**LEAN MANAGEMENT AND FINANCIAL PERFORMANCE IN THE BANKING INDUSTRY IN UGANDA:**

**A CASE STUDY OF ECOBANK UGANDA LIMITED**

**BY**

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# DECLARATION

I, ***Ssenyonjo* F*redrick***hereby declare that this is my original work and has not been presented to any other university or institution of higher learning for any academic award. Secondary sources of information used in this work, have been acknowledged.

Date ……………………………………………………………

Signed …………………………………………………………..

# APPROVAL

This Dissertation has been approved for presentation to the School Research Committee in partial fulfillment of the requirements for the award of the Degree of Master of Business Administration (Accounting and Finance) of Nkumba University with my approval as Nkumba University supervisor.

Date ……………………………………………………………

Signed …………………………………………….……………

**ASSOC. PROF. E.B MUGERWA**

**SUPERVISOR**

# DEDICATION

I dedicate this work to my family whose rightful time I encroached on and who bore my absence from home to be able to come up with this research, and to my Wife and children, who supported and prayed for me.

# ACKNOWLEDGEMENT

A study of this kind could not have been successful without the help of God. I therefore, wish to express my sincere gratitude to the Most High God without whom we would not have been what we are today.

Like any field of endeavor and all walks of life, one’s success depends immensely on contributions of well-meaning individuals and for that matter a team. It is because of this that I like to express my sincere gratitude to my wife, and my children, and my friends, Mr. Joseph Oketch and Wife (Mrs sarah Kajumba Ssenyonjo),Mr.Ssemakula and Wife

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# LIST OF ACRONYMS

ATM Automated Teller Machine

CEO Chief Executive Officer

CVI Content Validity Index

IT Information Technology

NVA Non-Value Added

SPSS Statistical Package for Social Scientists

TOC Theory of Constraints

TPS Toyota Production System

# DEFINITIONS OF OPERATIONAL TERMS

**Lean:** In this study, this refers to the process of identifying the least wasteful way to provide value to customers.

**Elimination of waste:** in this study, this refers to any activity that does not add value to the product or process

**Process Improvement:** this refers to the proactive task of identifying, analyzing and improving upon existing processes within an organization for optimization and to meet new standards of quality.

**Lead Time:** this means the time that elapses between the placement of an order and the receipt of the order.

**Profitability:** this means the rate at which the organization income exceeds its expenses in the process of rendering its services

**Lean Management**; in this study, this means the process of seeking to eliminate waste, specify value, line up value-creating actions in the best sequence, conduct those activities without interruption whenever someone requests them and perform them more effectively

# ABSTRACT

The purpose of the study was to examine the relationship between lean management and financial performance of commercial banks in Uganda, a case study of Eco-bank Uganda. The study was guided by three specific objectives, that is: to examine how lean management eliminate waste in Eco bank Uganda; to assess how lean management leads to process improvement in Eco Bank Uganda and to examine how lean management improves on lead time in Eco bank Uganda. A case study research design was used. The study predominantly employed a quantitative approach but also used a qualitative approach. The study population consisted of 106 participants. A sample size of 87 respondents was selected using simple and purposive sampling techniques. Quantitative data analysis mainly consisted of descriptive statistics (percentages and frequencies) and inferential statistics (Pearson correlation and regression). Content analysis was used to analyze qualitative data. Findings revealed that lean management had improved on the elimination of wastes at Ecobank (r=0.486<P=.000). On second objective, it was revealed that lean management had led to process improvement at Eco Bank Uganda (r=0.572<P=.000). However, lastly, lean management had not adequately improved on lead-time (r= -0.163<P=.000). It was concluded that lean management especially with elimination of waste, process improvement had improved significantly and positively on performance of Eco bank Uganda, and this is not the case with lead-time. It was thus recommended that there is a need to ensure that employees of the bank are well multi-skilled and this can be done through putting in place periodical training and empowerment that can enable them to meet the lean management objectives in the bank.

# CHAPTER ONE:

# INTRODUCTION

# Background to the Study

This study examines lean management and financial performance in the banking industry in Uganda. It is based on a case study of Eco bank Uganda

Lean Management has been defined as seeking to eliminate waste, specify value, line up value-creating actions in the best sequence, conduct those activities without interruption whenever someone requests them and perform them more effectively (Womack and Jones, 2013). The thought processes within lean are identifying waste from the customer's perspective and then determining how to eliminate it.

Eco bank Uganda has been selected for this study because it is the first commercial bank in Uganda to introduce lean management technology in March 2012 in a bid to eliminate waste and derive value for customer’s money as well as improve financial performance, (Eco bank News Letter, March 2012; Eco bank Annual Report, 2013). The lean project was implemented for a period of three months and thereafter recommendations based on findings on various wastes identified were submitted to management in June 2012. However lean is a continuous process and it is therefore essential for lean to become part of the financial culture for sustainability and improved performance.

The underlying reason for undertaking this study using Eco bank Uganda officials (Bank officers and supervisory staff) and corporate customers is to assess whether the bank financial performance can improve with the introduction of lean management. Specifically, Eco bank Uganda introduced lean management to try eliminating time wasted and material at every stage of the operating process and increase their bottom line. In this case, the bank wanted to reduce on cycle time while increasing on multi-skilled employees (Eco bank Strategic Plan, 2014). Secondly, it introduced lean management with an aim of trying to create a lean process that eliminates waste because it was affecting its profits and customer satisfaction.

They particularly want to reduce on operating expenses as well as manage inventories. Thirdly, Eco bank aimed at ensuring that the process of doing business is improved by reducing on errors made and standardizing of work, improving its daily practices and ensure that they are well tracked and tools needed to establish and maintain a persistent, intensive focus on processes are upheld (Eco bank Strategic Plan, 2014).

(Eco bank Strategic Plan, 2014) highlighted the rationale for lean management towards improving financial as follows:

1. To eliminate wastes in the bank
2. To improve the process of doing business
3. To improve bank efficiency through improved profitability, liquidity and loan recovery
4. To achieve customer satisfaction and retention
5. To improve on lead time

This study focuses on the followings of the above.

1. Elimination of waste,
2. Process improvement
3. Lead time

#

# 1.2 Statement of the Problem

The main objective of introducing lean management in Eco bank included, eliminating waste, reducing the need for managing large inventories, and providing optimum quality at the least cost by making quality control decisions on immediate part of the manufacturing process (Holweg 2007; Shah & Ward, 2007). It was from this basis that Ecobank Uganda adopted lean thinking. This was first implemented in Ecobank Kenya in June 2011 and later rolled out in Ecobank Uganda in March 2012 (Ecobank Annual Report, 2013; Ecobank News Letter, 2017). This was intended to eliminate waste through improving loan recovery, reduce on level of non-performing loans, profitability and bank liquidity and create accountability.

Inspite of the above, the financial performance of Eco bank has remained inadequate. This has been attributed to a number of challenges associated with failure to recover loans/increasing non-performing loans,increasing dues related parties and bank balances-amounts due from other banks which are also consistently rising /increasing. Further, the banks still have a challenge of achieving their profitability targets, total elimination of wastes and delayed work processes. For instance, according to Eco Bank Annual Report (2016) and financial statement (2017), out of total loan portfolio in the year 2016 of UGX.33billion, about 4.6% were non-performing. This increased to 5.9% in 2017. On top of that, the dues to related parties and bank balances-amounts due from other banks are also consistently rising for the last five years, whereby, in 2016, they rose up to 6%, and 7.2% in 2017 (Eco Bank Annual Report, 2017/18). This poor loan and financial quality exposes Eco-bank to high levels of credit risk. The bank has also exhibited a number of liquidity problems especially when it limited its customers to specific amount of money to borrow in 2017(Eco bank Annual Report, 2017). Thus, if these issues are not checked, they can result in continued loss of organizations capital base, which may lead to the bank's collapse. Many scholars have showed concern that inadequate lean management causes inadequate financial performance in the banking industry.

#

**1.3 Purpose of the study**

The study examines lean management and financial performance of the banking industry in Uganda basing on Eco bank Uganda as a case study.

# 1.4 Objectives of the study

The following were the objectives of the study

1. To examine how lean management eliminate waste in Eco bank Uganda.
2. To assess how lean management leads to process improvement in Eco Bank Uganda
3. To examine how lean management improves on lead-time in Eco bank Uganda.

# 1.5 Research Questions

The following research questions guided this study;

1. How does lean management Enhances elimination of wastes in Eco bank Uganda?
2. How does lean management leads to process improvement in Eco bank Uganda?
3. How does lean management improve on lead-time in Eco bank Uganda Limited?

# 1.6 Hypotheses

The following hypotheses guided this study;

H0**:** There is no significant relationship between lean management and financial performance at Eco bank Uganda

H1**:** There is significant relationship between lean management and financial performance at Eco bank Uganda

# 1.7 Significance of the Study

The study findings may be of significance to different stakeholders and groups of individuals in the banking sector as follows;

**Bank of Uganda**

The findings may inform the bank of Uganda, the extent to which lean management can improve the financial performance of commercial banks in regards to elimination of wastes, process improvement and increasing profitability. This may therefore inform Bank of Uganda managers, the role of enforcing lean management policy as a way of safeguarding the failure of commercial banks in Uganda and meet the needs of customers.

**Government**

This study may benefit the government of Uganda by exploring how elimination of wastes, improving the process of doing work in the bank and profitability improvement can safeguard the functioning of commercial banks in Uganda. This can enable the government to make a lean management as a banking regulatory guideline that can revamp the economic growth of the country.

**Management**

The findings of the study may assist the management of banks in general to evaluate the implementation of lean thinking in their banks. More emphasis needs to be vested in ensuring that wastes are eliminated if the performance of commercial banks is to improve. This helps in setting strategies to counter losses that may accrue due to wastes incurred. Further, managers need to always ensure that improvements are made in the process of doing work and this can ultimately lead to improved financial performance. Importantly, such improvements help in improving the working policies, profitability and definitely improving financial performance.

**Bank employees**

The bank employees should appreciate the findings of the study and understand that a banker who adheres to the required process of limiting wastes, adhering to process or work improvements and lead time, their performance will improved and ultimately the financial performance of their banking organization. The denouncing of these lean management pillars can equally lead to poor financial performance.

**Governing board**

The governing board of Eco bank Uganda will use the information to develop policies in regard to lean management and its associated influence on financial performance. By understanding that elimination of wastes, recess improvement and lead-time can affect the financial performance of a commercial bank; this can champion the development of banking policies that can be used in enriching the financial performance of Eco bank.

**Public**

The study may benefit the public in understanding areas that may cause their banks to leave business. They should know that elimination of wastes; process improvement and lead-time are the sources of improvement in financial performance of a commercial bank or institution. These should be applied even in other life settings.

**Future researchers**

The findings maybe appropriate in future research by providing baseline information relating to lean management thinking. Importantly, the study generated some pertinent literature for future researchers.

**1.8 The Setting of the study**

The study was conducted in Eco bank Uganda headquarters in Kampala, Kampala central region in Uganda. This case study was chosen because it is accessible to the researcher and ties in very well with the operationalization of the research problem under study. Eco bank (Uganda) is a member of Eco bank Transnational, the leading independent pan-African bank, headquartered in Lomé, Togo with affiliates in West Africa, Central Africa, East Africa and Southern Africa. Eco bank, which was established in 1985, has grown to a network of over 600 branches, employing over 10,000 people, with offices in 33 countries including Uganda. It commenced business in January 2009 in Uganda with 14 branches currently. Its main branch is found on Plot 4, Parliamentary Avenue, Kampala central division (Eco bank, 2015).

