

**ORGANISATIONAL FACTORS INFLUENCING
ADOPTION OF LEAN LOGISTICS IN MANUFACTURING
COMPANIES IN NAIROBI, KENYA: A CASE OF ROTO
MOULDERS LIMITED**

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the Award of the Degree of Master of Arts in Project Planning and Management of
the University of Nairobi.**

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DECLARATION

This research project report is my original work and has not been presented for any academic award in any university.

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DEDICATION

To my daughter Gloria Kavutha, Son Lyone Mitau and my Husband Martin for their continued support and to my parents Mr and Mrs Caxton for always being there for me.

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ABBREVIATIONS AND ACRONYMS

3PL	Third party logistics
5S	sort, set in order, shine, standardize, sustain
CEO	Chief Executive Officer
CLM	Centralized Logistics Managers
JIT	Just in Time
RML	Roto Moulders Limited
TOC	Theory of Constraints
SPSS	Statistical Package for Social Sciences
ANOVA	Analysis of Variance

ABSTRACT

The study intended to determine organizational factors influencing adoption of lean logistics in manufacturing companies. Lean logistics has significantly become a significant factor in enhancing organizational success. Lean logistics is one approach that focuses strongly on continuous improvement of organizational processes towards realization of increased efficiencies. Once knowledge is acquired, mitigation measures should be applied to prevent further wastage, and foster value added lean management. This research study studied organizational factors influencing adoption of lean logistics. Case of manufacturing companies, Roto Moulders Limited. Four organizational factors were studied, they are: Organizational structure, Leadership, Skills and expertise and Resource availability on manufacturing companies. The study used descriptive survey design with a target population of 120 individuals in logistics competency. This comprised of drivers, forklift operators, load builders, checkers, stock controllers, administrative assistants, fleet technicians and logistics team leaders. Using kerjice and Morgan table a sample size was determined, 98 individuals were selected from the 120 target population, and stratified sampling was used to select sample size from the strata. A six level data collection questionnaire, comprising of closed ended questions was utilized and interview guide as a data collection tool. Collected data was cleaned, decoded, organized and analyzed using SPSS software. The software analyzed the data using both descriptive statistics and inferential statistics. 73 (79.4%) of respondents managed to successfully fill the questionnaires and interview guide. In terms of age 41.7% were employees between age 35-45 years which the highest number of respondents. In terms of working period 32(43.8%) of employees had worked in the organization for more than 3 years. . The findings indicated that all organizational factors studied related moderately with the adoption of lean logistics in manufacturing companies in Nairobi with resource availability leading with $p=0.005$, followed by skills of employees with $p=0.004$, followed by leadership with $p=0.003$ and the least is organization structure with $p=0.001$. The study recommended that organization should identify structures that fits the organization, priority be given to training and imparting of technical skills required for integration of lean management and enough resources to be availed for successful lean adoption. The study concluded that all employees should acquire necessary skills needed to implement lean adoption and that the employees should undergo refresher trainings, be coached and developed by lean experts. Secondly, it is important for the organization to ensure that all resources required are availed at the right time by allocating enough time and funds for all operational expenses.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Technological changes and globalization are important in the world enterprise where competition is now very high. Logistics field has become very crucial to the globe's economy which has gathered a lot of importance from those in the field of research globally. For instance, For Thailand to be the logistic hub in Southeast Asian countries it had to improve on capabilities of logistics industry since it has been left out for long as it pertains the infrastructure, operations expenses and poor knowledge on appropriate logistics practices (Mohan, 2013) This demands for serious individuals in building logistics practices as an important strategy in the field for promoting the world's business competitiveness of the country. In Thailand, keen interest is given on cutting down logistics cost as it concerns the inventory.

For South East Asian countries, logistics expenses are more as compared to Singapore and Malaysia. These gives an approximate of 8 -13percent (Mohan, 2013). This posed an urgent concern of facilitating the logistics activities delivery and effectiveness. For it to acquire better position, logistics firms work towards adopting better steps like 5S and 3PL to better their service delivery. In order to implement such initiatives efficiently and effectively step by step improvement will precisely assist in providing the best value to clients at a reasonable price. Since it has been implemented successfully in manufacturing, adoption of Lean thinking is factored important to different firms offering services such as health and finance purposefully to promote good quality and to enhance performance of the operations (Russell and Taylor, 2009).

The term ``Lean'' refers to a combined set of principles, practices, tools and techniques which aims at improving quality, cost, service delivery and thus enhances customer satisfaction by eliminating three main sources of loss: variability, waste and inflexibility (Drew, McCallum & Roggenhoffer, 2004) In addition, lean is used as a continuous improvement philosophy that is similar to Kaizen or the Toyota Production

system(Dennis,2016) Considering the variability from manufacturing, (Hines 2004) pointed out that efforts to implement lean to standard service may be faced with challenges related to standardization of operations, ignoring customers complaints, hours of operations, all these are subject to a variations in the service which is more than the variations in manufacturing operations.

Logistics industry has not been left out in attempt to turnaround their performance too. They continuously and consistently are in pursuit of quality initiatives like just in time (JIT), 5S, Kaizen and Six Sigma to improve their operations; this has culminated into the concept of “lean logistics”. These programs have certainly brought down the cost of operations, by improving running costs (repairs, tyres, and fuel), truck utilization, inventory and administration costs (George, 2003). The concept of lean logistics is therefore considered appropriate to adapt in warehousing, distribution, and fleet functions, with the target of making service delivery better and perform well (Russell and Taylor, 2009). When applied to logistics, lean has the potential of adding value to the day to day activities that are repetitive and very essential, offering high speed in the routines through elimination of wastes related to delays, excess product handling, cycle counts and inventory rotation, and consequently lowering operational cost (George, 2003). However, considering the major differences between manufacturing and Logistics or service industries, implementing lean maybe confronted with a lot of difficulties relating to working standards, working hours, and people related issues, all which are subject to variability.

Kenya’s increased focus on logistics, particularly, inventory, transportation and administration aspects has borrowed heavily from lean tools, especially Kaizen,3PL and 5s. The decision is driven by the fact that, as in other countries in Africa, the logistical conditions in Kenya induce high operating costs. Poor road conditions increase the cost of repair and maintenance (In Africa tyres wear thrice as fast as in Europe). Hence, the main focus of this study is to address the factors which influence the success of adoption of lean logistics. There appears to be few empirical researches that researched on the key success

factors which enhance lean logistics adoption with a particular focus on manufacturing companies which is crucial in regard to the rapid growth of logistics sector.

1.2 Statement of the Problem

Karim and Arif-uz-Zaman (2013) presented lean as a systematic and integrated socio-technical system with the goal to minimize waste by reducing the number of supplier, customer and internal variations. It aims at minimizing waste all through the entire firm, maximize culture and identify and continuously promote client satisfaction. Bayat and Dadadhzadeh (2017) bringing lean logistics in all industries has a straight forward results on logistics processes.

The investments have noticeably brought change in the way fleet, distribution, order, inventory and 3PL is managed (Hutt and Speh 2010). The application of Kaizen has helped to give answers to challenges and give solutions on transportation and work based conflicts, based on gradual steps and implementation of tasks. In spite of the significant progress brought by lean logistics, the country's logistics indicators remain below the levels found in middle income economies like Nigeria (World Bank, 2005). There seems to be very little efficiency in logistics operations, the cost of transport has not reduced significantly, and customers are endlessly lamenting about poor services offered by transporters and third party logistics (3PL).

Lean management systems adoption fail where managers become task master since employees starts developing fear and distrust. The employees adopting lean would not understand the implications of their tasks and thus may not show commitment since they did not participate in the creation of overall goal of the program. In order to have good results, organizations need to collaborate with employees to develop a harmonious environment.

Majority of manufacturing firms in Kenya are faced with challenges of technological gap. They also have limited knowledge on kaizen and lean logistics. According to Nderi (2012), Kaizen practices vary in their degrees in which they are implemented in Kenyan

manufacturing firms. The cited shortcomings experienced in the adoption process are: poor management support, unpleasant attitude of the employee and economic strain. A case in point is Roto Moulders limited. It was started in the year 1991 under the company's act. It has recorded significant growth and in addition it has a wide variety covering from various types of tanks including water, ball shaped underground, rectangular loft and septic tanks. This research is aimed to give answers to this knowledge gap by investigating on the factors that are important components towards adoption of lean logistics. The research examines four organizational factors that influence adoption of lean logistics Roto Moulders ltd Nairobi.

1.3 General Objective

The general objective of this study was to investigate the factors within the organizations that influence the adoption of lean logistics at Roto Moulders limited.

1.4 Specific Objectives

The following were the objectives which guided this study

1. To investigate the extent to which organizational structure influence the adoption of lean logistics in Roto Moulders limited.
2. To assess how skills of workers influence the adoption of lean logistics in Roto Moulders limited.
3. To examine how resource availability influence the adoption of lean logistics in Roto Moulders Limited.
4. To assess how leadership influence adoption of lean logistics in Roto Moulders Limited.

1.5 Research Questions

1. To what extend does organizational structure influences adoption of lean logistics in Roto Moulders?
2. How do skills influence the adoption of lean logistics in Roto Moulders Limited?
3. How does resource availability influence adoption of lean logistics in Roto Moulders

4. How does leadership influence adoption of lean logistics in Roto Moulders?

1.6 Significance of the Study

This study may be of significance to the organization program managers and logistics officers. The findings from this study will generate knowledge of the organization factors that have more weight on influence of adoption of lean logistics in organization.

Lessons drawn from this study may also be used to build a body of knowledge on the four organizational factors researched here and their influence on lean logistics. It is hoped that the study will add literature on the subject organizational factors and lean logistics. Academic researchers, scholars and research organizations may find this study influential for it may provide them with information and assist in identifying gaps.

1.7 Limitation of the Study

The study was faced by a number of challenges. A number of fleet employed was busy in their line of work, most drivers were away from the station, and some program managers were busy in meetings and conferences. This was mitigated by earlier communication to set the date for data collection.

Some employees feared giving wrong information in fear of their job security. This was mitigated by explaining the purpose of the study prior to data collection and giving an introductory letter from the university.

1.8 Delimitation of the Study

The study focused on the influence of organizational factors that influence adoption of lean logistics in Roto Moulders in industrial area, Nairobi County, Kenya. The four factors to be studied were; Organizational structure, Skills, Resource availability and leadership. The main respondents were logistics coordinators, staff in charge of warehouses and those in charge of distribution and fleet management.

1.9 Assumptions of the Study

The researcher had assumptions that the respondents will give truthful answers. It was also assumed that the respondents will be available during the time of the exercise. It was also

assumed that the data collection instruments had validity and will measure the desired constructs.

1.10 Definition of Significant Terms

3PL:	This stands for Third Party Logistics. It is a service that allows lows outsourcing operational logistics from warehousing to delivery.
5S:	A name that uses a list of five Japanese words that starts with letter S , describing a system of Sorting, Straightening, Shining, Standardizing, and Sustaining an organized and ideal working environment that remove wastes associated with delays, safety, and compliance among others.
Kaizen:	Also known as continuous development is a long- time period method to work that systematically seeks to attain small, incremental modifications is process in order to improve performance and quality involving in all states of an organization
Leadership:	The art of motivating people to act towards achieving a common goal in an organization
Lean logistics:	It is a way to recognize and remove wasteful activities from the supply chain in order to maximize product flow and save time.
Lean:	Blended set of ideas, practices, tools and techniques with an intention to enhance excellent, shipping, cost and customer satisfaction by removing 3 main sources of loss: variability, waste and inflexibility
Logistics:	Process of planning, implementing and controlling efficient and effective transportation and storage of goods, services and related information from point of origin to point of consumption.
Just In Time:	It is a management thought that endeavors to eliminate sources of production waste by producing the right part the right time and in the right place. It generally consists of three elements namely; JIT purchasing that deals with raw materials, JIT production for transformation of raw

	materials into finished goods and JIT distribution that supports shipment of good produced.
Organizational structure:	This defines how activities such as task allocation, coordination and supervision are directed towards the realization of organizational aims.
Organizational Factors:	These are common management and human resource practices that organization and institutions invest in so as to better the welfare of their employees.
Resources Availability:	Refers to an economic or productive factor needed to accomplish an activity or as a means to carry out an enterprise and accomplish desired result.

