36. Transnational Bank Limited
16. Family Bank Ltd	37. Paramount Bank Ltd
17. Housing Finance Corporation Ltd	38. UBA Kenya Bank Ltd
18. Bank of India Kenya	39. Middle East Bank (K) Ltd
19. Bank of Africa (K) Ltd	40. Mayfair Bank Ltd
20. Ecobank Kenya Ltd	41. DIB Bank Kenya Ltd
21. Gulf African Bank Ltd	42. Charterhouse Bank Ltd