Lean management was introduced in Eco bank Uganda in March 2012 in a bid to eliminate waste and derive value for customer’s money as well as improve organizational performance, (Eco bank News Letter, March 2012; Eco bank Annual Report, 2013). The lean project was implemented for a period of three months and thereafter recommendations based on findings on various wastes identified where submitted to management in June 2012. The main objective of introducing lean management in Eco bank included, eliminating waste, reducing the need for managing large inventories, and providing optimum quality at the least cost by making quality control decisions an immediate part of the manufacturing process. It was from this basis that Eco bank Uganda adopted lean thinking. This was first implemented in Eco bank Kenyain June 2011 and later rolled out in Eco bank Uganda in March 2012(Eco bank Annual Report, 2013; Eco bank News Letter, 2017). This was intended to eliminate waste through improving loan recovery, reduce on level of non-performing loans, profitability and bank liquidity and create accountability.

However, lean management is a continuous process and it is therefore essential for Lean to become part of the Organizational culture for sustainability and improved performance (Eco bank strategic plan, 2014) Lean management systems consist of daily practices and tools needed to establish and maintain a persistent, intensive focus on processes. This process sustains and extends lean implementations. Practices of Lean management produce process that go through visual controls which provide physical evidence of leader’s discipline; they are designed to capture process performance data, including information on misses, defects, interruptions, system failures and abnormalities which produces accountability and hence process improvement which translates into improved performance. Eco bank Uganda has implemented visual boards with branch staff as key performance indicators (KPIs) tracked on a daily basis, however these KPIs are not tracked on a daily basis due to lack of management commitment to enforce the initiative (Eco bank strategic plan, 2014).The study will focus on the period 2012-2018because this is the period when lean management has been operational in Eco bank (Eco bank Annual Report and Financial Statement, 2013)

# 1.9 Arrangement of the study

The study is arranged under nine chapters as shown below: Chapter one presents the introduction to study and background to the study. Chapter two presents the study literature. It highlights literature survey, literature review and the conceptual framework. Chapter three presents the methodology. It highlights Research Design and Data collection .Chapter four presents the demographic characteristics of the Respondents,

chapter five presents the findings on how lean management eliminates waste in Eco bank Uganda (objective one), chapter six presents findings on how lean management leads to process improvement in Eco bank Uganda, (objective two), while chapter seven presents findings on how lean management improves on lead time in Eco bank Uganda(objective three). Chapter eight links the findings the findings to literature review and suggests the way forward. Chapter Nine presents the summary and conclusions

# CHAPTER TWO

#  STUDY LITERATURE

# 2.1 Introduction

This chapter presents the literature survey, literature review and the conceptual framework. The literature was reviewed from articles, journals, theses and dissertation.

# 2.2 Literature Survey

In annual assessment done in Eco bank in line with the contribution of lean management/thinking towards profitability of Eco bank, it was established that by standardizing work processes and introduction of knowledge sharing platforms, new ideas have been generated and shared. This stimulated the level at which loans are recovered from clients (Musoke, 2014). This was not the case before the introduction of lean management. He added that it has become easy for Eco bank to deal with a number of loan applicants due to innovations regarding loan recovery since lean management have been put in place in terms of modernized loan management systems, technological integration and management. In this case, therefore, Musoke (2014) believes that lean management can have a major contribution in increasing the profitability of an organization.

Galabuzi and Kamoga (2015) asserted that the performance of Eco bank for the last five years has been highly steered by the adoption of lean management. In one survey they conducted at Eco bank, they found out that there has been much improvement in management of inventories since the lead-time it requires to obtain inventories in the bank has been highly reducing. They added that the bank has been enrolling a number of technological inputs especially in management of client’s money, labor management, and other resources. This has been very much vital in easing the overall process of bank roles. These thus concluded that financial performance of Eco bank is commensurate to lean thinking. According to Galabuzi and Kamoga (2015), it becomes essential for this study to make an assessment and establish the truth this kind of survey.

Mwesigwa (2013) also assessed the effect of lean management thinking as used in construction industry on financial performance of commercial banks in Uganda. He considered Eco bank and realized that lean management thinking does not necessarily improve the financial performance of a commercial bank if enough training is not done among employees.

He stressed that majority of employees, customers in Eco bank have limited knowledge on how lean management works, and this has been affecting the implementation of the thinking. This subsequently affects the performance of commercial banks in Uganda. However, Mwesigwa (2013) did not downplay the role of lean management in improving the financial performance of commercial banks including Eco bank.

# 2.3 Literature review

The concept of lean management is not unique to Eco bank .it has received wide application in banks and has been a subject of study by various scholars. Here under is revised the worth of scholars on lean management with view off deriving a conceptual framework of analysis for this study

Ohno and Bodek (1988) argue that learn management in organisation is remembered to have started in early 15th century with Eli Whitney (1765) and King Henry the 3rd (1574). Later, it was reinvented by Henry Ford of Ford Motors and Toyota. In the years of reconstruction following the Second World War, Japanese industry (in general) and Toyota (in particular) had a problem, which was about rebuilding a shattered manufacturing base without recourse to either the huge market or the economies of scale available to Western (specifically US) companies. At first glance, the task might have appeared hopeless. The image of the relentlessly efficient production line, with huge and specialized machines producing countless numbers of components for rapid assembly by teams of workers, was ingrained in business thinking. Toyota was nearly bankrupt when Ohno (1912-1990) the inventor of the Toyota Production System and Lean manufacturing, took in hand the task of redesigning production (Ohno and Bodek 1988).

Shah & Ward (2007) thus indicated that it was from this basis that the Lean thinking concept was derived by the Toyota Production System (TPS) In 1948 and 1975. Lean management was hoped for by managers of the time because they wanted to make it easy to identify the least wasteful way to provide value to customers. Value was defined as any action or process that a customer will be willing to pay for. It is the capability provided to a customer at the right time at an appropriate price as defined in each case by the customer (Womack & Jones, 2003). The main goals of Lean management were to eliminate waste, reduce the need for managing large inventories, and provide optimum quality at the least cost by making quality control decisions an immediate part of the manufacturing process (Holweg 2007; Shah & Ward, 2007).The objective was to optimise cost quality and speed of delivery while keeping far less than the needed inventory on site, resulting in many fewer defects. This management idea was ably welcomed and implemented in most organizations in Europe, Asia and United states as early as 19th century. This was done with an intention of improving on performance of organizations by ensuring that profits, and quality of work is enhanced in hospitals, banks, schools and other sectors (Mango and Shapiro, 2001).

Alinaitwe et al., (2006) ascertained that in Uganda, the concept of lean management was adopted under Total Quality Management framework in 1990s. Lean management came in courtesy to facilitate change, increase team involvement and improve quality of services while containing costs. Lean thinking was first adopted mainly by construction companies, manufacturing companies and later telecommunication companies and commercial banks. In construction, the Uganda construction sector was affected by a number of factors (Alinaitwe et al., 2006). It experienced problems in productivity, innovation, slipping schedules, rework, mistakes, disputes, and increased construction costs. These were all symptoms of waste in the construction process. Alinaitwe et al.(2006) found out that workers in Uganda only use about 20 percent of their available time to increase the size of the building. Lean construction was adopted as the cure. These companies prioritized lean developed by Toyota, for many people, regarded as the only path for the building industry. In Uganda, lean production is currently a buzzword in many manufacturing industries (Fellows et al., 2002), and some in the construction sector have tried to adapt it. MTN (U) and Africell are also companies that seem to have adopted the lean thinking in regard to the production of the airtime recharge cards. The rationale behind the adoption of lean thinking was to ensure that environment is protected.

Mayank (2009) highlights different types of constraints to include; behavioral constraints; whereby when behavior is in conflict with reality and results in a negative impact on the global measurements of the organization. Managerial constraints; whereby poor management policies make it impossible to use physical resources fully or to use non-constraint resources properly to create throughput. Capacity constraints; which exists anytime the demand placed on a resource exceeds its available capacity; it includes machines and people and can restrict the recreation of throughput. Market constraints; market controls the product, pricing, lead time, quality and quantity of the goods and services demanded and establishes the necessary conditions for creating throughput. All these constraints once addressed affect financial performance positively.

Waters (2010) identifies elimination of waste as the first principle of Lean. He further states that some waste is obvious and some is not. In Organizations today, it is difficult to identify what waste is and what is not. Some processes might seem wasteful but actually provide value and some might seem valuable yet they do not result into real value. Waste results from any activity that adds costs without adding value such as the unnecessary movement of materials, the accumulation of excess inventory or the use of faulty production methods that create products requiring subsequent reworks (Panchal et al, 2013).

Goldratt (1984) is credited for having introduced the Theory of Constraints (TOC). This theory along with the conceptual framework below guided the study. The core concept of the Theory of Constraints is that every process has a single constraint and that total process throughput can only be improved when the constraint is improved. A very important consequence to this is that spending time optimizing non-constraints will not provide significant benefits; only improvements to the constraint will further the goal (achieving more profit). Thus, TOC seeks to provide precise and sustained focus on improving the current constraint until it no longer limits throughput, at which point the focus moves to the next constraint. The underlying power of TOC flows from its ability to generate a tremendously strong focus towards a single goal (profit) and to removing the principal impediment (the constraint) to achieving more of that goal. In fact, Goldratt considers focus to be the essence of TOC.

Womack and Jones (1996) states that the Theory of Constraints provides a specific methodology for identifying and eliminating constraints, referred to as the Five Focusing Steps which includes; identifying; exploiting; subordinating; elevating and repeating. In identifying, TOC assumes that it is important to identify the current constraint (the single part of the process that limits the rate at which the goal is achieved). In the second assumption of exploiting, the theory assumes that organization should make quick improvements to the throughput of the constraint using existing resources (i.e. make the most of what you have) if performance is to improve (Womack and Jones, 1996). In the third assumption, subordinating, TOC assumes that review of all other activities in the process must be done to ensure that they are aligned with and truly support the needs of the constraint. In elevating, the theory assumes that if the constraint still exists (i.e. it has not moved), consider what further actions can be taken to eliminate it from being the constraint. Normally, actions are continued at this step until the constraint has been “broken” (until it has moved somewhere else). In some cases, capital investment may be required and lastly, in repeating, the theory assumes that the five focusing steps are a continuous improvement cycle. Therefore, once a constraint is resolved the next constraint should immediately be addressed. This step is a reminder to never become complacent– aggressively improve the current constraint…and then immediately move on to the next constraint.

Womack and Jones (1996) extend that the Theory of Constraints (TOC) is a methodology for identifying the most important limiting factor (i.e. constraint) that stands in the way of achieving a goal and then systematically improving that constraint until it is no longer the limiting factor (Womack and Jones, 1996). Since Lean looks at eliminating waste to derive value for customer’s money, this theory will provide us with a methodology for identifying and eliminating the waste, which in this case will be the constraint. The theory therefore guided this study in assessing how lean management affects organizational performance by identifying the constraints that create waste and the methodology to improving these constraints until they are no longer limiting factors.

Juran (1980) in his theory of quality trilogy predisposes that improved performance of organization means that a product must meet customer needs leading to customer satisfaction, and quality also means all the activities in which a business engages in to ensure that the product meets customer needs. Juran (1980) took a holistic approach to quality and his concept of quality revolves around what is called a quality trilogy. He looks at quality as made of three things which an organization can do to realize improved performance. In the first, the organization must invest in quality planning through eliminating wastes. Here, it must identify its customers and their needs and designing the goods and services that meet those needs as well as establishing quality and costs goals. Secondly, it must mind about quality control and this is what this study connived as process improvement. This is the part of quality process where the organization sets the quality standards, which involves identifying the elements of quality and determining how to measure them. Here, the organization makes sure that it clearly defines what quality is for each product and develops a way to effectively compare the products produced against the quality standard. In other words, it is comparing actual performance against the quality goals. Lastly, the organization must find a way of quality improvement or what this study called meeting lead time. According to Juran (1980), quality is a journey, not a destination. The organization must continually monitor production and identify areas in the production process that can improve not only the quality of the product but the quality of the process used to make the product. These are presumed to have a significant effect of the performance of an organization.