1.11 Organization of the Study

The study is organized into five chapters. Chapter one introduces the study. It gives the direction of the study through stating the objective of the study, the significance, delimitation, assumptions and limitations. Chapter two discusses the empirical and theoretical literature on the organizational factors and how they influence lean logistics; it also discusses the conceptual framework and research gap. Chapter three gives studies technique, research design, goal population, sampling length, sampling system, research instruments, methods of data collection, tactics for evaluation, and ethical concerns. Chapter four deals with statistics analysis, data presentation and data interpretation while Chapter five offers a summary of the research findings, conclusions, tips and recommendations of areas for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers findings of previous studies on four organizational factors; Organizational structure, Skills, Resource availability and leadership and their influence on adoption of lean logistics. It will also highlight the conceptual and theoretical structure and identify gaps in empirical studies from where conceptual framework was formulated.

2.2 Adoption of Lean Logistics

According to AL-Balushi et al (2014), lean is a step by step cycle of reengineering philosophy comprised of strategic guiding principles and a set of tools at the operational level. It is a system that requires less of time, human effort, cost, space, which will result to less harm and mistakes making organization to achieve more by doing things at level best. Lean is a procedural way for waste reduction “muda” in a manufacturing cycle without forgetting productivity (Lysons and Farringham, 2006). Lean too takes in to consideration waste accumulated through overburden “muri” and waste created through unevenness in workloads “mura.

logistics is subset of supply chain that is involved in planning, coordinating and monitoring efficient and effective flow of goods and materials and management of information between two or more multiple points of delivery (Hutt and Speh 2010) Although numerous companies have implemented lean logistics successfully others have not achieved the results that they anticipated (Staats et al. 2011) This has fostered research interests in the factors that promote and prevent the lean logistics adoption. Previous research has noted some of factors that facilitates these processes therefore a broad agreement that skills and organization structure are important factors to the success of lean adoption.

Lean logistics looks at reducing the waste that is created at all check points along supply process and uses lean to eliminate these wastes under clear supervision and process improvement efforts. To completely implement lean logistics, lean thinking should be part a major part in your planning. Lean logistic ensures movement of physical products,

information flow and materials storage (Rushton 2009) There is also a an agreement that the success of lean logistics adoption not only depend on the use of lean tools and techniques, but it is that for a sustainable benefit for it to be achieved, it is important to be keen in putting up a structure that maintains lean logistics adoption.

2.3 Organizational Structure and Adoption of Lean Logistics.

There are various organizational structures in every organization. Each organization should have a corporate structure with a design to have a better environment which will result to enterprise goals. Therefore, there is no unique organizational structure. For each enterprise there should be a planned layout created considering what it requires and it should always be in support of the implementation of strategic plans. Demands are ever becoming more with the growth of information and communication technology. Today's changes in the overseeing of the organization are making sure that the availability, flexibility, ability to move along with the changes that happen in the market by competition and in the world's environment. The major trend is to minimize organizational hierarchy because this strategy makes it possible to achieve highly efficient and flexible management. (cejthamr and Dedina 2010),argues that the layout of pyramidal organizational structures has gone through a lot of changes, though it was ever being catalyst by known economic, technological and social conditions of the place.

Basic organizational structures based on division of powers are; line, staff and combined. Organizational structures based on activities are: functional, hybrid, centers, project, matrix, product, divisional and strategic business units. Recently, the ever changing environment dictates creativity just as in the place of the organizational structure. It is necessarily to adapt always with ever varying market situations, competitions and the increasing good conditions. Fast growth of information technology prolonged duration of slow development and persisting crisis are also considered as factors to adapt to..

(Al-mashari 2003) despite the several gains many productivity developing packages provided to the enterprise community, they mostly cost millions of dollars to get and implement and at the end affecting organizational structure. Lean organizations are based

on developing with activities and strengths, which in working towards straightening the implementation of all activities that mostly use lean logistics. Production plan is very clear, management hierarchy and expertise are pinned down, and organizational structure is flat. (Dedina and Maly 2005), the bringing of flat structure characteristics of a few number of organizational pyramid is one of the major requirement for implementation of lean structures. Several companies are working to achieve the best lean manufacturing, lean operations and lean organizational structures. (macurva 2011), says that organizations that targets to reduce activities and minimize stock levels are more prone to untold activities and even little delays in traffic can disrupt manufacturing activities. Ahuja and Khamba (2008) also have the same argument that unchangeable bureaucratic structures of the organizations are impending enlightenment of the workers. These systems of workers enlightenment and being included in the adoption cycle are important and top management should to know this as a fact if they intend to gain the positive results of successful adoption of lean logistics, either failure to involve employee in the whole implementation process can result to poor or incomplete adoption of lean logistics.

Logistics is a cycle that involves planning and controlling the movement and storage of goods, services and message from the origin point to the production point to fulfill the customers' needs. Logistics is in almost all the organizational structure in the form of either a single department or section of logistics. Changes in status of logistics in organizational structures are precise. There before manufacturing companies lacked independent departments of logistics hence, logistics were availed by other sections. Today in many companies with centralization of logistics, the logistics department reports directly to the CEO. Centralized logistics manages (CLM) supervise the distribution of materials throughout the entire company.

The position of logistics in organizational structures of companies has different shapes. The role of logistics is ever gaining popularity and is strengthened by the organizational structures enterprise mostly in of globalization, strengthening of current technologies and the increasing position of logistics. Logistics processes will be influenced by new trends.

2.4 Skills and Adoption of Lean Logistics

Skills and expertise is not just something inevitable in the market for manufacturing companies, but the availability of proficiency and right firsthand expertise is a key factor of success and competition so important that manufacturing companies that will not embrace knowledge and capacity among employees in the coming years are destined to sharply decline (Jedyak, 2015). Skills and expertise reinforcement through training and reinforcement function has always been neglected in many companies. According to Jeyaraman and Teo (2011) organizations always need to hire personnel with excellent skills to ensure sustainability when designing and adopting lean strategies.

Putting into consideration the high degree of customer interaction with services, employees' lay significant role in providing important service to customers. The skilled laborers are crucial to assume the company development and achievement (Jeyaraman and Teo, 2010) it's therefore critical for companies and organizations to pay attention on employees to be equipped with required know how and training for the company to gain the objectives of lean adoption. Taman's (2012) personal exposure of top level management and employees with experience of lean is an important point in the manufacturing companies in Netherlamds.Katz (2012) it's important for CEOS to cultivate individual lean knowledge which will help them know what can be achieved.

To give employees necessary skills and expertise they need a sensei. Sensei is a master teacher with good know how in implementing lean that coach others on their lean journey. Koennigsaecker (2013) sensei need to be used to help coach others on lean. Liker and Franz (2012) it is important to build internal sensei who will take lead in lean implementation and sustainment when an external sensei exits. The major part of lean learning is to narture a team of internal leaders who will be mentored by external sensei.

Alagaraja and Egan (2013) propose that getting, employing and maintaining individual with lean skills were important factors to the adoption of lean in an organization. Koenigsaecker (2013) argues that retaining employees with Kaizen expertise is key to the growth of self-sustaining and development. (Haddad & Jaaron) says that the biggest

challenges in successful adoption of lean that result to development of production effectiveness is the ignorance of management to build the workers. Either, many researchers supports that workers are the main base in adoption of lean logistics that will promote the efficiency of an organization and its competitiveness and without their involvement in the cycle of the implementation; these skills would be rendered unworthy (Ahuja & Khamba) 2008.

Pannereerselvam (2012) says that the purpose of proper training and integrity in efficiency of the functional units of an organization and general developments in the end product through the supply of the right information and their growth. He supports that to meet the varying needs, it is important to give the right training and important guidelines to employees. Training needs of the workers should be ruled, organized and managed by the top level management of the organization. Robinson and Ginder (1985) when employees are correctly trained and retrained with the view of developing their knowledge and information lean logistics adoption becomes a success. Officials should monitor and follow-up on training programs on one on one, this will help upgrade the organizational abilities by building the problem solving skills and knowledge of its workers and making learning in all functional areas. (Mckone et al. (2001)

2.5 Resource availability and Adoption of Lean Logistics

Resources in logistics are a key factor at all levels. Resources are either tangible, physical goods in movement or intangible, being services that needs planning and coordination. Resources can be further classified as human and material resources. In order to ensure lean logistics, it is critical to choose inventory, release, gather, move, recover and demobilize and track the movement and keep a record of present human and material resources in all management stages.

Resource is an important success ingredient in the determination of any successful activity. To implement any lean initiative, the organization requires significant investment in developing resources, building skills in employees, statistical licensing purchase and establishes an organization culture (Anchanga 2006). Lean adoption and maintenance

dictates involving dedicated requirements. (Koenigsacker 2013) supports that it is important to gather all resources to acquire the important level of performance. HR ought to have a responsibility in growing and planning lean training programs and be involved in planning award and appreciation system that supports lean development. Sayer & Williams) 2012 Reward and recognition designs will be adequate in the beginning but, managers should be careful when planning reward and recognition designs. Algaraja (2013) workers will work with togetherness, union and promotion if management gives security of work and a decent reimbursement. Ahuja (2009) Providing reasonable resources to support adoption of lean logistics is also an important factor for success .it is therefore important to coach the distribution force.

The effectiveness of a production system is often a very important aspect in deciding the competitiveness of a manufacturing company. Increase in throughput in a manufacturing system can be reached by proper allocation of buffer capacities, employees and by improving the availability of resources.

2.6 Leadership and Adoption of Lean Logistics

Appropriate leadership is critical factor that promote the success of lean adoption (Achanga 2006) There is need for the top management to continue giving continuous support, to achieve the true importance.(Pande 2000) some companies which implemented lean were a failure since the top management did not give a full support towards the initiative. Leadership is considered a very important prerequisite if successfully adopted the required steps (Antony and Banuels, 2001). Experts believe that adiminstration and management is the pivot to actualization of adoption of lean in the manufacturing companies. In the current market, the winners are organizations with the right leader and managers who keenly focus on people aspect and aspects with an equal balance that avoids affecting either of the parties involved (Manoj, Maneesh, & Gellynck, 2016).

Giving employees directions towards a common destination is the most important task that leaders do. It requires one to appeal to employees reasoning and thoughts. However, leadership cannot be completely divorced from management, these two elements are complementary, and cannot exist independently in an organization. As much organizations look for people who can cope with complexities, they also require people who can manage changes brought by those complexities, may it be economic, political or human complexities. According to Kotter (1990), leadership entails, supporting the vision for the organization, making people with that vision through effective and efficient communication and encouraging them to action. In contrast, the process of management involves planning, budgeting, organizing, staffing, controlling and problem solving. Management implements the vision and direction generated by leaders; they also coordinate and staff the organization, and handle the everyday operation of the organization (Kotter, 1990).

Warren Bennis (1989) emphasizes that to survive in the highly dynamic and ever evolving business world, new generation of leaders are going to be needed. The distinction between a leader and a manager will be an important element (Bennis, 1989). Leaders conquer volatility, turbulence, and ambiguity that seem to conspire against organizations and may certainly affect their performance if nothing is done. Bennis (2007) summarized the issue more recently as follows “managers do things right, while leaders do the right things”

There is evidence that in the context of large organization, the skills of individual leaders’ influence performance. For instance, in a causal study of skills, the career progression of candidates at AT&T over a period of eight and twenty years found that among other specific traits, the cognitive, administrative and interpersonal skills of people in leadership roles, predicted career advancement through low to middle levels of management Koenigsaecker (2013) argues that the steady of authority seriousness in a lean adoption is a critical ingredient in achievement ,and it is important that a senior level leadership shows their commitment to always take part in the lean adoption implementation by taking part in lean development activities. There was even greater correlation for knowledge and skills than for education and experience. This meta-analysis research is an indication of the association between L&M skills and performance. Existing literature suggest that an

expectation of positive association between L&M skills and performance is reasonable, however there have been studies that have indicated indirect association.