Moore (2007) essentially ascertained that lean expands on the idea of working both efficiently and effectively to best use resources while meeting stakeholder expectations. Lean uses additional analysis to reach the optimum balance between effectiveness–providing the service or product that the recipient wants when he or she wants or needs it–and efficiency–providing this service or product with the optimal use of resources, including time, money, and people (Liker, 2004).

George (2003) argues that lean may be a useful approach to process improvement where individuals. Chase information to complete a task (there is an ‘information shortage’); Deal with multiple decision loops; Are interrupted while trying to complete a task; Focus on ‘expediting’ reports, purchases, or similar outcomes; Do work in batches, collecting a certain amount of work before starting the task; Find work is lost between organizational units (Moore, 2007). The goal of Lean is to have a steady, even flow of work in the unit or for the individual while also providing what the recipients want in a timely manner (DeMarco, 2001). To do this it is necessary to: Determine the value of the product or service to the recipient(s), who may be: a customer, the immediate recipient; the stakeholder, a person who has an interest in the product or service; students, parents or others from outside the organization; faculty or staff working within the organization who are ‘downstream’ receiving the product or service of another internal unit, and Identify resource use and activities that do not contribute to the value of the product or service (DeMarco, 2001). The desired outcome of Lean is to standardize and streamline the process so that more time can be spent on more complex or unique services, products, or components. Lean uses many of the traditional Continuous Quality Improvement (CQI) tools found in Innovation Insights, Tools for Organizational Improvement and these have been the factors behind organization performance improvement (Moore, 2007). The study findings were in line with the above literature.

Waters (2010) identified elimination of waste as the first principle of Lean. Waters (2010) further states that some waste is obvious and some isn’t. In Organizations today, it is difficult to identify what waste is and what isn’t. Some processes might seem wasteful but actually provide value and some might seem valuable yet they do not result into real value. Waste results from any activity that adds costs without adding value such as the unnecessary movement of materials, the accumulation of excess inventory or the use of faulty production methods that create products requiring subsequent reworks (Panchal et al, 2013).

Meisel et al., (2007) explains these types of waste further as seen in the diagram below. He also emphasized that Lean thinking allows an organization to improve its value stream by removing all forms and types of waste in order to cut costs and increase profitability. For example creating a faulty ATM card or cheque book, printing it out and finding the errors internally or worse sending it to the customer and then finding out the errors – followed by correcting those errors, then re printing and re sending the document with apologies or some more expensive form of recompense could lead to losses to the bank hence impacting on their profitability.

McBride (2003) states that it important to understand exactly what waste is and where it exists. For each waste, there is a strategy to reduce or eliminate its effect on a company, thereby improving overall performance and quality. The chief Operating Officer of one of the oldest banks in Peru, Banco de Credito del (BCP) discussed with Mckinsey the impact lean management had on the bank and lessons learnt from the lean transformation and revealed how the lean transformation led to more transactional income and increased sales for the bank through renovation of their branches such that customers who walked into the renovated branches would pass through an ATM hall before reaching the tellers which encouraged the customer to use an ATM for simple transactions and staff could focus on sales for business growth hence eliminating the waste of waiting. The lean transformation led to more sales, increased quality, low costs, employee satisfaction as the quality of life improved with staff finishing work at 7:30pm instead of 10 or 11pm. From the literature above, it is quite clear that elimination of wastes as a lean management attribute is associated with improvement in organization performance, however, this influence seems limited to broader perspectives, which leaves a big gap to be fulfilled by this study. Therefore, this study was conducted to fulfill this gap by findings out what was exactly happening in Eco bank Uganda. At the end, the study findings were in line with the above literature.

Coxon et al., (2011) argued that banks have a highly complex environment that makes lean is comprehensive approach to minimizing waste and variability so valuable. By focusing on end-to-end processes rather than on individual activities or functions, lean allows institutions to see that they have many more "factory-like" work streams than they may have realized. They then can adapt lean's traditional approach to each specific operation especially improving the alignment of operating teams, the balancing of capacity and workloads and the transparency of information flows.

Carreira, (2005) argues that companies can eliminate time and material at every stage of the operating process and increase their bottom line. It is essential to create a lean process that eliminates waste because it affects profits and customer satisfaction. Streamlined processes and operational efficiency lead to reduced costs and released capacity, meaning lean banking process improvement contributes significantly to your bottom line. Deely, 2014 argues that financial institutions leveraging lean banking operations report results of 20-30% cost reduction within 12-18 months and maintain cost efficiency ratios below the industry average.

 Burton et al., (2005) identified Variation as a form of waste that is controllable and comes in many “flavors” including part variation, human variation, tool variation, time variation, location variation. Variation is a form of waste that must be eliminated or minimized. Variation in processes reduces predictability and therefore reliability. Every time a sample is taken from a process and mean and standard deviation calculated, we obtain different values due to the different types of variation present in the process. As we understand the key process inputs and outputs statistically, we can begin to assign causes and make changes that reduce or eliminate variation. As variation reduces, process capability improves. Therefore having standard processes eliminates variation and hence improves organizational performance.

Senapati et al., (2012) explain that as soon as manufacturers focused on processes, they found waste associated with changeovers, quality defects, process control, factory layout and machine down time. So they tried to find ways to reduce or eliminate waste. Harrington, 1996 proposes by eliminating the non-value adding activities from the processes and stream lining the information flow, significant optimization results can be realized.

Mckinsey (2011) ascertained that many financial institutions have had success using lean programs to deliver short term improvement goals, but sustaining the change is often more difficult. From the literature above, it is quite clear that process improvement as a lean management attribute is associated with improvement in organization performance, however, this influence seems limited to broader perspectives, which leaves a big gap to be fulfilled by this study. Therefore, this study was conducted to fulfill this gap by finding out what was exactly happening in Eco bank Uganda. At the end, the study findings were in line with the above literature.

Silver et al., (1998) defines lead-time as the time that elapses between the placement of an order and the receipt of the order into inventory. They further assert that lead-time may influence customer service and impact on inventory costs. Rother & Shook (2003) defined Lead-time as the time it takes one piece to move all the way through a process or a value stream, from start to finish. Envision timing a marked part as it moves from beginning to end (Rother, 2003). Another way of defining Lead-time is how long before a sequence of processes will be completed, they must begin.

Cove (2013) argues that lLead time is the total time taken to complete one unit of a product or service. Every business has a lead-time including both manufacturing and service industries like banks and hospitals. A lead-time analysis graphic tool has both value added process steps and Non-value added process steps, which help an organization, eliminate waste in process implementation.

Senapati et al. (2012) found out that in today's competitive business world, companies require small lead times, low costs and high customer service levels to survive. Because of this, companies have become more customers focused. The result is that companies have been putting in significant efforts to reduce their lead times. For instance, to perform in today's global market, short lead times are essential to provide customer satisfaction. As the Japanese example of just-in-time production has shown, consequently reducing lead times may increase productivity and improve the competitive position of the company (Senapati et al, 2012).

Mckinsey (2011) in an attempt to reduce lead-time, businesses and organizations found that in reality 90% of the existing activities are non-essential and could be eliminated. In the banking sector products like cheque books and Auto Teller Machine cards(ATM) are produced for customer use and the shorter the lead time, the better the performance because this means the customers receive their orders in time and start using the items which translates into transactional income for the bank and increase revenues hence improved organizational performance.

Bassett (1992) states that the quickest route to effective inventory control is to prioritize stock in terms of cost, lead-time, frequency or criticality of defects and against any other standard that serves to reduce cost or improve services. The most effective system for managing workflow is to put 80% of time, effort and cost into in controlling the highest priority 20% of inventory.

In conclusion, when all dimensions of Lean management work in conjunction with each other that is, waste is identified and eliminated, processes improved and standardized and lead times shortened, the effect on performance will be greater than when used in isolation. In other words, organizations attempting to introduce Lean management experience a more dramatic change in performance.

From the literature above, it is quite clear that lead-time as a lean management attribute is associated with improvement in organization performance, however, this influence seems limited to broader perspectives, which leaves a big gap to be fulfilled by this study. Therefore, this study was conducted to fulfill this gap by findings out what was exactly happening in Eco bank Uganda. At the end, the study findings were in line with the above literature.

#

# 2.4 Conceptual framework

# Figure 2.1: THE CONCEPTUAL FRAMEWORK

**INDEPENDENT VARIABLE (IV) DEPENDENT VARIABLE (DV)**

**Financial Performance**

* Profitability
* Liquidity
* Non-performing loans
* Loan recovery
* Customer Satisfaction

**Lean Management**

* Elimination of wastes in the bank
* Process improvement in Eco bank
* Lead time management in the bank

**Intervening Variables**

* Electronic banking
* Bank Governance
* Banking regulations
* Foreign competition
* Employee competence

***Source:*** *Adapted fromMugoya, M.A., (1997).Uganda Commercial Bank non- performing loans: The role of the lending process, Makerere University, Faculty of Commerce, Kampala.Pg45 and modified by the researcher.*

From the conceptual framework above, it is hypothesized that lean management has a relationship with financial performance. If the financial institution considers eliminating waste, improving processes and lead-time, this can influence their financial performance in terms of improving its profitability, reducing the level of non-performing loans, bank's liquidity and loan recovery. This resonates exactly with what Mugoya (1997) found out that elimination of wastes in organization is an essential step to ensure that organization’s profits, liquidity, and accountability improves. Therefore, this study will endeavor to combine the three dimensions for instance, eliminating wastes, improving processes and lead-time to assess whether they have an influence on the financial performance of Eco bank, Uganda.

**CHAPTER THREE:**

# RESEARCH METHODOLOGY

# 3.1 Introduction

This chapter presents the methodology that was used during the study. It highlights Research Design and Data Collection and management

The research Design includes Research Approach, Research strategy, Research duration, Research classification and study limitation. Data collection and management includes study population, sampling method, sampling Technique and Data collection instrument/Tools. Data Collection Procedure and Ethical consideration

# 3.2 Research design

This study adopted a case study research design (Saris and Revilla, 2015). A case study research design was used because it provided a good representation of other organizations, which were doing the same work like commercial banking (Sekaran, 2003). Theoretically, any 2 quantitative variables can be correlated (Amin, 2005). The case study research design will adopt both a mixed method approach for selecting respondents, collecting data, analysis and quality control. Both quantitative and qualitative approaches were used because they complemented each other.

# 3.3 Research Approach

A phenomenological research approach was followed which focuses on understanding why something is happening rather than describing why it is happening.

# 3.4 Research Strategy

The study employed the case study Strategy because it allows the collection of large amount of data from a sizeable population in an economical way. In case study, a single person, program, event process, institution, organization social group or phenomenon is investigated within a specified period using a combination of appropriate data collection devices (Cresswell, 1994).

# 3.5 Research duration

The study considered the period 2013 to 2018. The period of four years was deemed sufficient to assess lean management and financial performance of Eco bank in Kampala district. Data collection and processing took a period of 4months.it is therefore a longitudinal Study, tracing changes and developments of lean management in Eco-bank over long time

# 3.6 Research classification

The research was classified as both qualitative and quantitative. This means that both quantitative and qualitative approaches were used while explaining, describing and exploring happenings in relation to lean management and financial performance of Eco bank

# 3.7 Study Population

The study population consists of 106 participants (Eco bank Human Resource Records, 2018).These consist of 33 Bank officers, 9 supervisory staff and 65 corporate customers. The supervisory staff were chosen because they have the responsibility of overseeing the implementation of lean management to ensure elimination of waste and creating of value in the bank while the Bank officers were chosen because they were aware of what was taking place in the bank and the role of the lean management on the bank performance. The corporate customers would tell much on whether lean management has improved on the process of doing business with Eco-bank.

# 3.8 Simple size

The sample size was determined using the Morgan and Krejcie (1970) as cited in Amin, M.E, 2005. This therefore means that the sample included 87 officials. The sample sizes are depicted in Table 3.1 below.

**Table 3.1: Distribution of the study, Population, Sample Size and Sampling Methods**

|  |  |  |  |
| --- | --- | --- | --- |
| **Category of Population** | **Population Size** | **Sample Size** | **Sampling Techniques**  |
| Supervisory staff | 9 | 7 | Purposive sampling |
| Bank Officers | 33 | 28 | Simple Random sampling |
| Corporate Customers  | 64 | 52 | Simple Random sampling |
| **Total** | **106** | **87** |  |

***Source: Primary data, Eco bank (U) limited.***

**3.9 Sampling techniques**

The study used **probabilistic** and **non-probabilistic** sampling methods. From the existing probabilistic sampling methods, the study used simple random sampling. Simple random sampling were used to select bank officers and corporate customers in the bank. This method was chosen because the category of lower bank officials had a large population size and as such warranted simple random sampling to minimize sampling bias in view of various responses (Mugenda & Mugenda, 2003). From the existing non-probabilistic sampling methods, purposive sampling was employed to select supervisory staff within Eco bank who were targeted due to their perceived knowledge arising out of known experience that they have in regard to Lean management and financial performance. This method was employed following the postulate that if sampling had to be done from smaller groups of key informants, there was need to collect very informative data, and thus the researcher needs to select the sample purposively at one’s own discretion (Sekaran, 2003).

# 3.10 Data Collection Procedure

A supportive letter from the School of Business Administration duly signed by the Dean was obtained, introducing the researcher to the Human Resource Manager at Eco bank. This helped in creating a free environment for the respondents to respond to the questionnaires and participate in the interviews.

**3.11 Data Sources**

Data was obtained from both primary and secondary sources. Primary sources involved collecting data from interviews and questionnaires and secondary sources involved collecting data using documentary review checklists.

**3.12 Data Collection Methods**

Questionnaire survey is a research method consisting of a series of questions and other prompts for gathering information from respondents (Amin, 2005). This was used to collect primary data from lower bank officials, and, it involved use a semi-structured questionnaire. The method of survey using a semi-structured questionnaire is deemed appropriate since part of the questionnaire offers the lower bank officials a choice of picking their answers from a given set of alternatives while the other part of the questionnaire allowed them to qualify their responses (Amin, 2005).

**Interview:** Interview refers to the method of collecting data by asking people questions and following up or probing and prompting their answers (Kothari, 2004). This was used to collect primary data from the supervisory bank staff. It involved use of a semi-structured interview guide. The method of interview using a semi-structured interview guide was deemed appropriate since the aforementioned categories of staff had vital information yet no time to fill in questionnaires (Sekaran, 2003).

**Documentary Review:** This was used to collect secondary data and was guided by a documentary review checklist. Documents from Ecobank Uganda, public and private libraries with literature relevant to the research topic was analyzed as secondary sources of data to supplement primary data from survey and interviews (Amin, 2005).

# 3.13 Data Collection Instruments

**Questionnaire:** Brymen& Bell (2007), state that a standardized questionnaire is a reliable tool that can be utilized for quantitative method projects. Questionnaires were used to collect data from the lower bank officials in Eco bank Uganda. The questionnaire was used in this case because it has proved to be an invaluable instrument of collecting a wide range of information from a large number of individuals especially when it comes to people like the junior staff in view of whether financial performance of Eco bank is affected by lean management as specified by appendix I (Sekaran, 2003). The questionnaires are popular because the respondents filled them in at their own convenience and are appropriate for large samples. The questionnaire was designed with both open and closed ended questions (Amin, 2005). The researcher constructed the questionnaire. It had two sections; Section A considered the social-economic characteristics of the respondents while section B had statements organized along the research questions and based on a five Likert scale (Strongly agree, Agree, Neutral, Disagree, Strongly disagree).

**Interview guide:** The researcher prepared and used a semi-structured interview guide to conduct interviews with supervisory bank staff in Eco bank Uganda. Interviews were chosen because they are thought to provide in-depth information about a particular research issue or question. Still, interviews were chosen because they make it is easy to fully understand someone's impressions or experiences, or learn more about their answers as compared to questionnaires. According to Mugenda (2003), interviews are advantageous in that they provide in-depth data, which is not possible to get using questionnaires.Like questionnaires, interviews are also a source of primary data as specified in appendix II.

**Documentary Review Checklist:** This consisted of a list of documents (Sekaran, 2003) particularly concerning lean management and financial performance, which were directly relevant. Most of these documents were obtained from public libraries and Eco bank Uganda. In this case; textbooks, journals, magazines, theses, conference papers, newspaper articles, government reports, internet, and dissertations related to the topic under investigation as recommended by Amin (2005) were reviewed.

# 3.14 Validity

To improve the validity of the questionnaire, guidance was sought from the available research experts who moderated the tools to fit the study objectives. By doing this, it was ensured that there was improvement on clarity of language, relevancy, and comprehensiveness of the content and standard length of the questionnaire. In addition, the questionnaire was pre-tested. The researcher tested the instruments before the real research commenced with some teachers and students outside the main study area. This was pre-tested by instruments in Equity Bank Uganda. Questions that proved vague or ambiguous were modified. It is important to stress that findings obtained in the pre-testing study were not used in the final report but were particularly for purposes of testing the research instruments.

# 3.15 Reliability

To ensure reliability of the research instrument, a Cronbach alpha test was computed as a measure of scale reliability. As a general rule, a coefficient greater than or equal to 0.7 is considered acceptable and a good indication of construct reliability (Kothari, 2006).The Cronbach Alpha coefficient for 30 items in the questionnaire was 0.921 which is well above the recommended 0.70, implying that the instrument was able to measure the objectives of the study.

#

# 3.16 Data Processing and Analysis

Completed questionnaires were edited for accuracy, consistency and completeness of information before leaving the field. Thereafter, editing was done at the end of each working day after gathering data from the field. Data from the questionnaires was then coded, entered in the Statistical Package for Social Scientists (SPSS) Version 21 program for summary and analysis. Basic statistical analyses involved the use of tables and descriptive statistical measures such as frequencies and percentages. Pearson Correlation, Linear regression analysis and ANOVA were employed to compare independent variable constructs with dependent variable. On the other hand, qualitative data in form of field notes were organized and Key informant interviews were transcribed to form texts for objective specific analysis.

# 3.17 Access to data collection sources

A supportive letter from the School of Business Administration duly signed by the Dean was obtained, introducing the researcher to the Human Resource Manager at Eco-bank. This was helpful in creating a free environment for the respondents to respond to the questionnaires and participate in the interviews

# 3.18 Research Ethical Considerations

It was pertinent to consider the proper conduct of this research. This research accommodated the responsibilities to protect the interests of the survey respondents and scientific honesty on the part of the researcher. Importantly, on the part of survey respondents, no one was coerced to respond to this survey.

The respondents were asked to participate on their own freewill, that is, they were told of their rights not to participate or to end their participation if they so wished. Besides, they were briefed about the purpose of the study and how or why they were chosen to participate. As such, they were free from deception or stress. The respondents were also guaranteed of protection through anonymity and all information that could reveal their identity was held in strict confidence.

The researcher generated knowledge through honest conduct, reporting and publication of research results. The researcher was aware that scientific misconduct had to be identified and reported in order to maintain the quality of the research results and report. All the sources of literature reviewed in the study, were acknowledged in the form of bibliography at the end of the dissertation.

# 3.19 Limitations to the study

The following limitations were faced with the strategies on how they were overcame as provided below.

In the first instance, some of respondents were skeptical about the intentions of the researcher and the purpose of the study and they therefore hesitated to participate in the interview; however, the researcher was able to convince them that the study was purely for academic purposes only.

Unwillingness of respondents to fill questionnaires. This was experienced but whenever it was experienced, the researcher increased consistency in contacting the respondents and made sure reminders were sent to them to fill the questionnaires.

Respondents having a view of not obtaining any direct benefit from the research results. However, assurance to them that they need to spare some little time to answer the questions because the research may also be beneficial to them when presented to the policy makers.

#

 **CHAPTER FOUR**

# DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS

# 4.1. Introduction

This chapter handles the background information on the respondents that were used in the study. Among these characteristics included, gender age, level of education and time taken working with Eco bank Uganda Limited.

It should be noted that the study had targeted to provide questionnaires to 52 corporate customers. Only 48 managed to respond to the study. This means that 92.3% was the response rate. For interviews, 78% managed to respond. Given the fact that the response rate was over and above 70%, this was agreeable to proceed with analyses of results.

# 4.2 Gender of Respondents

To establish the gender of the respondents, the researcher recorded their gender and below are the results that were recorded in Table 4.1.

**Table 4.1. Gender of the respondent**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Male | 13 | 27.1 | 27.1 |
| Female | 35 | 72.9 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

The results from Table 4.1 showed that 72.9% of the respondents were females where as close to 27.1% were males. From the findings, the female respondents were more responsive compared to their male counterparts. This implies that there was gender sensitiveness regarding data collected no matter the percentage of representation.

# 4.3 Age of Respondents

To establish the age of the respondents, the researcher were requested to state their age and below are the results that were recorded in Table 4.2.

**Table 4.2. Age of the respondent**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | 20-29 years | 9 | 18.8 | 18.8 |
| 30-39 years | 33 | 68.8 | 68.8 |
| 40-49 years | 6 | 12.5 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

 ***Source: Primary Data (2019****)*

The results from Table 4.2 showed that 68.8% of the respondents were aged between 30-39 years, 18.8% were 20-29 years and 12.5% were 40-49 years. From the findings, it is clear that 30-39 years is the most employed age group at Eco-bank.

# 4.4 Level of Education of Respondents

To establish the level of education of the respondents, the researcher were requested to state their education levels and below are the results that were recorded in Table 4.3.

**Table 4.3. Education of the respondent**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Diploma | 11 | 33.3 | 33.3 |
| Bachelor’s degree | 15 | 45.5 | 78.8 |
| CPA | 7 | 21.2 | 100.0 |
| Total | 33 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

The results from Table 4.3 showed that 45.5% of the respondents were holding a bachelors degree of education. 33.3% were holding a diploma and the remaining 21.2% had CPA. From the findings, it is clear that all respondents were educated hence having knowledge as far as the study variables are concerned. They could easily provide first-hand information.

# 4.5 Duration in the bank

To establish the duration of respondents in the bank, the Respondents were requested to state the time they had spent at Eco bank and below are the results that were recorded in Table 4.4.

**Table 4.4. Duration in the Bank**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Less than 1 year | 4 | 12.1 | 12.1 |
| 1-5 years | 7 | 21.2 | 33.3 |
| 6-10years | 12 | 36.4 | 69.7 |
| 10years++ | 10 | 30.3 | 100.0 |
| Total | 33 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

The results from Table 4.4 showed that 36.4% of the respondents had been working with Eco bank for the last 6-10 years, 30.3% had been working for 10 years and above and the 12.1% had been at the bank for not less than one year. This means that the study was based on majority of respondents who had the required experience as far as elimination of wastes and performance of foreign owned banks is concerned.