Leader's beliefs about the organization are critical to undertaking risky investments. Excellent leadership is among the most critical ingredients that promote the success of lean management. Top leadership set the tone and pace, but individuals at different levels of employment have relevant roles in inspiring and motivating excellence variedly. Organizations that value commitment from top management show better performance, and believe that if support of management and leadership is weak, then initiatives are likely to crumble. Most companies implementing lean are not successful as a result of poor management support (Pande, Neuman and Cavanagh, 2000).

2.7 Theoretical Frame work

This section highlights the theories which are closely related to the topic of study. Theory is an explanation of an aspect of the natural world that can be repeatedly tested. The key theories that form the theoretical foundation of this study are the theory of constraints and the theory of lean management.

Theory of constraints

This study is anchored on the theory of constraints that focuses on organizational change method that leads to return increase. This theory was introduced by Eliyahu Goldratt (1984). The important concept of TOC is that each organization has a major dominant constraint. A constraint is any factor that prevents the organization from receiving much of it works for, which is profit. TOC utilizes a focusing procedure to identify the constraint and reorganize the rest of the organization around it. Literally, as one constraint is removed a different constraint will come up. The organization then needs to concentrate on the upcoming constraint. And this operations reiterates itself continuously. According to the theory of constraints, the best approach for an organization to realize its plans is to cut down its operating costs, cut down portfolio and brings more throughputs. The goal focuses on pressure as bottleneck processes in a job-shop manufacturing organization. However, many non-manufacturing constraints prevail, such as market demand, or sales departments' capacity to change market demand into orders.

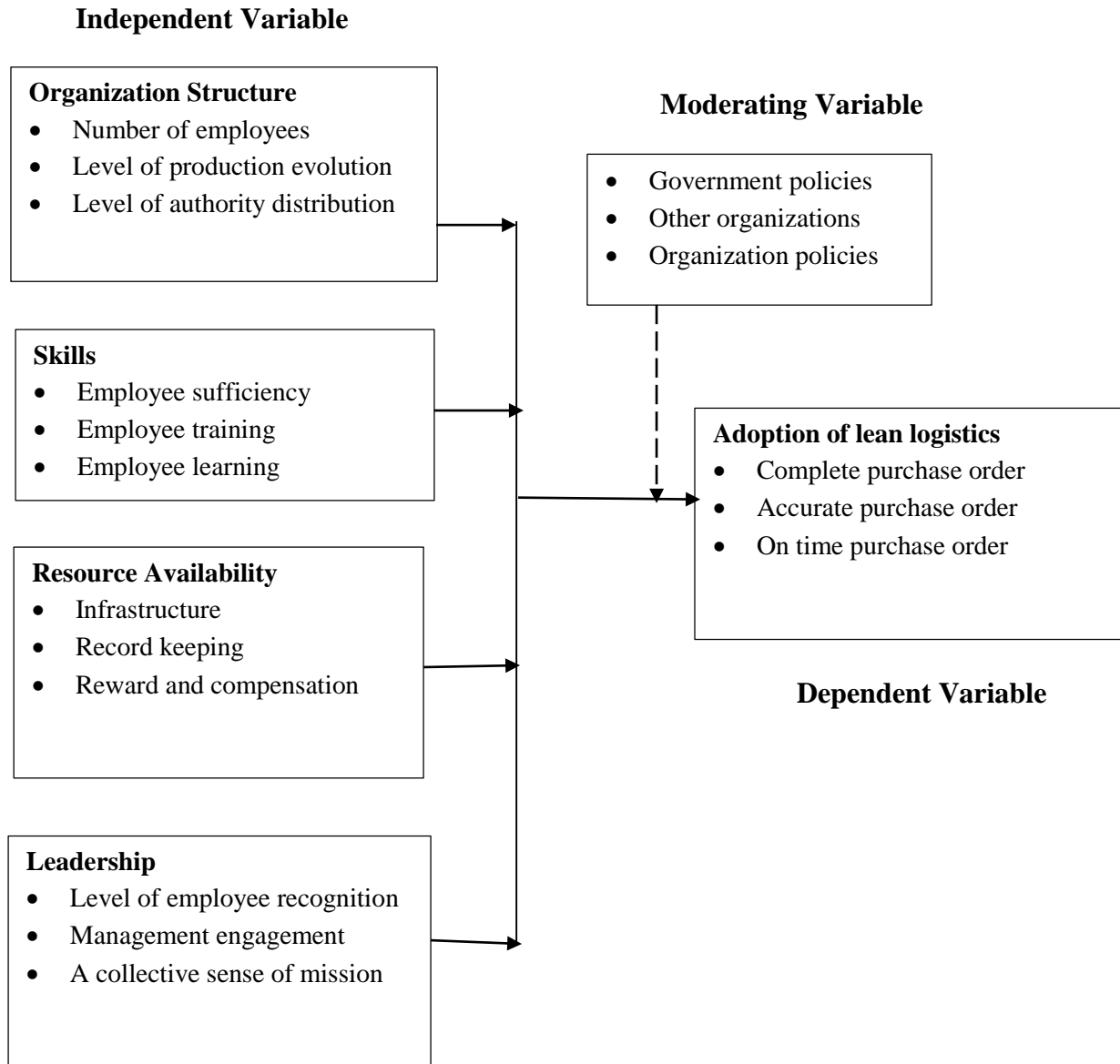
The theory of constraints defines a set of tools such as five focusing steps that those who want change can use to reduce constraints, thereby making more profits. Just as with TOC, lean thinking is an organizational change method that is implemented with a goal of improving profit. Both have a major goal in improving profit which is achieved by focusing on reducing cost. Where TOC begins by identifying constraints, lean thinking gives instructions to the change agent to consider the notion of value first. Both lean thinking and TOC agree that the organization should first find the change then determine if a sensei is required.

Theory of Lean Management

John Krafcit presented the theory of lean management in 1988, where he clarifies thriving of organizations and expansion of profits. It expresses that for an organization to maximize its profits, it is supposed to bring down its expenses of operation or elevate its costs for goods and services. In any case because of the rising competition from the competitors, organizations focus more on cost reduction as opposed to rising costs. For this situation, lean administration is utilized as part of lessening expenses and change of procedures by organizations. The review of the procedure helps with any superfluous stages to most extreme. Through lean administration expenses will go down and turn over expands making clients more fulfilled. To guarantee a steady and flawless process is set up, organizations set up nonstop change framework for observing the outcomes.

Lean management theory assumes that the received lean creation model will be effective in light of the fact that every individual from work force accesses the pertinent devices and comprehends the approach. This may not be the situation since a few people among the work power may not comprehend the strategy consequently cause lean framework fall since there is no standard procedure.

Figure 1: Conceptual Framework



As shown in figure 2.1, the independent variables: organization structure as indicated by the number of employees, level of production evolution, level of authority distribution and availability of market price. The second independent variable is skills. It is indicated by employee sufficiency, employee training and employee learning. The third independent variable is Resource availability as indicated by infrastructure availability, record keeping and reward and compensation. The fourth independent variable is leadership which is indicated by number of leadership meetings held in the organization, level of employee recognition and management engagement to the organization. The moderating factors are government policies, other manufacturing organizations doing the same thing and organizational policies. As illustrated in figure 2 .1, the dependent variable of this study is the Adoption of lean logistics in manufacturing companies, Roto Moulders limited.

2.8 Summary of Research Gaps

This part shows the identified problem and the knowledge gap that needs to be addressed

Table 2.1. Knowledge Gap

Objective	Author	Focus	Findings	Gap
To investigate the extent to which organization structure influences adoption of lean logistics in Roto Moulders	Al-Mashari 2003	Organizational structure	Despite the benefits, many productivity development packages give to the enterprise community they still cost a lot to get and implement and they result changing organization structure.	How to effectively identify organization structure that fits your organization.
To assess how skills influences adoption of lean logistics in Roto Moulders.	Jeyaraman and Teo(2011)	Skills	Organizations need to hire and keep employees with relevant skills and expertise for the sake of sustainability when planning lean adoption initiatives.	How to efficiently conduct training gap analysis in an agile set up like logistics.
To examine how resource availability influences adoption of lean logistics in Roto Moulders.	Gollan et al(2014)	Resource Availability	It is prudent for senior management within an organization to ensure that enough revenue is availed for achievement of lean practices.	How to effectively ensure proper recording of all resources.
To examine the extent to which leadership influences adoption of lean logistics in Roto Moulders.	Manoj, Maneesh, & Gellynck, (2016)	Leadership	Experts believe that leadership and management is the pivot towards actualization of adoption of lean in manufacturing companies.in the current market. The winners are organizations with the right leaders and managers who keenly focus on people aspect and process aspects with an equal balance that avoids affecting either of their parties involved.	How to identify a type of leadership for a successful lean adoption.
To investigate the factors influencing adoption of lean logistics in Roto Moulders.	Rushton 2009	Adoption of lean logistics	The success of lean logistics adoption not only depends on the use of tools and techniques, but for sustainable gains of these to be achieved it is important to concentrate to putting up a structure that supports lean logistics adoption.	How to effectively identify wastes in 5s,eliminate them and track activities for sustainability in logistics

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter entails how the research was administered. It includes the research design, sampling procedure, data collection methods, validity and reliability of research instruments, methods of data analysis, operational definition of variables and ethical issues. Here the researcher targets to explain the procedures and tools that will be utilized to present data for analyzing to get appropriate facts related to the subject under investigation.

3.2 Research Design

Research design refers to the steps that are taken in linking research questions, data collection, analysis and interpretation(Hartley,2004) This study employed descriptive survey design to assist in in-depth analysis of organizational factors that influences adoption of lean logistics. Descriptive design describes the behavior of subjects and do not look for specific relationships nor correlate two or more variables. In survey designs data is collected using questionnaires or interview guides either from probability or non-probability; randomized or non-randomized selected sample from the targeted population (Orodho, 2005)

3.3 Target Population

A population is defined as total collection of elements about which we wish to make some inferences (Stillwell and Clarke, 2011) the target population of the study was 120 employees in logistics at RML. The study considered permanent workers and casual workers. The specific groups that were studied were 26 drivers,13 distribution team leaders,12 distribution assistants,12 forklift operators,17 warehouse adiminstrtors,19 load bulders,10 fleet technicians and 8 fleet team leaders.

3.4 Sampling Size & Sampling Procedure

The sample indicates the total number of respondents to be selected from the target population. Sampling is done because it is not plausible to obtain information from the whole population to accurately accomplish the study objectives.

Stratified random sampling was utilized in the study. The target population of 120 employees was categorized into management level, operation level, and support level. Management level consisted of team leaders in all capabilities; operation level consisted of truck drivers, fleet technicians, and forklift operators. Support level consisted of stock controllers, checkers, load builders and distribution assistants. The sample size corresponding to a population of 120 was obtained from Krejcie and Morgan's 1970 table (McNamara, 1997) then proportions were used to calculate the sample size in each stratum. The sample size for this study is 92 drawn from the target population of 120 using Krejcie & Morgan table(1970).the table utilizes the following formulae to obtain the various sample sizes for various population sizes

$$N_o = \frac{(t)^2(p)(q)}{d^2}$$

Where n_0 is the sample size for categorical data is the value for the selected alpha level which is the 0.025 in each tail=1.65; p is the set at an estimated value of 0.5 hence $(p)(q)=0.25$; d is the acceptable margin of error for proportion being estimated at 0.05. In a broad sense, the units of analysis can be grouped as summarized in table 3.2

Table 3.2 Sampling Frame

Stratum	Target population	Sample size
Distribution team leaders	10	8
Distribution assistants	12	10
Warehouse team leaders	14	10
Fleet team leader	11	5
Drivers	20	15
Forklift operators	12	11
Stock controllers	11	8
Fleet technician	10	8
Checkers	10	8
Load builders	10	9
Total	120	92

3.5 Research Instruments

This study utilized questionnaires and interview guide as the primary tools for data collection. The questionnaire comprised of both structured and unstructured questions with 6 sections. The questionnaire consisted of six sections. The first section (Section A) had personal information of the respondent, the second (Section B), questions on organizational culture, Section C), skills (section D) resource availability (section E), leadership and (section F) adoption of lean logistics. In the event where illiteracy was evident questions were translated into Kiswahili and questions were asked in order in which they are documented in the questionnaire, exact responses were documented in spaces provided. For closed ended questions, a five point Likert scale was used. This included; (1) Strongly disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly agree.