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# CHAPTER FIVE

# LEAN MANAGEMENT AND ELIMINATION OF WASTE IN ECO BANK UGANDA

# 5.1. Introduction

This chapter deals with the first objective of the study. The study set out to establish whether lean management had improved on elimination of wastes in Eco bank Uganda Limited. The findings are presented in the tables below;

**Table 5.1. Eco Bank avoids doing things that customers do not want**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 2 | 4.2 | 4.2 |
| Disagree | 2 | 4.2 | 8.3 |
| Not sure | 10 | 20.8 | 29.2 |
| Agree | 23 | 47.9 | 77.1 |
| Strongly Agree | 11 | 22.9 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

According to the table , majority of the respondents 47.9 agreed that Eco Bank avoids doing things that customers do not want sales volumes have been growing for the last 3 years, 22.9% strongly agreed, 20.8% were not sure, 4.2% disagreed and 4.2% strongly disagreed. As such, we can assert that Eco bank endeavors to eliminate wastes while doing what customers want. From interviews, one of the key informants stated that,

*“…I have accounts in more than one bank but at least the services of Eco bank are quite different…they are very responsive and mind about the time of the customer…”*

**Table 5.2. Any actions that do not add value to customers are avoided**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 1 | 2.1 | 2.1 |
| Disagree | 7 | 14.6 | 16.7 |
| Not sure | 12 | 25.0 | 41.7 |
| Agree | 13 | 27.1 | 68.8 |
| Strongly Agree | 15 | 31.3 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

According to the table 5.2, majority of the respondents 31.3% strongly agreed that any actions that do not add value to customers are avoided at Eco bank. 27.1% also agreed to this assertion. However, 25% remained neutral, 14.6% disagreed and 2.1% strongly disagreed. This can be interpreted to mean that the bank has tried to eliminate waste by avoiding engaging in actions, which are of less value to customers. On interview, one of the key informants stated that,

*“….I appreciate the management of Eco bank, it is only this bank that brings a customer close to his or her bank while sharing periodical events…”*

Another key informant added,

*“….In this bank, it is where you find tellers who are always very attentive and respect customers…I do not regret being in this bank…”*

**Table 5.3. Time wastage in Eco bank is eliminated at every stage**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| Valid | Strongly Disagree | 1 | .4 | 2.1 | 2.1 |
| Disagree | 1 | .4 | 2.1 | 4.2 |
| Not sure | 1 | .4 | 2.1 | 6.3 |
| Agree | 23 | 8.3 | 47.9 | 54.2 |
| Strongly Agree | 22 | 7.9 | 45.8 | 100.0 |
| Total | 48 | 17.3 | 100.0 |  |

***Source: Primary Data (2019****)*

According to the table 5.3 showed that, majority of the respondents 47.9% agreed that time, wastage in Eco bank is eliminated at every stage the asset base of the bank has grown over the years. 45.8% also strongly agreed to this assertion. However, 2.1% remained neutral, disagreed and strongly disagreed respectively. This can be interpreted to mean that time management is key in the operations of the bank which is a primary indicator of waste elimination in a banking environment. Key informants also shared the same opinion as one of them are quoted below,

*“…Eco bank may not be the largest bank in Uganda but it is very efficient and values time…you will never find such long lines or hear our clients complain about delays…we give time a priority because we are dealing with business people mostly…”*

**Table 5.4. The bank makes no mistake with my money**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 1 | 2.1 | 2.1 |
| Disagree | 3 | 6.3 | 8.3 |
| Not sure | 12 | 25.0 | 33.3 |
| Agree | 17 | 35.4 | 68.8 |
| Strongly Agree | 15 | 31.3 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

According to the Table 5.4, majority of the respondents 35.4% agreed that the bank makes no mistake with their money. 31.3% also strongly agreed. However, 25% seemed neutral to this assertion, though 6.3% and 2.1% disagreed and strongly disagreed respectively. This can be interpreted to mean that client positively perceive Eco bank as a good cash handler which is a primary indicator of waste elimination in a banking environment. Key informants also shared the same opinion as one of them are quoted below,

*“…I think you have been following news and different reports in the banking industry…such issues have never been found in our bank because we have a clear system of operation and this is what lean management is all about…be efficient with the client money…”*

Table 5.5. Bank Technology has been introduced which has been essential inreducing on errors that would arise

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 3 | 6.3 | 6.3 |
| Disagree | 3 | 6.3 | 12.5 |
| Not sure | 11 | 22.9 | 35.4 |
| Agree | 17 | 35.4 | 70.8 |
| Strongly Agree | 14 | 29.2 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

According to the Table 5.5, majority of the respondents 35.4% generally agreed that bank Technology has been introduced which has been essential in reducing on errors that would arise. 29.2% also strongly agreed with the assertion. However, 22.9% remained neutral and 6.3% strongly disagreed and disagreed with the assertion. This implies that Eco bank is highly utilizing technology to eliminate wastes in the bank operations. One of the key informants had this to say,

*“….I am happy Eco bank has been very much compliant with recent technology and this has improved and made it easy to serve our clientele easily…as you know we are living in the era of technology we have nothing to do but adopt all forms of technology right from smartcards, Visa cards etc…”*

**Table 5.6. The bank listens to complaints and equally attends to them in time**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 6 | 12.5 | 12.5 |
| Disagree | 10 | 20.8 | 33.3 |
| Not sure | 13 | 27.1 | 60.4 |
| Agree | 12 | 25.0 | 85.4 |
| Strongly Agree | 7 | 14.6 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

According to the Table 5.6, majority of the respondents, 27.1% seemed doubting that the bank listens to complaints and equally attends to them in time. Though 25% agreed, 20.8% disagreed. The last batch of 14.6 strongly agreed and 12.5% strongly disagreed. Generally, since 27% of respondents tended towards disagreement, it is enough to reflect that the bank is still lacking in attending to client complaints in time and this is an indicator of failure to eliminate wastes in the bank.

In summary, there has been a general agreement that Eco bank has tried to eliminate waste in its operations and this is reflected in improved time management, good handling of customer money, attending to clients in time, utilizing recent technology and improved valuing of customers. However, it is still lacking in valuing customer complaints.

# 5.2 Testing hypothesis

This section reports the results of the correlation and regression analysis conducted to examine whether elimination of wastes has had a significant influence on financial performance of Eco bank Uganda. Pearson Correlation and regression analyses were performed to establish this.

Table 5.7: Standard Correlations of elimination of wastes and financial performance of Ecobank Uganda Limited.

|  |  |  |
| --- | --- | --- |
|  | elimination of wastes | financial performance |
| elimination of wastes | Pearson Correlation | 1 | .486\*\* |
| Sig. (2-tailed) |  | .000 |
| N | 48 | 48 |
| financial performance | Pearson Correlation | .486\*\* | 1 |
| Sig. (2-tailed) | .000 |  |
| N | 48 | 48 |
| ***Source: Primary Data (2019****)*\*\*. Correlation is significant at the 0.01 level (2-tailed). |

Results of the correlation analysis (r<0.486, p<0.01), show a significant and positive correlation between elimination of wastes and financial performance of Eco bank. These findings were subjected to a test of significance (p) and it is shown that the significance of the correlation (p = .000) is less than the recommended critical significance at 0.01. Thus, the relationship was significant. The implication of these findings is that elimination of wastes significantly and positively improved on financial performance of Eco bank. The positive nature of the relationship implied that an improvement in elimination of wastes can lead to an improvement in financial performance of Eco Bank.

**Table 5.8: Model summary on elimination of wastes and financial performance of Eco bank**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .486a | .236 | .219 | .572 |
| a. Predictors: (Constant), elimination of wastes  |

Findings in Table show a strong linear relationship (Multiple R = .486) between elimination of wastes and financial performance. Going by the adjusted R Square, it is shown that elimination of wastes for 23.6% change in financial performance of Eco bank. This implies that elimination of wastes is so essential in realizing improved financial performance of Eco bank.

**Table 5.9: ANOVAb of elimination of wastes and financial performance of Eco bank**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 4.646 | 1 | 4.646 | 14.192 | .000b |
| Residual | 15.059 | 46 | .327 |  |  |
| Total | 19.705 | 47 |  |  |  |

|  |
| --- |
| a. Dependent Variable: Financial performance  |
| b. Predictors: (Constant), elimination of wastes |

Computed overall F statistics [F (14.192) = 4.646, p < 0.00] was significant with an adjusted R square of 0.219; suggesting that 21.9% of the variations in financial performance of Eco bank can be accounted for by the independent variables. This implies that, Eco bank Uganda has tried to eliminate waste through lean management.

In conclusion, it can be stated that Eco bank has eliminated wastes which has positively and significantly improved on its financial performance.

# CHAPTER SIX

LEAN MANAGEMENT AND PROCESS IMPROVEMENT IN ECO BANKUGANDA

# 6.1. Introduction

This chapter deals with the second objective of the study. The study set out to establish whether lean management had improved on process improvement in Eco bank Uganda Limited. The findings are presented in the tables below.

Table 6.1. The money I spend in Eco bank has been reducing ever since I started bankingwith it

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 4 | 8.3 | 8.3 |
| Disagree | 3 | 6.3 | 14.6 |
| Not sure | 4 | 8.3 | 22.9 |
| Agree | 16 | 33.3 | 56.3 |
| Strongly Agree | 21 | 43.8 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

According to the table 6.1, majority of the respondents 43.8strongly agreed that the money they spend in Eco bank has been reducing ever since they started banking with it, 33.3% agreed, 8.3% were not sure, 6.3% strongly disagreed and 8.3% strongly disagreed. As such, we can assert that there have been process improvement especially when it comes to reducing on the money spent in the Eco bank. From interviews, one of the key informants stated that,

*“…it is true the money which our clients used to spend initially has been reducing because many of our customers resort to using ATM or internet to deposit money,...others choose to use their phones and many others…”*

**Table 6.2. The bank makes no error in all financial engagements I have had with them**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 3 | 6.3 | 6.3 |
| Disagree | 2 | 4.2 | 10.4 |
| Not sure | 12 | 25.0 | 35.4 |
| Agree | 12 | 25.0 | 60.4 |
| Strongly Agree | 19 | 39.6 | 100.0 |
| Total | 48 | 100.0 |  |

***Source: Primary Data (2019****)*

According to the table 6.2, majority of the respondents 39.6% strongly agreed that the bank makes no error in all our financial engagements I have had with them.25percentage also agreed to this assertion. However, 25% remained neutral, 4.2% disagreed and 6.3% strongly disagreed. This can be interpreted to mean the process of conducting business in Eco bank has been improved in regarding to reducing errors in all its financial engagement. On interview, one of the key informants stated that,

*“…lean management has been a very instrument factor in ensuring that errors which we used to make are totally eliminated or services improved…”*

**Table 6.3. The process of work activities are well coordinated in the bank**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 3 | 6.3 | 6.3 |
| Disagree | 3 | 6.3 | 12.5 |
| Not sure | 9 | 18.8 | 31.3 |
| Agree | 19 | 39.6 | 70.8 |
| Strongly Agree | 14 | 29.2 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

According to the table 6.3, majority of the respondents 39.6% agreed that the processes of work activities are well coordinated in the bank.29.2percentage also strongly agreed to this assertion. However, 18.8% remained neutral, 6.3% disagreed and strongly disagreed respectively. This can be interpreted to mean that the process of work activities is well coordinated in the bank which is a good indicator of process improvement and lean management.