Interview guide was administered to distribution drivers, load builders and forklift operators. One advantage of interview guide as noted by Mark (2003), is that it helps in collecting valid and reliable data that is found important in answering the research questions in order to realize the objectives of the study.

3.6 Pilot Testing of Research Instrument

A pilot study on the questionnaire and the interview guide was carried out in two weeks prior to the actual study. Allan and Emma (2011) pointed out that research outcome quality is determined by the quality research instruments. A pilot testing entailed picking 10 respondents and administering the questionnaire to them and 5 respondents for the interview guide. This process was useful to identify any shortcomings with test instructions, circumstances where items were unclear helped the researcher format the questionnaire and correct any error and inconsistencies (Mugenda 2003) the major reason of pilot testing is improving comprehension, sequence, right wordings and ensure appropriate time given to finish answering the questionnaire.

3.6.1 Validity of the Research Instruments

Validity assists the researcher to be certain that the questionnaire items measures the desired constructs. Donald and Delno (2006) define instrument validity as the appropriateness, meaningfulness and usefulness of inferences a researcher makes based on data collected. Mugenda and Mugenda (2003) support this assertion that validity has to do with how accurately the data collected in the study represents the variables. This study employed content and construct validity. Content and Construct validity measures the suitability of the instrument (questionnaire) to measure what it intends to measure (Kothari, 2004). Content validity measured if the questions were easily understandable, clear, few words and brief and when this element is confirmed, the questionnaire passed validity test. Construct validity will obtain new knowledge, on the influence of the independent variable on the dependent variable.

3.6.2 Reliability and Research Instrument

Donald and Delano (2006) define reliability of research tool the consistence of rankings collected and that it has components; balance and equivalence. Reliability is assumed to be attained if a device offers the same outcomes with replicated measurements of the corresponding object. This study used test- retest method.

To make sure the reliability coefficient of the research tool, Cronbach's Alpha reliability coefficient was received for all the variables within the observe. Cronbach's alpha coefficient is like chance and therefore ranges between zero and one. A coefficient of zero indicates that the instrument has no inner consistency on the other hand a coefficient of one implies a whole inner consistency. The goal of discussing reliability is to reduce the mistakes and biases inside the study.

3.7 Data Collection Procedures

Consent to conduct research from RML was acquired, after which an appointment was booked with the leaders. The primary data collection method most suitable for this study was use of questionnaires and interview guide. Primary data refers to the data which will originally be collected for the first time for the purpose of the study. This is due to its advantage of allowing the researcher to get first-hand information from the respondents. In this case the researcher self-administered the questionnaires.

3.8 Data Analysis Techniques

Data analysis refers to examination of gathered data and making deductions and inferences through decoding and organization. It is disintegrated into manageable parts, to synthesize and create logical and relatable patterns (Orodha, 2002). The study used a quantitative method of data analysis. To warrant simple analysis the questionnaires were cleaned, edited, coded and tabulated. The quantitative data collected in the closed ended sections were analyzed using descriptive statistics of frequencies and percentages. Inferential statistics were also computed to determine the intensity of the relationship between the dependent and independent variables.

The analysis utilized SPSS version 21 software owing to its various advantages, for instance; the capability to organize data in tabular format, saving the distinct outputs and files, creating graphical displays from menus and syntaxes that make presentation easy and interesting, handling multiple data and identifying errors in outputs.

3.9 Ethical Issues

The respondents were told to respond to the questionnaires voluntarily through a formal introduction letter and the purpose of the research was explained. The respondents were instructed not to indicate their identities in the tools since this was important for the confidentiality.

3.10 Operationalization of Variables

Operational definition of independent and dependent variables is shown in Table 3.3 below.

Table 3.3 Operationalization of variable

Objective	Type of variable	Indicators	Measurement Scale	Methods of data collection	Data collection tools	Data analysis technique
To investigate the extent to which organization structure influences adoption of lean logistic in manufacturing companies	Independent variable	No. of employees Level of production evolution. Level of authority distribution Availability of market	Ordinal	Administering questionnaire And interview Guide	Questionnaire Interview guide	Percentage Mean Mode Standard deviation
To assess how skills influences adoption of lean logistics in manufacturing companies	Independent variable	Employee sufficiency Employee training Employee learning	Ordinal	Administering questionnaire and interview Guide	Questionnaire. Interview guide	Percentage Mean Mode Standard deviation
To examine how resource availability influences adoption of lean logistics in manufacturing companies.	Independent variable	Infrastructure Record keeping Reward and compensation	Ordinal	Administering questionnaire And interview Guide	Questionnaire .Interview guide	Percentage Mean Mode Standard deviation
To examine the extent to which leadership influences adoption of lean logistics in manufacturing companies	Independent variable	Inspirational mentorship Level of employee recognition Management engagement Collective sense of mission	Ordinal	Administering questionnaire And interview guide	Questionnaire. Interview guide	Percentage Mean Mode Standard deviation
	Dependent variable	Complete purchase order. Accurate purchase order. On time purchase order.	Ordinal	Administering questionnaire And interview guide	Questionnaire. Interview guide	Percentage Mean Mode Standard deviation

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This section of the study presents evaluation of data collected by use of questionnaires and interview guides. The data obtained was analyzed using descriptive and inferential statistical techniques for every variable and the findings supplied in tabular summaries, and their outcomes discussed.

4.1.1 Response Rate

Questionnaires and interview guide were issued to 92 respondents but 73 returned back. The other 19 questionnaires and interview guide were not returned due to failure to respond to the questions claiming that they were busy at the time of data collection among other reasons. This translates to 79.4% response. This was as per Mugenda and Mugenda (2003) who suggested that for generalization a response rate of 50% is enough for analysis and reporting, 60% is good and a response rate of 70% and over is excellent.

Table 1.1: Response Return Rate

Response Rate	Frequency (F)	Percentage (%)
Returned	73	79.4
Not Returned	19	20.6
Issued	92	100.0

4.2 Demographic Information

The study wanted to establish the background information of the respondents participated in the study that covered; Designation, the period of working in Roto Moulders Limited and level of education. The background information points at the respondents' suitability in answering the questions.

4.2.1 Distribution of Respondents by their Age bracket

The researcher desired to know the age group of the respondents and the figures were as shown in Table 4.2

Table 4.2: Distribution of Respondents by their Age bracket

	Frequency	Percent
Less than 25 years	6	8.3
Between 25-35 years	8	10.7
Between 35-45 years	31	41.7
Above 50 Years	24	36.3
Above 55 years	4	3.0
Total	73	100

From table 4.2, 31 (41.7%) of the respondents were between 35-45 years were the majority, those of the age above 50 years were 24 (36.3%), those with ages between 25-35 years were 8 (10.7%), those with ages Less than 25 years were 6(8.3%) and those above 55 years with 4(3.0%).This implies that a big number of the respondents were between 35-45 years of age.

4.2.2 Designation of the Respondents

The study sought to investigate the job Designation of the respondents of this study. This question was significant in establishing the distribution of the respondents in the various departments within the institution to enable generalization of the results.

Table 4.3: Distribution of the Respondents by Designation.

	Frequency	Percent
Distribution assistant	9	12.3
Stock controller	8	11.0
Checker	7	9.6
Fleet technician	8	11.0
Distribution team leader	7	9.6
Warehouse team leader	8	11.0
Fleet team leader	8	11.0
Driver	6	8.2
Load builder	8	11.0
Forklift operator	4	5.5
Total	73	100

From the findings in Table 4.3, 12.3% of the respondents worked as Distribution assistant while 11.0% of the respondents indicated by an equal percentage that they worked as Warehouse team leader, stock controller, loadbulder and Fleet team leader respectively.9.6% of the respondents worked as Distribution team leader and checkers, 8.2% of the respondents worked as Drivers and 5.5% of the respondents worked as Forklift operators. From the findings Distribution assistants had the largest number of respondents while Forklift operators had the least number of respondents.

4.2.3 Working Period

A combined question sought to know the duration the respondents have been working in Roto Moulders Limited in a predetermined range of intervals scale to establish the knowledge held about by the respondents. The respondents gave the following range of experience when asked.

From the findings, 43.8% of the respondents had worked at the Roto Moulders Limited for more than 3 years, 41.1% had worked for RML for 1 to 3 years and 15.1% had worked for Roto Moulders Limited for less than a year.

This shows that a big number of the respondents had worked in their current stations for a quite long time and thus understood factors influencing adoption of lean logistics in manufacturing companies in Nairobi, Kenya: a case of Roto Moulders Limited.

Table 4.4. Working Duration Respondents at the RML

	Frequency	Percent
Less than a year	11	15.1
Between 1 and 3 years	30	41.1
Above 3 years	32	43.8
Total	73	100

In addition to this, the key informants were asked to indicate their position in RML and also how long they've been in the position. Majority of drivers indicated that they've been in RML for a period of 5-10 years, majority of forklift operators indicated that they've served in Roto Molders Limited for a period of 6 years while a good number of load builders pointed out that they have been in the same position for a duration of about 5 years.

4.2.4 Level of Education of the Respondent

In order to participate meaningfully in factors influencing adoption of lean logistics in manufacturing companies in Nairobi, Kenya, the employee's level of education was sought. The respondents were requested to state their education level according to Table 4.5.

Table 4.5.: Respondents' level of education

	Frequency	Percent
Primary	12	16.4
Secondary	23	31.5
Tertiary	29	39.7
University	9	12.3
Total	73	100

From the findings above, 39.7% of respondents, had acquired Tertiary education, 31.5% indicated their maximum level of education was a secondary certificate, while 16.4% of the respondents showed that primary school was their maximum level of education and 12.3% of respondents, had university degree as per the responds given.

This indicates that most of the respondents at the Roto Moulders Limited have attained a degree, thus had rich information and knowledge on the factors influencing adoption of lean logistics in manufacturing companies in Nairobi (Roto Moulders Limited)

In addition, the key informants were asked to indicate their highest level of education, Majority of the drivers indicated their highest level of education was tertiary, folk lift operators also showed that their highest level of education was tertiary while majority of load builders indicated that they had attained secondary education as their highest level of education.

4.3 Organization Structure and Adoption of Lean Logistics in Manufacturing Companies

The study desired to establish the influence of Organization Structure on Adoption of Lean logistics in Roto Moulders Limited. The respondents were requested to indicate the extent to which they agreed with the following statements. The responses were placed on a five Likert scale ranging from 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree. The findings were as shown in the Table 4.6

Table 4.6: Extent to which Organization Structure affect adoption of lean logistics in manufacturing companies industry

	Mean	Std. Deviation
Authority is distributed evenly in the organization creating the best environment to aid adoption of lean logistics	3.5	0.671
Strategies are put in place to ensure coping and adaptation of current trends in the market by the organization.	3.6	0.736
Lean adoption success depends on how tasks are allocated, coordinated, directed and supervised in the organization	3.7	0.942
Working as one team from top level while embracing teamwork and collaboration helps in delivering excellent ways of working.	4.0	0.528
Organizations implementing lean systems such as lean logistics should consider setting expectations on behavior and performance and empower employees	3.8	0.901
Top management level continuously examines its commitment towards adoption of lean logistics and acts as a role model to the juniors.	4.1	0.794

The data presented in Table 4.6 indicates the responses on the influence of Organization Structure on adoption of lean logistics in manufacturing companies.