 **Table 6.4. Work done at Eco bank follows a bank schedule**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 3 | 6.3 | 6.3 |
| Disagree | 8 | 16.7 | 22.9 |
| Not sure | 12 | 25.0 | 47.9 |
| Agree | 17 | 35.4 | 83.3 |
| Strongly Agree | 8 | 16.7 | 100.0 |
| Total | 48 | 100.0 |  |

***Source: Primary Data (2019****)*

According to the Table 6.4, majority of the respondents 35.4% agreed that the work done at Eco bank follows a bank schedule. However, 25% remained neutral. Additionally, 16.7 strongly agreed and disagreed respectively. 6.3% disagreed to this assertion. This can be interpreted to mean that there has been improvement in time management at Eco bank, which is a primary indicator of process improvement in a banking environment. Key informants also shared the same opinion as one of them are quoted below,

*“…we have been asserting all our efforts to make sure that our learn management framework is implemented and this is why I admit that our bank adheres to all schedules as planned…”*

**Table 6.5. There is adequate information sharing between the bank and customers**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 3 | 6.3 | 6.3 |
| Disagree | 5 | 10.4 | 16.7 |
| Not sure | 15 | 31.3 | 47.9 |
| Agree | 16 | 33.3 | 81.3 |
| Strongly Agree | 9 | 18.8 | 100.0 |
| Total | 48 | 100.0 |  |

***Source: Primary Data (2019****)*

According to the Table 6.5, majority of the respondents 33.3% generally agreed that there is adequate information sharing between the bank and customers**.** However, 31.3% were not sure with the assertion. 18.8% strongly agree and 6.3% strongly disagreed and disagreed with the assertion. This implies that since majority tended towards agreement, it can be taken that the bank has endeavored to keep customers updated about their bank and their money, which is a good indicator of process improvement.

**Table 6.6. The bank has eliminated everything that consumes time for the client**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 7 | 14.6 | 14.6 |
| Disagree | 5 | 10.4 | 25.0 |
| Not sure | 2 | 4.2 | 29.2 |
| Agree | 27 | 56.3 | 85.4 |
| Strongly Agree | 7 | 14.6 | 100.0 |
| Total | 48 | 100.0 |  |

***Source: Primary Data (2019****)*

According to the Table 6.6, majority of the respondents 27.1% agreed that the bank has eliminated everything that consumes time for the client. 14.6% strongly agreed. 10.4% and 14.6% disagreed and strongly disagreed. Only 4.2% remained neutral. Generally, since majority of respondents tended towards agreement that the bank has eliminated all forms of issues that consumes time of customers in the bank.

**Table 6.7. There is room for complaint in case you are not contended**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 4 | 8.3 | 8.3 |
| Disagree | 6 | 12.5 | 20.8 |
| Not sure | 8 | 16.7 | 37.5 |
| Agree | 20 | 41.7 | 79.2 |
| Strongly Agree | 10 | 20.8 | 100.0 |
| Total | 48 | 100.0 |  |

***Source: Primary Data (2019****)*

According to the Table 6.7, majority of the respondents 41.7% agreed that there is room for complaint in case you are not contended. 20.8% strongly agreed. 16.7% were neutral and 12.5% of them disagreed and 8.3% strongly disagreed. Generally, since majority of respondents tended towards agreement that in some ways complaints are handled in the bank.

In summary, there has been a general agreement that Eco bank has tried to improve the process and this is reflected in improved time management, handling complaints, sharing information with customers, adhering to bank schedule, coordination of work activities, reducing errors in financial engagements.

#

# 6.2. Testing hypothesis

This section reports the results of the correlation and regression analysis conducted to examine whether process improvement has had a significant influence on financial performance of Eco bank Uganda. Pearson Correlation and regression analyses were performed to establish this.

Table 6.8: Standard Correlations of process improvement and financial performance ofEco bank Uganda Limited

|  |  |  |
| --- | --- | --- |
|  | Process improvement  | Financial performance |
| Process improvement  | Pearson Correlation | 1 | .572\*\* |
| Sig. (2-tailed) |  | .000 |
| N | 48 | 48 |
| Financial performance | Pearson Correlation | .572\*\* | 1 |
| Sig. (2-tailed) | .000 |  |
| N | 48 | 48 |
| \*\*. Correlation is significant at the 0.01 level (2-tailed). |

 ***Source: Primary Data (2019****)*

Results of the correlation analysis (r<0.572, p<0.01), show a significant and positive correlation between process improvement and financial performance of Eco bank. These findings were subjected to a test of significance (p) and it is shown that the significance of the correlation (p = .000) is less than the recommended critical significance at 0.01. Thus, the relationship was significant. The implication of these findings is that process improvement significantly and positively improved on financial performance of Eco bank. The positive nature of the relationship implied that an improvement in process improvement can lead to an improvement in financial performance of Eco Bank.

**Table 6.9: Model summary on process improvement and financial performance of Eco bank**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .572a | .327 | .313 | .537 |
| a. Predictors: (Constant), process improvement  |

***Source: Primary Data (2019****)*

Findings in Table6.8 show a strong linear relationship (Multiple R = .572) between process improvement and financial performance. Going by the adjusted R Square, it is shown that process improvement account for 32.7% change in financial performance of Eco bank. This implies that process improvement is so essential in realizing improved financial performance of Eco bank.

**Table 6.10: ANOVAb of process improvement and financial performance of Eco bank**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 6.453 | 1 | 6.453 | 22.400 | .000b |
| Residual | 13.252 | 46 | .288 |  |  |
| Total | 19.705 | 47 |  |  |  |

a. Dependent Variable: Financial performance

b. Predictors: (Constant), process improvement

Computed overall F statistics [F (22.400) = 6.453, p < 0.00] was significant with an adjusted R square of 0.313 suggesting that 31.3% of the variations in financial performance of Eco bank can be accounted for by the independent variables. This implies that, Eco bank Uganda has tried to improve the process of operation through lean management.

In conclusion, it can be stated that Eco bank has improved on the process of doing business, which has positively and significantly improved on its financial performance.

# CHAPTER SEVEN

# LEAN MANAGEMENT AND LEAD TIME IN ECO BANK UGANDA

# 7.0. Introduction

This chapter deals with the first objective of the study. The study set out to establish whether lean management had improved on lead-time in Eco bank Uganda Limited. The findings are presented in the tables below;

**Table 7.1. The quality of work done by employees in Eco bank is standardized**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 10 | 20.8 | 20.8 |
| Disagree | 16 | 33.3 | 54.2 |
| Not sure | 7 | 14.6 | 68.8 |
| Agree | 13 | 27.1 | 95.8 |
| Strongly Agree | 2 | 4.2 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

According to the table 7.1, majority of the respondents 33.3% disagreed that the quality of work done by employees in Eco bank is standardized, 20.8% strongly disagreed. However, 27.1% agreed with the assertion. 4.2% strongly agreed. 14.6% were not sure. As such, we can assert that lean management has not fairly improved on lead time especially when it comes to quality of work done by employees. This was contrary to what key informants stated that,

*“…the quality of work done by employees has been highly improving especially when it comes to their responsiveness to customers, advising clients, and meeting timelines…”*

**Table 7.2. Bank officials are always quick and accurate**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 6 | 12.5 | 12.5 |
| Disagree | 5 | 10.4 | 22.9 |
| Not sure | 10 | 20.8 | 43.8 |
| Agree | 24 | 50.0 | 93.8 |
| Strongly Agree | 3 | 6.3 | 100.0 |
| Total | 48 | 100.0 |  |

***Source: Primary Data (2019****)*

According to the table 7.2, majority of the respondents 50% agreed that bank officials are always quick and accurate. 6.3% also strongly agreed to this assertion. However, 20.8% remained neutral, 10.4% disagreed and 12.5% strongly disagreed. This can be interpreted to mean that quick and accuracy among bank employees has improved because of lean management. On interview, one of the key informants stated that,

*“….our bank has invested enough in improving the competence of its staff and I can assure you that our bank serves its clientele as quick and accurate as possible…”*

**Table 7.3. Time is very much respected by Eco bank Uganda**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 8 | 16.7 | 16.7 |
| Disagree | 9 | 18.8 | 35.4 |
| Not sure | 8 | 16.7 | 52.1 |
| Agree | 16 | 33.3 | 85.4 |
| Strongly Agree | 7 | 14.6 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

According to the table 7.3, majority of the respondents 33.3% agreed that time is very much respected by Eco bank Uganda. 14.6% also strongly agreed to this assertion. However, 18.8% disagreed and 16.7% strongly disagreed. 16.7% were not sure. This can be interpreted to mean that majority of respondents tended towards agreement and many of them also disagreed. There is a mixture of doubt on whether time is very much respected by Eco bank Uganda. Key informants also shared the same opinion as one of them are quoted below,

*“…Eco bank may not be the largest bank in Uganda but it is very efficient and values time…you will never find such long lines or hear our clients complain about delays…we give time a priority because we are dealing with business people mostly…”*

**Table 7.4. The bank makes no mistake with my money**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 6 | 12.5 | 12.5 |
| Disagree | 5 | 10.4 | 22.9 |
| Not sure | 7 | 14.6 | 37.5 |
| Agree | 21 | 43.8 | 81.3 |
| Strongly Agree | 9 | 18.8 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

According to the Table 7.4, majority of the respondents 43.8% agreed that the bank makes no mistake with customer money. 18.8% also strongly agreed. However, 14.6% seemed neutral to this assertion, though 10.4% and 12.15% disagreed and strongly disagreed respectively. This can be interpreted to mean that client positively perceive Eco bank to have managed customer money with much efficiency which is a primary indicator of lead time in a banking environment. Key informants also shared the same opinion as one of them are quoted below,

*“…I think you have been following news and different reports in the banking industry…such issues have never been found in our bank because we have a clear system of operation and this is what lean management is all about…be efficient with the client money…”*

# Table 7.5. Time taken at the counter by customers is adequate

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 1 | 2.1 | 2.1 |
| Disagree | 3 | 6.3 | 8.3 |
| Agree | 18 | 37.5 | 45.8 |
| Strongly Agree | 26 | 54.2 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

According to the Table 7.5, majority of the respondents 54.2% strongly agreed that time taken at the counter by customers is adequate. 37.5% also strongly agreed with the assertion. However, 6.3% and 2.1% strongly disagreed and disagreed with the assertion. This implies that Eco bank has improved on lead time especially when it comes to reducing time taken at the bank counter or teller is. This was in line with what key informants had this to say,

*“….As earlier indicated…lean management is about ensuring that there is timeliness in bank services and this is the basis as to why we have enough tellers who are responsive to customer timeline…”*

**Table 7.6. The ATM machines are quick and accurate**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Disagree | 5 | 10.4 | 10.4 |
| Not sure | 11 | 22.9 | 33.3 |
| Agree | 16 | 33.3 | 66.7 |
| Strongly Agree | 16 | 33.3 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

According to the Table 7.6, majority of the respondents 33.3% agreed and strongly agreed that the ATM machines are quick and accurate respectively. 22.9% remained not sure and 10.4% disagreed. Generally, since majority of respondents about 66.6% tended towards agreement that ATMs are quick and accurate which is a prime indicator of improved adherence to lead-time.

**Table 7.7. The bank complies with time as indicated**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Frequency | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 1 | 2.1 | 2.1 |
| Disagree | 2 | 4.2 | 6.3 |
| Not sure | 3 | 6.3 | 12.5 |
| Agree | 23 | 47.9 | 60.4 |
| Strongly Agree | 19 | 39.6 | 100.0 |
| Total | 48 | 100.0 |  |
|  |  |  |  |

***Source: Primary Data (2019****)*

According to the Table 7.7, majority of the respondents 47.9% agreed that the bank complies with time as indicated. 39.6% strongly agreed, 6.3% remained not sure, 4.2% and 2.1% disagreed and strongly disagreed. Generally, since majority of respondents about 87.5% tended towards agreement that the bank complies with time which is a prime indicator of improved adherence to lead-time.

In summary, there has been a general agreement that Eco bank has tried to improve on lead time in its operations and this is reflected in quick and accuracy of employees, ATM quickness and accuracy, reduced time taken at the counter and reduced mistakes with money. However, the quality of work done by bank employees is highly doubted.

# 7.2Testing hypothesis

This section reports the results of the correlation and regression analysis conducted to examine whether lead-time has had a significant influence on financial performance of Eco bank Uganda. Pearson Correlation and regression analyses were performed to establish this.