The findings in Table 4.6 indicates the respondents opinions towards numerous organizational factors on lean adoption in manufacturing companies at RML. A scale of 1-5 was used where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree. top level management continuously examining its commitment documented a mean of 4.1. this translates that the respondents strongly agree that, top management level continuously examines its commitment towards adoption of lean logistics and acts as role model to the junior employees. Working as a team documented 4.0, which shows that the

respondents agreed that team work from top management is a key factor towards adoption of lean management. Setting expectations on performance noted a mean of 3.8 which shows the respondents supported that setting expectations on behavior and performance is a crucial factor towards adoption of lean logistics in RML. Task allocation, coordination, direction and supervision recorded a mean of 3.7 which shows that the respondents agreed that lean adoption success depends on how tasks are allocated, coordinated, directed and supervised. Putting in place strategies recorded a mean of 3.6 which indicate that the respondents agreed that putting in place strategies to ensure coping and adaptation of current trends in the market supports adoption of lean logistics.

Therefore, it can be deduced that Organizational factors affects the adoption of lean logistics in Roto Moulders Limited

4.3.1 Involvement in Lean Logistics Formulation

In addition, Key informants were also asked whether they had knowledge on who is involved in lean logistics formulation. The findings are presented in the Table 4.7

Table 4.7: Involvement in Lean Logistics Formulation

	Frequency	Percent
Knowledge	11	61.1
Non knowledge	7	38.9
Total	18	100

As per the findings, majority of the key informants,(61.1%) indicated that they had knowledge on who was involved in lean logistics formulation in RML, while the rest 38.9% indicated that they had no knowledge on the person/party involved in lean logistics formulation in Roto Moulders Limited. This implies that majority of the key informants in RML had enough knowledge on Lean logistics formulation.

4.3.2 Availability of set Standards for Employees and the Organization

Key informants were asked on the availability of set standards for employees and the organization. They were also asked to indicate if they were keenly adhered to. The findings of the study are as follows.

From the research finding on Availability of set standards for employees and the organization, 74% of the respondents replied that the standards' were existing, only 26% indicated the absence of set standards for employees and the organization generally. This implied that most of key informants had knowledge on the set standards governing the employees and the organization. As part of the question, the key informants were also asked if the set standards were being adhered to, from the 74% majority of them indicated that the standards were not adhered to.

Table 4.8: Availability of set standards for employees and the organization

	Frequency	Percent
Yes	14	77.8
No	4	22.2
Total	18	100

4.4 Skills and Adoption of Lean Logistics in Manufacturing Companies

The researcher asked the respondents to indicate the extent to which Skills affect adoption of lean logistics in Roto Moulders Limited. The key provided indicates that the analysis was based on the ranges 1 –5 where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree.

Table 4.9: Extent to which Skills factors affect adoption of lean logistics in manufacturing companies industry

	Mean	Std. Deviation
Training creates a risk of free environment through elimination or reduction of mistakes and contributes to successful adoption of lean	4.1	0.842
Coaching and development of employee by a lean expert while giving employees space and freedom makes them feel they are part of lean logistics adoption journey.	3.7	0.951
Frequent refresher trainings and inductions and inductions program developed by lean experts has constantly facilitated adoption of lean logistics in both the management and employees	3.6	0.603
Lean adoption success depends on organizational prioritization to develop staff, embrace coaching and mentoring and motivation with constant positive feedback aimed at improving skills.	3.7	0.867
Growing confidence of an individual and allowing for personal growth helps in improving logistics system through waste minimization.	3.8	0.924
It is likely that waste would be minimized when staff is trained on lean logistics tools and theoretical education on lean logistics systems.	3.4	0.782

The key provided indicates that the analysis was based on the ranges 1 –5 where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree.

Training recorded a mean of 4.1 which shows that the respondents stipulated that training creates a risk of free environment which contributes to lean logistics adoption while coaching and development of employee recorded a mean of 3.7 which indicates that the respondents were in agreement that coaching and employee development by a lean expert makes them feel part of lean logistics adoption journey. Refresher training recorded a mean of 3.6 which shows that frequent refresher trainings and inductions has constantly facilitated adoption of lean logistics. Growing confidence of an individual recorded a mean of 3.8 which indicates that the respondents agreed that growing confidence of an individual and allowing for personal growth helps in improving adoption of lean logistics in RML. minimization of wastes when staff trained recorded a mean of 3.4 which indicates that respondents were neutral whether staff training lean logistics tools and theoretical education minimizes waste or not.

Therefore, it can be deduced that skills factors affects the adoption of lean logistics in Roto Moulders Limited

The study sought from the Key informants whether employees undertake refresher training. The study findings are as established in Table 4.10

Table 4.10: Participation in Refresher Training

	Frequency	Percent
Yes	13	72.2
No	5	27.8
Total	18	100

According to the findings, a number of the respondents,(72.2%) said that the employees often undertake refresher training, while 27.8% indicated that they don't. It emerged during key informant interviews that, a key respondent quoted:

“Refresher training activities are offered by people outside the company”. (Key Informant 7).

To give employees necessary skills and expertise they need a sensei. Sensei is a master teacher with important knowledge in implementing lean that build others on their lean journey. Koennigsaecker (2013) sensei should be used to assist coach leaders on lean. Liker and Franz (2012) it is important to build internal sensei to gain capability to take charge in lean adoption and sustainance when the external sensei exits.

4.5 Resource Availability and Adoption of Lean Logistics in Manufacturing Companies

The respondents were requested to indicate the extent to resource availability factors that affect adoption of lean logistics in Roto Moulders Limited. The key provided indicates that the analysis was based on the ranges 1 –5 where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree. The result findings are as shown in table 4.11.

Table 4.11: Extent to which resource availability factors that affect adoption of lean logistics in manufacturing companies

	Mean	Std. Deviation
Allocation of time and funds for capital projects and operational expenses related to lean logistics plays an important role during implementation phase.	4.1	0.991
Availability of funds influences sharing and benchmarking with other companies to cross pollinate ideas and skills through hiring of consultants with lean experience	3.7	0.552
Availability of enough work force influences adoption of lean logistics	3.6	0.604
Lean adoption success depends on the available assets in the company	3.9	0.932
Rewarding and recognizing of best performers is a key motivational factor towards lean logistics adoption.	3.5	0.535

According to the analysis of the findings in Table 4.11 a good number of the respondents that resource availability factors that affect adoption of lean logistics in Roto Moulders Limited to a great extent. This is shown by statements that Allocation of time and funds for capital projects and operational expenses related to lean logistics plays an important role during implementation phase as shown by mean of 4.1 and a standard deviation of 0.991.

Availability of funds influences sharing and benchmarking with other companies to cross pollinate ideas and skills through hiring of consultants with lean experience as shown by mean of 3.7 and a standard deviation of 0.552, that Availability of enough work force influences adoption of lean logistics with a mean of 3.6 and a standard deviation of 0.604, that Lean adoption success depends on the available assets in the company as shown by

mean of 3.9 and a standard deviation of 0.932 and that Rewarding and recognizing of best performers is a key motivational factor towards lean logistics adoption as shown by mean of 3.5 and a standard deviation of 0.535.

Therefore, it can be deduced that that resource availability factors that affect adoption of lean logistics in Roto Moulders Limited.

4.5.1 Usage of Lean logistics in Activities

In addition, key informants were asked to indicate if the available assets in the company influenced the adoption of lean logistics in their line of work. Findings are as shown in Table 4.12.

Table 4.12: Usage of Lean logistics in Activities

	Frequency	Percent
Yes	9	50%
No	9	50%
	18	100%

According to the findings, 50% of the respondents said that they were using the lean logistics in their daily activities, while only 50% indicated on not using lean logistics in their daily activities. In support of the views one of the key respondents was quoted saying that

4.5.2 Influence of Assets on Adoption of Lean Logistics

Key informants were asked to indicate if the available assets in the company influence the adoption of lean logistics in their line of work. Findings are as shown in Table 4.13.

Table 4.13: Influence of assets on adoption of lean logistics

	Frequency	Percent
Yes	16	88.9%
No	2	11.1%
	18	100%

According to the findings, 88.9% of the key informants indicated a positive relationship between assets availability and adoption of lean logistics in Roto Moulders Limited, while only 11.1% indicated a negative relationship between the two. In support of the views one of the key respondents was quoted saying that

“Yes enough assets make work easier!”(Key Informant 3).

Resource is an important factor in the determination of any successful activity. To implement any lean initiative, the organization requires significant investment in developing resources, building skills in employees, statistical licensing purchase and establishes an organization culture (Anchanga 2006).

4.6 Leadership and Adoption of Lean Logistics in Manufacturing Companies

The respondents were asked to indicate the extent to which leadership factors affect adoption of lean logistics in Roto Moulders Limited. The key provided indicates that the analysis was based on the ranges 1 –5 where 1=strongly disagree,2=disagree,3=neutral,4=agree and 5=strongly

Table 4.14: The extent to which leadership factors affect adoption of lean logistics in manufacturing companies

	Mean	Std. Deviation
Leadership convictions through personal commitment, taking initiatives and leading by example are a key success factor for lean logistics adoption.	3.6	0.703
Good leadership structure allows setting up of clear goals which drive the company towards transforming the logistics department to consistently satisfy the customers	4.0	0.931
Management role is relevant in developing and enabling a team of operators to deliver outstanding quality, on time and full deliveries to the customers.	4.3	0.883
Leadership and coaching teams has adhered to the company's standards and consequently supported the continuous framework.	4.1	0.904
I believe that leaders' willingness to exhibit companies' values and serving as role model by taking lead in adhering to companies standards on lean logistics contributes to successful growth.	3.7	0.663
Leadership alignment through agreement of common objective and strategies determines the extent to which lean logistics adoption matures with overall goal of attaining company vision and mission.	3.5	0.583
The way leaders spend their time, ask questions, provoke conversations, promote relationship and make decisions affects lean logistics adoption.	3.0761	0.663

According to the analysis of the findings in table 4.14, it was established that most respondents indicated that leadership factors affect adoption of lean logistics in Roto Moulders Limited to a great extent.

This is revealed by statements that Leadership convictions through personal commitment, taking initiatives and leading by example are a key success factor for lean logistics adoption. as shown by mean of 3.6 and a standard deviation of 0.703, that good leadership structure allows setting up of clear goals which drive the company towards transforming the logistics department to consistently satisfy the customers as shown by mean of 4.0 and

a standard deviation of 0.931, that management role is relevant in developing and enabling a team of operators to deliver outstanding quality, on time and full deliveries to the customers as shown by mean of 4.3 and a standard deviation of 0.883, that leadership and coaching tams has adhered to the companies standards and consequently supported the continuous frame work as shown by mean of 4.1 and a standard deviation of 0.904, that I believe that leaders' willingness to exhibit companies' values and serving as role model by taking lead in adhering to companies standards on lean logistics contributes to successful growth as shown by mean of 3.7 and a standard deviation of 0.663.

Leadership alignment through agreement of common objective and strategies determines the extent to which lean logistics adoption matures with overall goal of attaining company vision and mission as shown by mean of 3.5 and a standard deviation of 0.583 and The way leaders spend their time, ask questions, provoke conversations, promote relationship and make decisions affects lean logistics adoption as shown by mean 3.0761 and a standard deviation of 0.663. The findings of the study conclude that leadership factors affect adoption of lean logistics in Roto Moulders Limited to a great extent.

4.6.1 Availability of Challenges Facing Adoption of Lean Logistics in Key Informants Departments

The study further wanted to know from the respondents on the availability of challenges facing adoption of lean logistics in the key informants departments. Findings are as indicated in Table 4.15:

Table 4.15: Availability of Challenges facing adoption of lean logistics in Key informants departments

	Frequency	Percent
Yes	15	83.3%
No	3	16.7%
	18	100%

Respondents who indicated that there were challenges facing the adoption of lean Logistics in their various departments (*drivers, forklift operators and load builders*). as shown in the table above.

Key respondent indicated that “lack of know how to operate new machines.”(Key Informant 2)

In line with the above, the key informants were asked to indicate if they were in agreement that good leadership structures drives the company towards transforming the logistics department to satisfy the customers. Majority of them they were in agreement with the above statement, while only a few of them declined.

4.7 Lean Logistics in Manufacturing Companies

The study sought to establish the extent to which the following factors are as a result of adoption of lean logistics in Roto Moulders Limited. The status of this variable was rated on a 5 point Likert scale ranging from 1-5, 1=strongly agree, 2=agree, 3=neutral, 4=disagree and 5=strongly disagree. The analysis of the findings is as shown in Table 4.13 .