**Table 7.8: Standard Correlations of lead time and financial performance of Eco bank**

|  |  |  |
| --- | --- | --- |
|  | Lead time  | Financial performance |
| Lead time | Pearson Correlation | 1 | -.163 |
| Sig. (2-tailed) |  | .269 |
| N | 48 | 48 |
| financial performance | Pearson Correlation | -.163 | 1 |
| Sig. (2-tailed) | .269 |  |
| N | 48 | 48 |
| \*\*. Correlation is significant at the 0.01 level (2-tailed). |

 ***Source: Primary Data (2019****)*

Results of the correlation analysis (r<-0.163, p<0.01), show non-significant and negative correlation between lead time and financial performance of Eco bank. These findings were subjected to a test of significance (p) and it is shown that the significance of the correlation (p = .269) is greater than the recommended critical significance at 0.01. Thus, the relationship was not significant. The implication of these findings is that lead time has negatively affected financial performance of Eco bank. The negative nature of the relationship implied that a reduction in lead time can lead to a reduction in financial performance of Eco Bank.

**Table 7.9: Model summary on Lead time and financial performance of Eco bank**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .163a | .027 | .005 | .646 |
| a. Predictors: (Constant), lead time  |

Findings in Table7.8 show a strong linear relationship (Multiple R = .163) between lead-time and financial performance. Going by the adjusted R Square, it is shown that lead-time for 2.7% change in financial performance of Eco bank. This implies that elimination of wastes is not essential in realizing improved financial performance of Eco bank.

**Table 7.10: ANOVAb of Lead time and financial performance of Eco bank**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | .523 | 1 | .523 | 1.254 | .269b |
| Residual | 19.182 | 46 | .417 |  |  |
| Total | 19.705 | 47 |  |  |  |
| a. Dependent Variable: Financial performance  |
| b. Predictors: (Constant), lead time |

Computed overall F statistics [F (1.254) = .523, p < 0.00] was not significant with an adjusted R square of 0.005; suggesting that 0.5% of the variations in financial performance of Eco bank can be accounted for by the independent variables. This implies that, Eco bank Uganda is not doing well in improving lead time with its lean management framework.

In conclusion, it can be stated that Eco bank has not functioned well towards improving lead time which has negatively affected its financial performance.

# 7.3 The Relationship between Lean Management and Financial Performance

This section reports the results of the correlation and regression analysis conducted to examine whether lean management has had a significant influence on financial performance of Eco bank Uganda. Pearson Correlation and regression analyses were performed to test the hypothesis that, there is no significant relationship between lean management and financial performance at Eco bank Uganda.

Table 7.11: Standard Correlations of lean management and financial performance ofEco Bank

|  |  |  |
| --- | --- | --- |
|  | Lean management | Financial performance |
| Lean management  | Pearson Correlation | 1 | .997\*\* |
| Sig. (2-tailed) |  | .000 |
| N | 48 | 48 |
| financial performance | Pearson Correlation | .997\*\* | 1 |
| Sig. (2-tailed) | .000 |  |
| N | 48 | 48 |
| \*\*. Correlation is significant at the 0.01 level (2-tailed). |

 ***Source: Primary Data (2019****)*

Results of the correlation analysis (r<0.997, p<0.01), show a significant and positive correlation between lean management and financial performance of Eco bank. These findings were subjected to a test of significance (p) and it is shown that the significance of the correlation (p = .000) is less than the recommended critical significance at 0.01. Therefore, the hypothesis that, there is no significant relationship between lean management and financial performance at Eco bank Uganda was rejected. Thus, the relationship was significant. The implication of these findings is that lean management significantly and positively improved on financial performance of Eco bank. The positive nature of the relationship implied that an improvement in lean management can lead to an improvement in financial performance of Eco Bank.

#

**Table 7.12: Model summary on lean management and financial performance of Eco bank**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .997a | .994 | .994 | .049 |
| a. Predictors: (Constant), lean management  |

Findings in Table show a strong linear relationship (Multiple R = .997) between lean management and financial performance. Going by the adjusted R Square, it is shown that lean management account for 99.4% change in financial performance of Eco bank. This implies that lean management is so essential in realizing improved financial performance of Eco bank.

**Table 7.13: ANOVAb of lean management and financial performance of Eco bank**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 19.596 | 1 | 19.596 | 8303.161 | .000b |
| Residual | .109 | 46 | .002 |  |  |
| Total | 19.705 | 47 |  |  |  |
| a. Dependent Variable: Financial performance  |
| b. Predictors: (Constant), lean management  |

Computed overall F statistics [F (8303.161) = 19.596, p < 0.00] was significant with an adjusted R square of 0.994 suggesting that 99.4% of the variations in financial performance of Eco bank can be accounted for by the independent variables. This implies that, Eco bank Uganda has implemented on lean management which has improved on financial performance.

# CHAPTER EIGHT

TOWARDS HARMONIZATION OF LEAN MANAGEMENT AND FINANCIALPERFORMANCE OF ECOBANK

# 8.1 Introduction

This chapter discusses the findings of the study using the available literature. The purpose is to understand how the study findings conform to or diverge from literature.

# 8.2 How lean management eliminates waste in Eco bank Uganda

The study results established that lean management has improved on elimination of wastes in Eco-bank Uganda. This is because there was a general agreement that Eco bank has tried to eliminate waste in its operations and this was reflected in improved time management, good handling of customer money, attending to clients in time, utilizing recent technology and improved valuing of customers. However, it is still lacking in valuing customer complaints. This study finding is in line with the literature of Waters (2010) who had earlier identified that elimination of waste gives an organization edge in reducing on money lost in wastes. In further support of the above findings, Panchal et al (2013) and Johnson (2009) further ascertained that some processes might seem wasteful but actually provide value and some might seem valuable yet they do not result into real value. Waste results from any activity that adds costs without adding value such as the unnecessary movement of materials, the accumulation of excess inventory or the use of faulty production methods that create products requiring subsequent reworks may negatively affect the performance of an organization and in this case Ecobank Uganda.

In congruence with study findings, Meisel et al (2007) further asserted that eliminating wastes allows an organization to improve its value stream by removing all forms and types of waste in order to cut costs and increase profitability. For example creating a faulty ATM card or cheque book, printing it out and finding the errors internally or worse sending it to the customer and then finding out the errors – followed by correcting those errors, then re printing and re sending the document with apologies or some more expensive form of recompense could lead to losses to the bank hence impacting on their profitability. The above findings therefore, confirmed that there is a relationship between elimination of wastes and financial performance of Eco bank Uganda.

# 8.3 How lean management leads to process improvement in Eco bank Uganda

The study results established that lean management leads to process improvement in Eco-bank Uganda. This is because there was a general agreement that Eco bank has tried to improve the process of operations and this is reflected in improved time management, handling complaints, sharing information with customers, adhering to bank schedule, coordination of work activities, reducing errors in financial engagements.

The study findings indicated that process improvement has a significant influence on performance of Eco bank Uganda. These findings confirmed the works of Coxon et al (2011) who had argued that banks have a highly complex environment that makes lean's comprehensive approach to minimizing waste and variability so valuable. By focusing on end to end processes rather than on individual activities or functions, lean allows institutions to see that they have many more "factory-like" work streams than they may have realized. They then can adapt lean's traditional approach to each specific operation especially improving the alignment of operating teams, the balancing of capacity and workloads and the transparency of information flows.

Carreira (2005) further agitates that companies can eliminate time and material at every stage of the operating process and increase their bottom line. It is essential to create a lean process that eliminates waste because it affects profits and customer satisfaction. Streamlined processes and operational efficiency lead to reduced costs and released capacity, meaning lean banking process improvement contributes significantly to your bottom line. Deely (2014) further supports the above findings while arguing that financial institutions leveraging lean banking operations report results of 20-30% cost reduction within 12-18 months and maintain cost efficiency ratios below the industry average. Burton et al (2005) also congruently concurs with the study findings while ascertaining that variation as a form of waste that is controllable and comes in many “flavors” including part variation, human variation, tool variation, time variation, location variation and standard processes eliminates variation and hence improves performance of an organization. According to Mckinsey (2011) finally concludes that many financial institutions have had success using lean programs to deliver short term improvement goals, but sustaining the change is often more difficult. The above findings therefore, confirmed that there is a relationship between process improvement and financial performance of Eco bank Uganda.

# 8.4 How lean management improves on lead time in Eco bank Uganda

The study results established that lean management has not adequately improved on lead time in Eco-bank Uganda. This is because there was a general agreement that Eco bank has tried to improve on lead time in its operations and this is reflected in quick and accuracy of employees, ATM quickness and accuracy, reduced time taken at the counter and reduced mistakes with money. However, the quality of work done by bank employees is highly doubted.

The study findings were concurred with what earlier scholars had indicated. For instance, Silver et al (1998) had earlier found out that financial performance of manufacturing and banking organizations rely so much on adhering to lead time. They further assert that lead time may influence customer service and impact on inventory costs. Cove (2013) also concurs with study findings above while arguing that lead time is the source of cost minimization or increased spending. The higher the adherence to lead time, the higher the performance of an organization and the lower to non-adherence, the lower the performance, in today's competitive business world, companies require small lead times, low costs and high customer service levels to survive. Because of this, companies have become more customer focused. The result is that companies have been putting in significant efforts to reduce their lead times.

Senapati et al, (2012) further in confirmation of the study findings that lean management has reduced mistakes with money. They indicated that to perform in today's global market, short lead times are essential to provide customer satisfaction. As the Japanese example of just-in-time production has shown, consequently reducing lead times may increase productivity and improve the competitive position of the company. In an attempt to reduce lead time, businesses and organizations found that in reality 90% of the existing activities are non-essential and could be eliminated. In the banking sector products like cheque books and Auto Teller Machine cards(ATM) are produced for customer use and the shorter the lead time, the better the performance because this means the customers receive their orders in time and start using the items which translates into transactional income for the bank and increase revenues hence improved organizational performance.

Bassett (2002) states that the quickest route to improving financial performance in an organization is to prioritize stock in terms of cost, lead time, frequency or criticality of defects and against any other standard that serves to reduce cost or improve services. The most effective system for managing work flow is to put 80% of time, effort and cost into in controlling the highest priority 20% of inventory. The above findings therefore, confirmed that there is a negative relationship between lead-time and financial performance of Eco bank Uganda.

# CHAPTER NINE

# SUMMARY, RECOMMENDATION AND CONCLUSIONS

# 9.1 Introduction

This chapter gives the summary and conclusion of the study as they emerge from the previous chapters.

# 9.2 Summary

The study results established that lean management has improved on elimination of wastes in Eco-bank Uganda. This is because there was a general agreement that Eco bank has tried to eliminate waste in its operations and this is reflected in improved time management, good handling of customer money, attending to clients in time, utilizing recent technology and improved valuing of customers. However, it is still lacking in valuing customer complaints. The above findings therefore, confirmed that there is a relationship between elimination of wastes and financial performance of Eco bank Uganda.

The study results established that lean management leads to process improvement in Eco-bank Uganda. This is because there was a general agreement that Eco bank has tried to improve the process of operations and this is reflected in improved time management, handling complaints, sharing information with customers, adhering to bank schedule, coordination of work activities, reducing errors in financial engagements. The above findings therefore, confirmed that there is a relationship between process improvement and financial performance of Eco bank Uganda.

The study results established that lean management has not adequately improved on lead-time in Eco-bank Uganda. This is because there was general neutrality that Eco bank has tried to improve on lead-time in its operations and this is reflected in quick and accuracy of employees, ATM quickness and accuracy, reduced time taken at the counter and reduced mistakes with money. However, the quality of work done by bank employees is highly doubted. The above findings therefore, confirmed that there is no significant and positive relationship between lead time and financial performance of Eco bank Uganda.