Table 4.16: The extent to which the following factors are as a result of adoption of lean logistics in manufacturing companies

	Mean	Std. Deviation
Orders delivered in full as per the requirement of customer have improved recently.	3.6	0.843
Orders delivered accurately as expected by the customer have improved with time	3.9	0.994
Orders delivered on time as requested by the customer have improved recently.	3.7	0.985
Customer complaints have reduced with time.	4.1	0.771
Product returns due to delivery gaps have reduced recently	4.0	0.782
The cost of fuel, repair and maintenance have gone down recently	3.8	0.562.

The study sought to establish the extent to which the following factors are as a result of adoption of lean logistics in Roto Moulders Limited. The status of this variable was rated on a 5 point Likert scale ranging from 1-5, 1=strongly agree, 2=agree, 3=neutral, 4=disagree and 5=strongly disagree. The analysis of the findings is as shown in Table 4.13 below.

From the analysis of the findings as shown in Table 4.10, most participants indicated great extent. The statements which affirms the claims is that Orders delivered in full as per the requirement of customer have improved recently as shown by mean of 3.6 and a standard deviation of 0.843, that Orders delivered accurately as expected by the customer have improved with time as shown by mean of 3.9 and a standard deviation of 0.994, that Order delivered on time as requested by the customer have improved recently as shown by mean

3.7 and a standard deviation of 0.985, that Customer complaints have reduced with time as shown by mean of 4.1 and a standard deviation of 0.771.

Product returns due to delivery gaps have reduced recently as shown by mean of 4.0 and a standard deviation of 0.782 and that the cost of fuel, repair and maintenance have gone down recently thus decreasing profit as shown by mean of 3.8 and a standard deviation of 0.562. It can depict that most respondents indicated that the above factors are as a result of adoption of lean logistics in Roto Moulders Limited to the great extent.

4.7.1 Lean Logistics Impact

The study sought from the key informants whether the adoption of lean logistics in their line of duty had brought any positive change. The study findings are as established in Table 4.17.

Table 4.17: Lean Logistics Impact.

	Frequency	Percent
Yes	11	61
No	7	39
Total	18	100

As per the findings, majority (61%) of the key informants also indicated that adoption of lean logistics in their line of duty has brought up a positive change while 39% of the key informant indicated that adoption of lean logistics has not brought any change in their line of duty.

4.8 Inferential Statistics

To evaluate the relationships between the dependent and independent variables, correlation and multiple regression analysis was conducted and the findings presented in the following subsections.

4.8.1 Correlation Analysis

In this subsection a summary of the correlation and regression analyses is presented. It seeks to first determine the degree of interdependence of the independent variables and also show the degree of their association with the dependent variable separately. These results are summarized in Table 4.18

Table 4.18: Correlation Matrix

	Organization Structure	Skills	Resource Availability	Leadership	Lean logistics(Other factors)
Organization structure (r) (p) Sig. (2 tailed)	1.000	0.773 0.036	0.763 0.018	0.618 0.025	0.652 0.031
Skills (r) (p) (2 tailed)	0.773 0.036	1.000	0.316 0.047	0.163 0.019	0.161 0.029
Resource Availability (r) (p) Sig. (2 tailed)	0.463 0.018	0.316 0.047	1.000	0.216 0.047	0.233 0.0464
Leadership (r) (p) Sig. (2 tailed)	0.618 0.025	0.163 0.019	0.216 0.047	1.000	0.462 0.014
Lean logistics(Other factors) (r) (p) Sig. (2 tailed)	0.652 0.031	0.161 0.029	0.233 0.0464	0.462 0.014	1.000

The correlation summary shown in Table 4.14 indicates that the relationships between the independent variables were significant at the 95% confidence level and a strong comparison to their associations with the dependent variable. This means that the intervariable correlations between the independent variables were strong enough to affect the relationship with the dependent variable. Results of the Pearson's correlation coefficient depicts that there is a significant positive relationship between Skills factors and adoption of lean logistics ($\rho=0.773$, $p\text{-value} < 0.05$). Therefore, it can be implied that an increase in Skills factors is associated with increased adoption of lean logistics. Secondly, the findings showed that there is also a significant positive significant relationship between adoption of lean logistics and Resource Availability ($\rho=0.763$, $p\text{-value} < 0.05$).

Thirdly, the findings showed that there is a strong positive significant relationship between Leadership and adoption of lean logistics ($\rho=0.618$, $p\text{-value} < 0.05$). Finally, there was a significant positive relationship between Lean logistics (Other factors) and adoption of lean logistics ($\rho=0.652$, $p\text{-value} < 0.05$).

4.8.2 Regression Analysis

The study sought to determine the goodness of fit of the regression equation using the coefficient of determination between the overall independent variables and adoption of lean logistics. Coefficient of determination established the strength of the relationship. Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (adoption of lean logistics) that is explained by the Organization Structure function as the independent variable of the firm.

4.8.2.1 ANOVA Results

Analysis of variance (ANOVA) is a collection of statistical models used to analyze the differences among group means and their associated procedures (such as "variation" among and between groups)

Table 4.20: ANOVA of the Regression

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	12.223	4	48.892	9.44956	0.000817935
Residual	460.486	69	5.174		1
Total	472.709	73			

Dependent Variable: adoption of lean logistics

Predictors: (Constant), Skills, Resource Availability, Leadership, and Lean logistics (Other factors)

Analysis of Variance (ANOVA) was used to make simultaneous comparisons between two or more means; thus, testing whether a significant relation exists between variables (dependent and independent variables). This helps in bringing out the significance of the regression model. The ANOVA results presented in Table 4.16 shows that the regression model has a margin of error of $p = .0008$. This indicates that the model has a probability of 0.08% of giving false prediction. This point to the significance of the model.

4.8.2.2 Coefficient of Correlation

Multiple regression analysis was conducted as to determine the relationship between the adoption of lean logistics and the four variables.

Table 4.21: Coefficient of Correlation

	Un-standardized		Standardized	T	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
Organization Structure	0.377	0.251		8.359202	0.001
Skills	0.782	0.121	0.146	6.46281	0.004
Resource Availability	0.463	0.079	0.126	5.860759	0.005
Leadership	0.473	0.073	0.045	6.479452	0.003
Lean logistics(Other factors)	0.532	0.073	0.142	7.287671	0.004

a. Dependent Variable: adoption of lean logistics

Adoption of lean logistics = 3.77 + 0.782* Skills + 0.463* Resource Availability + 0.473* Leadership + 0.532* Lean logistics (Other factors)

From the finding in Table 4.17, the study found that Organization Structure, Skills, Resource Availability, Leadership, and Lean logistics (Other factors), at zero adoption of lean logistics will be 3.77. It was established that a unit increase in Skills factors, while holding other factors (adoption, Resource Availability, Leadership, and Lean logistics (Other factors)) constant, will lead to an increase in adoption of lean logistics in manufacturing companies particularly Roto Moulders Limited by 0.782 ($p = 0.003$). Further, unit increase in Resource Availability while holding other factors (Skills and Adoption, Leadership, and Lean logistics (Other factors)) constant, will lead to an increase in adoption of lean logistics in RML by 0.463 ($p = 0.001$). A unit increase in Leadership skills, while holding other factors (Skills, Resource Availability and Lean logistics (Other factor)) constant, will lead to an increase in adoption of lean logistics in RML by 0.473 ($p = 0.005$).

Moreover, unit increase in Lean logistics (Other factor), while holding other factors (Organization Structure, Skills and Adoption, Resource Availability and Leadership,) constant, will lead to an increase in adoption of lean logistics in manufacturing companies particularly Roto Moulders Limited by 0.532 ($p = 0.004$). This infers that Resource Availability contribute most to the adoption of lean logistics followed by Skills factors. At 5% level of significance and 95% level of confidence, Lean logistics (Other factor), Skills factors, and Resource Availability are significant in adoption of lean logistics in manufacturing companies particularly Roto Moulders Limited.

CHAPTER FIVE
SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND
RECOMMENDATIONS

5.1 Introduction

This chapter covers the summary of the study findings, discussions, conclusions and recommendations. The findings are summarized conforming to the objectives of the study which include organizational structure, skills, leadership and resource availability. These independent variables were studied against the dependent variable which is which is adoption of lean logistics.

5.2 Summary of the Findings

This section presents the findings from the study on the organizational factors influencing adoption of lean logistics in manufacturing companies in Roto Moulders Limited. It was established that all the organizational factors studied positively influenced the adoption of lean logistics, however, the correlation between organizational structure and adoption of lean logistics was not statistically significant. The rest of the organizational factors had statistically significant correlations, with resource availability leading followed by skills.

5.2.1 Findings on Organizational Structure and Adoption of Lean Logistics

that Lean adoption success depends on how tasks are allocated, that coordinated, directed and supervised in the organization as shown by mean of 3.7 and a standard deviation of 0.942, that Working as one team from top level while embracing teamwork and collaboration helps in delivering excellent ways of working as shown by mean of 4.0 and a standard deviation of 0.528, that Organizations implementing lean systems such as lean logistics should consider setting expectations on behavior and performance and that empower employees as shown by mean of 3.8 and a standard deviation of 0.901 and that Top management level continuously examines its commitment towards adoption of lean logistics and acts as a role model to the juniors as shown by mean of 4.1 and a standard deviation of 0.794. The results produced a statistically significant relationship between organizational structure and adoption of lean logistics in RML with a p value of $0.004 < 0.05$

5.2.2 Findings on Skills and Adoption of lean Logistics

A mean of 4.1 of the respondents in the study were of the opinion that training builds a risk of free environment through minimization of flaws and contributes to successful adoption of lean 3.7 agreed that Coaching and development of employee by a lean expert while giving employees space and freedom makes them feel they are part of lean logistics adoption journey. further 3.6 of the respondents noted that Frequent refresher trainings and inductions program developed by lean experts has constantly facilitated adoption of lean logistics in both the management and employees. 3.8 of the respondents noted that Growing confidence of an individual and allowing for personal growth helps in improving logistics system through waste minimization. The study established that there was a statistically significant positive correlation between skills and adoption of lean logistics in RML with a p value of $0.003 < 0.05$.

5.2.3 Findings on Resource Availability and Adoption of Lean Logistics

According to the analysis of the findings majority of the respondents indicated that resource availability factors affect adoption of lean logistics in Roto Moulders Limited to a great extent. This is shown by statements that Allocation of time and funds for capital projects and operational expenses related to lean logistics plays an important role during implementation phase as shown by mean of 4.1. Availability of funds influences sharing and benchmarking with other companies to cross pollinate ideas and skills through hiring of consultants with lean experience as shown by mean of 3.7 a mean of 3.9 noted that Lean adoption success depends on the available assets in the company. Rewarding and recognizing of best performers is a key motivational factor towards lean logistics adoption as shown by mean of 3.5 as noted from the findings. The study established that there was a statistically significant positive correlation between skills and adoption of lean logistics in RML with a p value of $0.001 < 0.05$.

5.2.4 Findings on Leadership and Adoption of Lean Logistics

Majority of the respondents in the study at a mean of 4.0 agreed that good leadership structure allows setting up of clear goals which drive the company towards transforming the logistics department to consistently satisfy the customer, management role is relevant

in developing and enabling a team of operators to deliver outstanding quality, on time and full deliveries to the customers as shown by mean of 4.3. a mean of 4.1 of the respondents noted that leadership and coaching teams has adhered to the companies standards and consequently supported the continuous frame work. A mean of 3.7 of the respondents supported that leaders' willingness to exhibit companies' values and serving as role model by taking lead in adhering to companies standards on lean logistics contributes to successful lean adoption. The way leaders spend their time, ask questions, provoke conversations, promote relationship and make decisions affects lean logistics adoption as shown by a mean of 3.1. The study found that there was a statistically significant positive correlation between skills and adoption of lean logistics in RML with a p value of $0.005 < 0.05$

5.3 Discussion of Findings

The findings showed positive significant correlation between all the four factors in manufacturing companies.

5.3.1 Findings on the influence of Organization Structure on Adoption of Lean Logistics

According to Ahuja and Kamba(2008), rigid bureaucratic structures of organizations are impending empowerment of the workers, these systems of workers empowerment and participation in adoption cycle are important and management should know this fact if they are to gain the worthy of adoption of lean logistics. (Macurva 2011), says that organizations intending to cut down activities and decrease stock levels are more prone to unforetold situations and even setback in traffic can lead to break up in manufacturing activities.

The study has established that organizational structure influences adoption of lean logistics in manufacturing companies in RML. The study has further shown that lean adoption depends on how tasks are allocated, coordinated, directed and coordinated and that top management level should continuously examine its commitment towards adoption of lean logistics and to act as role model to the juniors.

5.3.2 Findings on the influence of Skills on Adoption of Lean Logistic

The findings in the study support Jeyaraman and Teo (2011) who highlighted those organizations should hire and retain personnel with relevant skills and expertise to ensure sustainability when planning the lean action therefore manufacturing companies with a speculation of lean should be keen on expertise and competence for employees in order to realize targeted lean goals. Asher and Rijit (2012) say that manufacturing industries globally for long are competing with three aspects related to expertise, training and skills. These are employee training, employee sufficiency and employee learning. From the findings frequent refresher training and inductions are key in lean adoption.

The findings indicates that successful lean adoption requires the organization ought to be inspiring and to always look for continuous improvement strategies and ensure that every one is involved in the journey. From the findings some of the strategies to be embraced are coaching, mentoring motivation and growing confidence of an individual. Manufacturing companies strategies need to suffice the aspect of leading and coaching of teams to ensure adherence to standards to safety, quality, compliance and output.

5.3.3 Findings on the influence of Resource Availability on Adoption of Lean Logistics

The study findings support the observation by Ramesh and Kodali (2012) that organization thinking of implementing adoption of lean practices ought to carefully consider components in monetary aspects in the project design stage. In manufacturing companies finances canvas the channels which other important facilities such as leadership and management team pay can be made (Gollan, Kalfa, Agarwal, Green and Randhawa, 2014).The findings also agree that lack of enough financing among manufacturing companies is thus a strong hindrance to the affluent adoption of lean logistics. The study findings also indicate that rewards and recognition in manufacturing companies is a vital factor in the efforts to adopt lean.

The findings of this study are supported by Gollan et al., (2014) who observed that it is prudent for higher management within the organization ensure that sufficient monetary resources are at disposal for affluent lean adoption. The study agrees with the research

studies spearheaded by Kenya Association of Manufacturers to investigate on possible barriers to lean that concluded that availability of finances for successful adoption and implementation of lean management systems is a crucial factor.

5.3.4 Findings on the influence of Leadership on Adoption of Lean Logistics

Zaleznik (1997) argues that leadership involves setting a sense of direction to employees and is not subject to rank of employment. According to Kotter (1990), leaders are involved in developing and driving that vision for the organization, it entails aligning with employees on what is expected of them as contained in the vision, mission and values of the organization. The findings of the study agree with Chauhan and Singh (2012) that, the commitment by top management is vital. Management by top level, middle level and lower level failure to embrace. The findings of this study support the observation by Achanga (2006) that technology and leadership have huge impacts on the processing and manufacturing industry worldwide.

The findings of the study agree with Mwacharo (2013) that lack of investment in the lean logistics journey by management in Kenyan companies has seen it most closing the factories and turning them into go downs. The findings agree that the staff feel that the way leaders spend their time, ask questions, provoke conversations, promote relationships and make decisions affects lean logistics adoption. The study agrees that good leadership structure allows setting up of clear goals which drive the organization towards transforming the logistics department.

5.4 Conclusion

Based on the findings of the study, the following conclusions are drawn on the organizational factors influencing adoption of lean logistics. All four organizational factors influenced the adoption of lean logistics in RML to almost similar extend as demonstrated by the correlation coefficient with skills and resource availability demonstrating a greater extend. Organization structure and leadership had a moderate correlation. Training was found to be the most important element to consider ensuring that lean adoption is a success. This ensures that all employees acquire the necessary skills needed to implement lean

adoption. Apart from training ,employees need to undergo frequent refresher trainings, be coached and developed by lean experts and give them space and freedom .This will make them feel part of lean logistics adoption journey and they will embrace the initiative and take it as their own which will result to success of lean adoption initiative.

However, it is prudent to ensure that the resources are availed in good time. This entails allocating enough time and funds for projects and all operational expenses related to lean logistics adoption. This plays an important role since with funds available, sharing and benchmarking with other companies becomes possible and is through this where cross pollination of ideas and skills is made possible and also it becomes possible to hire consultants with lean experience. The study demonstrated that good leadership structures allows setting up of clear goals which drive the company towards transforming the logistics department.it is upon the leadership and management to ensure that good leadership structures are set to ensure that all the goals are set and help the employees to work towards achieving the desired goals for the organization. The study demonstrated that working as one team from top level while embracing teamwork and collaboration helps in delivering excellent ways of working in an organization, it is therefore prudent for the organization to ensure that teamwork and collaboration among the employees is embraced.

5.5 Recommendations

On the basis of the findings from the study, it is recommended that:

1. The organization should effectively identify a structure that fits the organization to ensure successful lean adoption. This is from how authority is distributed to create the best environment to aid lean adoption. The study also recommends that the top management to continuously examine its commitment towards lean logistics adoption and to act as role model for the junior staff.
2. Highest priority should be given to training and imparting of technical skills required for integration of lean management programs in the new organizational operational strategy. The study recommends for the adoption of the apprenticeship approach to put the staff through a practical learning process throughout the adoption phase till they satisfy highest efficiency level. The study recommends for

the certification of technical requirements for the integration of lean management system to serve as the bridge attaining basic minimum technical skills before formal approval to interaction to the lean management system.

3. Enough resources should be availed to ensure successful lean adoption. This is from budgeting and allocation of sufficient funds for training the staff and purchasing of equipment required in the adoption of lean logistics process. The study recommends that lean adoption process should only begin when the resources see determined to cover the whole process. This would be vital in averting any likelihood for failure in the adoption process as the level of success is determined by the level of resource availability.
4. Organizational leadership is a vital organizational component for effective lean adoption, thus first hand approach must begin with determination of administration requirement for managing the transition process towards adoption of lean logistics. Laxity in decision making will result in failure as it would indicate lack of commitment from top, triggering the same down hierarchy. Therefore, the study recommends for pro-activeness in up taking leadership obligation in the course of lean adoption process.

5.6 Suggestions for Further Research

1. It is recommended that replication studies be conducted in other regions in Kenya and results compared to see if there is any consistency or if the results were biased.
2. The study recommends that future researchers should attempt and evaluate the impact of financial planning on the success of lean management programs in manufacturing companies.

REFERENCES

- Aboelmaged, M.G. (2011). Reconstructing six sigma barriers in manufacturing and service Organizations. The effects of organizational parameters. *International journal of Quality and Reliability and Management*,28(5),519-541.
- Ahmad, S, & Azuan, S. (2003). Culture and lean manufacturing towards a holistic framework. *Australian journal of Basic and applied Sciences*,7(4),4-6.
- Allen, M, &Wigglesworth, M. J (2009). Innovation leading the way. Application of lean Manufacturing to sample management. *Journal of Biometric Screening*14 (5), 6-11
- Achanga, P., Shehab, E., Roy, R., Nelder, G. (2006). “Critical success factors for Lean implementation within SMEs”, in *Journal of Manufacturing Technology Management*, 17,(4): 460-471.
- Antony, J., & Kumar. (2012). Lean and Six Sigma methodologies in NHS Scotland: An empirical study and directions for future research. *Quality innovation of Prosperity*, 16(2), 19-34.
- Baudin, M. (2005). Lean logistics: The Nuts and Bolts of Delivering materials and Goods. *CRC press*.
- Bhasins, S. (2012). An appropriate change strategy for lean success. Management decision. *Journal of manufacturing technology Management*, 50(3), 439-458.
- Brun, A. (2011). Critical success factors of six sigma implementation in Italian Companies. *International Journal of production economics*, 131(1), 158-164.
- Buehlmann, U., &Fricke, C.F. (2016). Benefits of lean implementation efforts in small and medium sized enterprises. *Production & manufacturing Research*,4(1),114-132.
- Chauhan.G., & Sigh, T. (2012). Measuring parameters of lean manufacturing realization. *Measuring Business Excellence*, 16(3), 57-71.
- Chay, T.C. (2004). The challenges of lean manufacturing implementation in SMEs Bechmarking. *An International Journal*, 21(16), 987-1002.
- Christence, C. (2013). *The innovators Dillemma*. Newyork: Collins.

- Christopher MarcSchlick, E. F (2013). Age-Differentiated work systems. *Springer Science & Business Media*.
- Conceicao, S., & Altman. (2011). Training and development process and organizational culture Change. *Organization Development Journal*, 29(1), 33-43.
- Dorota, R. A. (2014). The challenges of lean manufacturing implementation in SMEs. *Benchmarking: An International Journal*, 21(6), 987–1002
- Douglas, M. Lambet, Janes R. Stock, Lisa M, Ellram. (2011). *Fundamentals of logistics Management*, Pennysvania State University: Irwin/McGraw-Hill.
- Drew, J., McCullum, B. and Roggenhofer, S. (2004). *Journey to Lean: Making Operational Change Stick*. 62-75, Virginia: Palgrave MacMillan
- Dreyer, C. R (2016). Real- time, integrated supply chain operations: An example from Distribution of pharmaceuticals. *Proceedings of POMS*, Orlando, Florida, USA.
- Duttai, E. A, & Banerjee, E.S. (2004). Review of lean manufacturing Issues and Challenges in Manufacturing. *International Journal of Research in business management*, 27-36.
- Finkelstein, S. (2004). Power in Top Management Teams: Dimensions, measurement and Validation. *Academy of management Journal*, 35(3), 505-538.
- Gareth, H.R. (2014). Organizational readiness and lean thinking implementation. Findings from three emergency department case studies in New Zealand *Health Services Management Research*, 3-9.
- George, M.L. (2003). Lean Six Sigma for service: How to use lean speed and six sigma quality to improve services and transaction. *The Mc Graw Hill Companies*.
- Goehnera, L., Mellob, L.C., & Banderia, R.A. (2016) .Lean manufacturing Implementation for multinational companies with production subsidiary in Brazil: *Development of a Roadmap*. *International journal of lean thinking*, 7(1), 4-9.
- Gollan, P.J., Kalfa, S., Agarwal, R., Green, R., & Randhawa, K. (2014). Lean manufacturing as a Performance work system: the case of cochler international. *Journal of production Research*, 52(1), 21.

- Gurumurthy, A., & Kodali, R. (2011). Design of lean manufacturing systems using value stream Mapping with simulation: a case study. *Journal of manufacturing technology management*, 22(4), 444-473.
- Hines, P., Holweg, M. et al. (2004). Learning to evolve. A Review of Contemporary Lean Thinking. *International Journal of Operations & Operations & Production Management*, 24, 10, pp. 994–1011
- Hutt, M. D & Speh, T. W. (2010). *Business Marketing Management: 10th ed*, Cengage Learning. 92, 93-97, 96, 11.
- James, P. Womack, Daniel T. Jones, Daniel Roos. (1990). Machine that changed the world. Simon and Schuster.
- Jeffrey K. Liker, James Franz (2011). The Toyota way to continuous Improvement: Linking Strategy and Operational Excellence to Achieve Superior Performance. *McGraw Hill Professional*.
- Jeyaraman K. and Teo L. (2011). A conceptual framework for critical success factor of lean Six Sigma Implementation on the performance of electronic manufacturing service industry. *International journal of lean Six Sigma*, 191-21
- Mwacharo, J.M., Nomura, K., Hanada, H., Han, J.L., Amano, T. & Hanotte, O. (2013). Reconstructing the origin and dispersal patterns of village chickens across East Africa; *insights from autosomal mar-kers*. *Mol. Ecol.*, 22: 2683–2697
- Karim, A., & Arif-Uz-Zaman, K. (2013). A methodology for effective implementation of lean strategies and its performance evaluation in manufacturing organizations. *Business Process Management Journal*, 19(1), 169–196
- Kinsinger, P. (2006). Adaptive Leadership for VUCA World: tale of two managers. *Thunderbird Magazine*.
- Knemeyer & Murphy. (2004). Evaluating the performance of third-party logistics arrangements: A relationship marketing perspective. *Journal of supply chain arrangements*, 35-51.