# 9.3 Conclusion

We conclude that lean management leads to improvements elimination of wastes at Eco bank Uganda (r=0.486<P=.000). As a result of lean management, has tried to eliminate waste in its operations and this is reflected in improved time management, good handling of customer money, attending to clients in time, utilizing recent technology and improved valuing of customers.

We also conclude that lean management has led to improvement of process of operations at Eco bank Uganda(r=0.572<P=.000). Importantly, lean management has improved on the process of operations and this is reflected in improved time management, handling complaints, sharing information with customers, adhering to bank schedule, coordination of work activities, reducing errors in financial engagements.

Lastly, we conclude that lean management has not adequately improved on lead time at Eco bank Uganda (r= -0.163<P=.000). Specifically, Eco bank has tried to improve on lead time in its operations and this is reflected in quick and accuracy of employees, ATM quickness and accuracy, reduced time taken at the counter and reduced mistakes with money. However, the quality of work done by bank employees is highly doubted.

**9.4 Recommendation**

Since the study established that lean management had improved on elimination of wastes in Eco bank and this has had a positive relationship with financial performance. Therefore, to continually improve the performance of Eco bank, there is a need to ensure that trust building among the customers should be a major concern for Eco bank while improving the usefulness of the system. In order to enhance trust in the bank, trust-creating activities must be continuously pursued. Eco bank managers should develop a system that provides up to date and relevant financial information with good user interface consistency in order to enhance trust, such as automated electronic cash management system for both customers and its officials.

Since the study established that lead management had improved on the process improvement in Eco bank and this has had a positive influence on financial performance. Therefore, to continually improve the performance of Eco bank,there is a need to ensure that there issecurity and privacy. Security features should be considered an important issue by the bank because internet banking users are more favorably inclined toward using it when they perceive that the information provided during the banking transactions is secure, and third parties will not have access to it. Eco-bank managers should monitor and evaluate the usage of the implemented technologies. This can be done by identifying the number of customers using a given technology and how often it is used, with such a measure in place. Bank managers should therefore get feedback on which technology that should be improved and then later plan for their business without wastage of resources. Accordingly, electronic banking needs to be fully instituted to allow the process improve.

Lastly, basing on the fact that lead management had not adequately improved on lead time in Eco bank, this had negatively affected on the financial performance of Eco bank. Therefore, to continually improve the performance of Eco-bank, there is a need to ensure that employees of the bank are well multi-skilled and this can be done through putting in place periodical training and empowerment that can enable them to meet the lean management objectives in the bank. In view of the above, inventory plans, controls and optimization can be adopted to enhance adherence to lead time.

#

# 9.5 Areas for further research

* Future research should focus lean management in private sector organizations because it appears that there is a big gap to close on how it is employed and how it is influencing public sector performance
* Further studies need to be undertaken in other commercial banks. Since this study covered Eco bank, it is likely that the situation in other banks is different. A further study will establish why other banks have not yet ensured lean management and how has its absence affected their level of performance
* A further study can also be undertaken to find out why Bank of Uganda has not implemented lean management and what influence does it have on its performance

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# APPENDICES

# APPENDIX I:

# QUESTIONNAIRE FOR BANK OFFICERS (ECOBANK)

**INTRODUCTION**

Dear Respondent,

The researcher is a student of Master of Business Administration (MBA) at Nkumba University (NU), Uganda. He is undertaking a research to generate data and information on *“The Role of Lean management on performance of commercial banks in Uganda: a case of Eco bank”* as part of a requirement for the Award of a Masters in Business Administration. You have been selected to participate in this study because the contribution you make to your organization is central to the kind of information required. The information you provide is solely for academic purposes and will be treated with utmost confidentiality. Kindly spare some of your valuable time to answer these questions by giving your views where necessary or ticking one of the alternatives given. Indeed your name may not be required. Thank you for your time and cooperation.

**SECTION A: BACKGROUND DATA**

***Please circle the options representing the most appropriate responses for you in respect of the following items:***

**1.** What is your Gender: a) Male A) Female

2. What is your age group?

a) 20-29, b) 30-39, c) 40-49, d) 50 and above

3. What is your highest level of education?

a) Diploma, b) Post Grad Diploma, c) Bachelor’s degree, d)Masters’ degree e) professional qualification e) Others (specify) ---------------

4. For how many years have you been working with Ecobank Uganda?

a) Less than one year b) 1-5 years c) 6-10 years 4) Over 10 years

**SECTION B: INDEPENDENT VARIABLE – LEAN MANAGEMENT (FOR CORPORATE CUSTOMERS ONLY**)

1. **Elimination of wastes**

**In this section please tick in the box that corresponds to your opinion/view according to a scale of 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree**

| **No** | **Statement** | **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | Eco Bank avoids doing things that we as customers do not want  |  |  |  |  |  |
| 2 |  Any actions that do not add value to customers are avoided  |  |  |  |  |  |
| 3 | Time wastage in Ecobank is eliminated at every stage  |  |  |  |  |  |
| 4 | The bank makes no mistake with my money  |  |  |  |  |  |
| 5 | Bank Technology has been introduced which has been essential in reducing on errors that would arise |  |  |  |  |  |
| 6 | The bank listens to complaints and equally attends to them in time  |  |  |  |  |  |

1. **Process Improvement**

**In this section please tick in the box that corresponds to your opinion/view according to a scale of 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree**

| **No.** | **Statement**  | **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | The bank makes no error in all financial engagements I have had with them  |  |  |  |  |  |
| 2 | The process of work activities are well coordinated in the bank  |  |  |  |  |  |
| 3 | Work done at Eco bank follows a bank schedule  |  |  |  |  |  |
| 4 | There is adequate information sharing between the bank and customers  |  |  |  |  |  |
| 5 | The bank has eliminated everything that consumes time for the client  |  |  |  |  |  |
| 6 | There is room for complaint in case you are not contended  |  |  |  |  |  |
| 7 | The quality of work done by employees in Eco bank is standardized  |  |  |  |  |  |

**iii) Lead time**

**In this section please tick in the box that corresponds to your opinion/view according to a scale of 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree**

| **No.** | **Statement** | **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | Bank officials are always quick and accurate  |  |  |  |  |  |
| 2 | Time is very much respected by Eco bank Uganda  |  |  |  |  |  |
| 3 | Employee absence at work is very minimal |  |  |  |  |  |
| 4 | Time taken at the counter by customers is adequate  |  |  |  |  |  |
| 5 | The ATM machines are quick and accurate  |  |  |  |  |  |

**SECTION C: DEPENDENT VARIABLE –FINANCIAL PERFORMANCE (FOR BANK OFFICERS ONLY**)

**In this section please tick in the box that corresponds to your opinion/view according to a scale of 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree**

| **No.** | **Statement**  | **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | Our institution has enough cash to meet its obligations effectively (as and when they fall due) |  |  |  |  |  |
| 2 | All our loans are paid in time  |  |  |  |  |  |
| 3 | The Default level in our bank has reduced for the past three years  |  |  |  |  |  |
| 4 | The percentage of non-performing loans in our bank has been reducing consistently  |  |  |  |  |  |
| 5 | Our Net Interest Margin has also improved for the last three years  |  |  |  |  |  |
| 6 | All bank loans are dully collected |  |  |  |  |  |
| 7 | The bank’s income increases every year  |  |  |  |  |  |
| 8 | Our net income supersedes our operating costs for the last 3years  |  |  |  |  |  |
| 9 | Every year Eco bank increases shareholder’s equity |  |  |  |  |  |

**THANK YOU FOR YOUR PARTICIPATION!**

#

# APPENDIX II:

# INTERVIEW GUIDE FOR SUPERVSIORY STAFF AT ECOBANK

1. Position at the Bank………………………………………………………………..

**A) Lean management**

2. Has the bank embraced lean management in its day-to-day business activities? ……………………………………………………………………………………………….

If yes, give examples of lean management activities found in the bank?

………………………………………………………………………………………………………

**B) Elimination of wastes and financial performance**

3. Has the bank endeavored to ensure that wastes are eliminated? Give a reason for your answer.

……………………………………………………………………………………………….

In what ways has elimination of wastes improved on performance of Ecobank?

………………………………………………………………………………………………………………………………………………………………………………………………………………

**C) Process improvement and financial performance**

4. Has the bank endeavored to improve the process of doing business? Give a reason for your answer.

……………………………………………………………………………………………….

In what ways has process improvement improved on performance of Ecobank?

………………………………………………………………………………………………………

**D) Lead time and financial performance**

5. Has the bank endeavored to ensure that time is utilized very well? Give a reason for your answer.

……………………………………………………………………………………………….

In what ways has lead time improved on performance of Ecobank?

………………………………………………………………………………………………………

**E) Financial performance**

7. Generally comment on financial performance of Ecobank Uganda?

………………………………………………………………………………………………………

………………………………………………………………………………………………………

**THANK YOU**

# APPENDIX III:

# DOCUMENTARY REVIEW CHECKLIST

|  |  |
| --- | --- |
| **Documents to be reviewed**  | **Information expected** |
| Newspaper reports  | * Performance of Ecobank
* Performance of lean management Project
 |
| Strategic plan  | * Lean management programmes in the bank
* Work standards
 |
| Performance Appraisal Reports | * Quality of work done
* Task accomplishment
 |
| Attendance registers/lists  | * Lead time
 |
| Ecobank performance Annual Reports | * Performance of employees
* Work standards
 |
| Ecobank Annual reports  | * Waste handling
* Process improvement campaigns
* Financial Performance of Eco bank
 |

# APPENDIX IV:

# TABLE FOR DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION

| ***N*** | ***S*** | ***N*** | ***S*** | ***N*** | ***S*** |
| --- | --- | --- | --- | --- | --- |
| 10 | 10 | 220 | 140 | 1200 | 291 |
| 15 | 14 | 230 | 144 | 1300 | 297 |
| 20 | 19 | 240 | 148 | 1400 | 302 |
| 25 | 24 | 250 | 152 | 1500 | 306 |
| 30 | 28 | 260 | 155 | 1600 | 310 |
| 35 | 32 | 270 | 159 | 1700 | 313 |
| 40 | 36 | 280 | 162 | 1800 | 317 |
| 45 | 40 | 290 | 165 | 1900 | 320 |
| 50 | 44 | 300 | 169 | 2000 | 322 |
| 55 | 48 | 320 | 175 | 2200 | 327 |
| 60 | 52 | 340 | 181 | 2400 | 331 |
| 65 | 56 | 360 | 186 | 2600 | 335 |
| 70 | 59 | 380 | 191 | 2800 | 338 |
| 75 | 63 | 400 | 196 | 3000 | 341 |
| 80 | 66 | 420 | 201 | 3500 | 346 |
| 85 | 70 | 440 | 205 | 4000 | 351 |
| 90 | 73 | 460 | 210 | 4500 | 354 |
| 95 | 76 | 480 | 214 | 5000 | 357 |
| 100 | 80 | 500 | 217 | 6000 | 361 |
| 110 | 86 | 550 | 226 | 7000 | 364 |
| 120 | 92 | 600 | 234 | 8000 | 367 |
| 130 | 97 | 650 | 242 | 9000 | 368 |
| 140 | 103 | 700 | 248 | 10000 | 370 |
| 150 | 108 | 750 | 254 | 15000 | 375 |
| 160 | 113 | 800 | 260 | 20000 | 377 |
| 170 | 118 | 850 | 265 | 30000 | 379 |
| 180 | 123 | 900 | 269 | 40000 | 380 |
| 190 | 127 | 950 | 274 | 50000 | 381 |
| 200 | 132 | 1000 | 278 | 75000 | 382 |
| 210 | 136 | 1100 | 285 | 1000000 | 384 |

***Source: Krejcie & Morgan (1970, as cited by Amin, 2005)***

Note.—*N* is population size.

*S* is sample size.