- Kothari, C.R. (2004). *Research methodology: Methods and Techniques* (2nd ed.) New Delhi: *New Age International Limited*.
- Kotter, J.P. (1990). *A force for change: How leadership differs from management*. New York: *Free press*.
- Mohan, J. B., (2013). *The Impact of Logistic Management on Global Competitiveness*,
- Mugenda, M. O. & Mugenda, G. A. (2003). *Research Methods, Quantitative and Qualitative Approaches*. Nairobi: *Acts Press*.
- Ramesh, V., and Kodali. (2012). A decision framework of maximizing Lean Manufacturing Performance. *“International journal of production Research* 50(12): 2234- 2251
- Russell R.S., Taylor B.W (2009). *Operations Management along the Supply Chain*, 6th ed), John wiley and Sons Ltd., Chichester
- Orodho, J.A. (2005). *Elements of Education and Social science Research Methods*. Nairobi: *Masola Publishers*, p. 31
- World Bank (2005). *A Better Investment Climate for Everyone*. New York: Co-publication of the World Bank and Oxford University Press.

APPENDICES

APPENDIX I: LETTER OF TRANSMITTAL OF DATA COLLECTION INSTRUMENT

Catherine Kavula Nzavwala,
P.O. Box 715,
Kitui.
Tel: 0726420098.

Dear Respondent,

RE: REQUEST TO PROVIDE RESEARCH INFORMATION.

I am a student at the school of Continuing and Distance Education at the University of Nairobi doing research on Organizational factors influencing adoption of lean logistics: a case of manufacturing companies at Roto Mulders Limited. Towards my master's degree.

You have been selected as one of the respondents to assist in providing information concerning your area of work. It's my kind request that will spare a few minutes of your time and answer the questions in the questionnaire. The information provided will be used for academic use only, and will be handled with utmost confidentiality. Your identity will be anonymous and your name shall not be recorded anywhere in the questionnaire.

Yours faithfully,

Catherine Kavula.

APPENDIX II: QUESTIONNAIRE FOR EMPLOYEES OF ROTO MOULDERS DATA COLLECTION

DATA COLLECTION QUESTIONNAIRE

This questionnaire intends to investigate organizational factors influencing adoption of lean logistics; a case of manufacturing companies in RML. Your sincere and valuable responses will be highly treated with utmost confidentiality. Please tick or comment appropriately and return your completed questionnaires to the person in charge.

Section A (Personal Information)

1. Name of the organization.

2. Please tick(/) your designation.

Distribution driver ()

Forklift operator. ()

Distribution assistant ()

Warehouse administrator ()

Stock controller ()

Checker ()

Fleet technician ()

Load builder ()

Distribution team leader ()

Warehouse team leader ()

Fleet team leader ()

3. How long have you worked in RML?

- a) Less than a year
- b) Between 1 and 3 years
- c) Above 3 years

4. What is your highest level of education?

- a) Primary
- b) Secondary
- c) Tertiary
- d) University

Section B (Organization Structure and Adoption of Lean logistics in manufacturing companies)

To what extent do you think the following are organizational structure factors that affect the adoption of lean logistics in manufacturing companies?

Please tick (✓) appropriately using the scale where 1=strongly disagree, 2=agree, 3=neutral, 4=Agree and 5=strongly agree.

	Statement	1	2	3	4	5
1	Authority is distributed evenly in the organization creating the best environment to aid adoption of lean logistics.					
2	Strategies are put in place to ensure coping and adaptation of current trends in the market by the organization.					
3	Lean adoption success depends on how tasks are allocated, coordinated, directed and supervised in the organization.					
4	Working as one team from top level while embracing teamwork and collaboration helps in delivering excellent ways of working.					
5	Organizations implementing lean systems such as lean logistics should consider setting expectations on behavior and performance and empower employees.					
6	Top management level continuously examines its commitment towards adoption of lean logistics and acts as a role model to the juniors.					

In your opinion what other factors would you add to the above?

.....

.....

.....

Section C (Skills and Adoption of Lean Logistics in manufacturing companies)

To what extent do you think the following are skills factors that affect adoption of lean logistics in manufacturing companies?

Please tick (✓) appropriately using the scale where 1=strongly disagree, 2=agree, 3=neutral, 4= Agree and 5=strongly agree.

	Statement	1	2	3	4	5
1	Training creates a risk of free environment through elimination or reduction of mistakes and contributes to successful adoption of lean					
2	Coaching and development of employee by a lean expert while giving employees space and freedom makes them feel they are part of lean logistics adoption journey.					
3	Frequent refresher trainings and inductions and inductions program developed by lean experts has constantly facilitated adoption of lean logistics in both the management and employees.					
4	Lean adoption success depends on organizational prioritization to develop staff, embrace coaching and mentoring and motivation with constant positive feedback aimed at improving skills.					
5	Growing confidence of an individual and allowing for personal growth helps in improving logistics system through waste minimization.					
6	It is likely that waste would be minimized when staff is trained on lean logistics tools and theoretical education on lean logistics systems.					

In your own opinion what other factors would you add to the above?

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.....

Section D (Resource Availability and Adoption of Lean Logistics in manufacturing companies)

To what extent do you think this are resource availability factors that affect adoption of lean logistics in manufacturing companies?

Please tick appropriately using the scale where 1=strongly disagree, 2=disagree, 3=neutral, 4= agree and 5=strongly agree

	Statement	1	2	3	4	5
1	Allocation of time and funds for capital projects and operational expenses related to lean logistics plays an important role during implementation phase.					
2	Availability of funds influences sharing and benchmarking with other companies to cross pollinate ideas and skills through hiring of consultants with lean experience					
3	Availability of enough work force influences adoption of lean logistics					
4	Lean adoption success depends on the available assets in the company					
5	Rewarding and recognizing of best performers is a key motivational factor towards lean logistics adoption.					

In your opinion what other factors would you add to the above?

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Section E (Leadership and Adoption of Lean Logistics in manufacturing companies)

To what extent do you think the following are leadership factors that affect adoption of lean logistics in manufacturing companies?

Please tick (√) appropriately using the scale where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree

	Statement	1	2	3	4	5
1	Leadership convictions through personal commitment, taking initiatives and leading by example are a key success factor for lean logistics adoption.					
2	Good leadership structure allows setting up of clear goals which drive the company towards transforming the logistics department to consistently satisfy the customers.					
3	Management role is relevant in developing and enabling a team of operators to deliver outstanding quality, on time and full deliveries to the customers.					
4	Leadership and coaching teams has adhered to the companies standards and consequently supported the continuous framework.					
5	I believe that leaders' willingness to exhibit companies' values and serving as role model by taking lead in adhering to companies standards on lean logistics contributes to successful growth.					
6	Leadership alignment through agreement of common objective and strategies determines the extent to which lean logistics adoption matures with overall goal of attaining company vision and mission.					
7	The way leaders spend their time, ask questions, provoke conversations, promote relationship and make decisions affects lean logistics adoption.					

In your opinion what other factors would you add to the above?

.....

.....

.....

Section F (Lean logistics in manufacturing companies)

To what extent do you think the following factors are as a result of adoption of lean logistics in manufacturing companies?

	Statement	1	2	3	4	5
1	Orders delivered in full as per the requirement of customer have improved recently.					
2	Orders delivered accurately as expected by the customer have improved with time					
3	Order delivered on time as requested by the customer have improved recently.					
4	Customer complaints have reduced with time.					
5	Product returns due to delivery gaps have reduced recently					
6	The cost of fuel, repair and maintenance have gone down recently					

In your opinion what other factors would you add to the above?

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

THANK YOU FOR YOUR PARTICIPATION.

APPENDIX III: INTERVIEW GUIDE FOR EMPLOYEES ROTO MOULDERS.

1. What is your age?

- a) Less than 25 years []
- b) Between 25-35 years []
- c) Between 35-45 years []
- d) Between 45-50 years []
- e) Above 55 years []

2. What is your position in Roto Moulders Limited and how many years have you been in the position?

3. What is your highest level of education?

4. Who is involved in lean logistics formulation?

5. Are there set standards for employees and organization generally? If yes, are they followed keenly?

6. Do employees undertake refresher trainings? If yes, who facilitates the trainings?

7. Do you use lean logistics in your daily activities?

8. Do available assets in the company influence the adoption of lean logistics in your line of your work?

9. Are there challenges faced when adopting lean logistics in your departments?

10. Good leadership structure drives the company towards transforming the logistics department to satisfy the customers. Do you agree with this statement? If yes, give reasons.

11. Is there positive change noticed in your line of duty after introduction of lean logistics?

TANK YOU FOR YOUR PARTICIPATION.

APPENDIX IV: TABLE FOR DETERMINING SAMPLE SIZE FOR A GIVEN POPULATION

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is population size
"S" is sample size.

Source: Krejcie & Morgan, 1970

Appendix V: Permit

THIS IS TO CERTIFY THAT:

**MISS. CATHERINE KAVULA NZAVWALA
OF UNIVERSITY OF NAIROBI, 0-100
Nairobi, has been permitted to conduct
research in Nairobi County**

Permit No. : NACOSTI/P/18/54302/24428

Date Of Issue : 24th September, 2018

Fee Received :Ksh 1000

**on the topic: ORGANIZATIONAL
FACTORS INFLUENCING ADOPTION OF
LEAN LOGISTICS IN MANUFACTURING
COMPANIES IN KENYA, NAIROBI. A CASE
OF ROTO MOULDERS LIMITED.**

**for the period ending:
20th September, 2019**



[Signature]
**Director General
National Commission for Science,
Technology & Innovation**

**Applicant's
Signature**

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

**The Grant of Research Licenses is guided by the Science,
Technology and Innovation (Research Licensing) Regulations, 2014.**

CONDITIONS

- 1. The License is valid for the proposed research, location and specified period.**
- 2. The License and any rights thereunder are non-transferable.**
- 3. The Licensee shall inform the County Governor before commencement of the research.**
- 4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.**
- 5. The License does not give authority to transfer research materials.**
- 6. NACOSTI may monitor and evaluate the licensed research project.**
- 7. The Licensee shall submit one hard copy and upload a soft copy of their final report within one year of completion of the research.**
- 8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice.**

National Commission for Science, Technology and innovation

P.O. Box 30623 - 00100, Nairobi, Kenya

TEL: 020 400 7000, 0713 788787, 0735 404245

Email: dg@nacosti.go.ke, registry@nacosti.go.ke

Website: www.nacosti.go.ke



REPUBLIC OF KENYA



**National Commission for Science,
Technology and Innovation**

RESEARCH LICENSE

Serial No.A 20779

CONDITIONS: see back page

Appendix VI: Authorization Letter



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 3310571, 2219420
Fax: +254-20-318245, 318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/18/54302/24428**

Date: **24th September, 2018**

Catherine Kavula Nzavwala
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *“Organizational factors influencing adoption of lean logistics in manufacturing companies in Kenya, Nairobi. A case of Roto Moulders Limited”* I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **20th September, 2019.**

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

DR. MOSES RUGUTT, PHD, OGW
DIRECTOR GENERAL/CEO

Copy to:

The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.

National Commission for Science, Technology and Innovation is ISO9001:2008 Certified

Appendix VII: Plagiarism

ORGANISATIONAL FACTORS INFLUENCING ADOPTION OF LEAN LOGISTICS IN MANUFACTURING COMPANIES IN NAIROBI, KENYA: A CASE OF ROTO MOULDERS LIMITED.

ORIGINALITY REPORT

15%	14%	3%	8%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

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1	pdfs.semanticscholar.org Internet Source	2%
2	researchleap.com Internet Source	1%
3	Submitted to Mount Kenya University Student Paper	1%
4	strategicjournals.com Internet Source	1%
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