

**THE EFFECT OF LEAN PROCUREMENT IN IMPROVING SUPPLY CHAIN  
PERFORMANCE :A CASE STUDY OF JUMIA UGANDA**

**BENJAMIN OKOT**

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## DECLARATION

I, ABER FIASTER MICHAEL OKOT declare that my research titled "**The Effect of Lean Manufacturing on Procurement Performance**" is my own work. I conducted this study under the guidance of MR PASCAL MULOOSI at Uganda Christian University as part of my study in the field of procurement and logistics management

I confirm that the findings and conclusions in this research are mine and have not been submitted elsewhere for credit. I have cited all sources used in my work to give credit to other researchers.

This declaration follows the academic honesty rules of Uganda Christian University

NAME: ABER FIASTER MICHAEL OKOT

Signature:..........

Date: ..10/9/2024..

## APPROVAL

This is to confirm that the research titled "*The Effect of Lean Manufacturing on Procurement Performance*" has been reviewed and approved by the committee. The research proposal meets the necessary academic and ethical standards of Uganda Christian University, and the researcher shows a clear understanding of the topic, goals, and methods.

Signature.....

Date.....

Super-visor.....

## DEDICATION

To my wonderful mother, Thank you for always supporting me throughout my school journey. Your love and encouragement have been my strength. You believed in me when I needed it most and inspired me to do my best. I appreciate all the sacrifices you made, your patience, and the way you celebrated my successes and comforted me during tough times. This achievement is just as much yours as it is mine, and I am truly grateful for everything you've done.

With love,

ABER FIASTER MICHAEL OKOT

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## ABSTRACT

Lean Manufacturing has become an important method for improving efficiency, cutting waste, and boosting overall performance in different industries. This research looks at how using Lean Manufacturing techniques affects procurement performance, focusing on how lean practices improve processes, relationships with suppliers, cost savings, and delivery times. Key lean tools like Just-in-Time (JIT), Kanban, and Value Stream Mapping (VSM) are explored for their role in reducing waste, managing inventory better, and improving communication with suppliers. By adopting lean methods, organizations aim to build a faster, more cost-effective procurement system that helps them make better decisions and gain a competitive edge.

This study uses a mix of methods, including interviews with procurement experts and analysis of performance data before and after lean practices were applied. It highlights both the benefits and challenges, such as improving efficiency and supplier collaboration, but also the hurdles like resistance to change and the need for trained staff. In the end, this research sheds light on how Lean Manufacturing can help improve procurement in a competitive market.

Keywords: Lean Manufacturing, procurement performance, Just-in-Time (JIT), Kanban, Value Stream Mapping (VSM), supplier relationships, efficiency, cost savings, delivery times.

## CHAPTER ONE INTRODUCTION

### 1.0 Introduction

The current study will analyze the impact of lean manufacturing on procurement performance in a firm: a case of Crown Beverages Limited (Pepsi). This chapter presents the background of the study, problem statement, purpose, aims, research questions, justification, significance, and conceptual framework.

### 1.1 Background of the Study

The effectiveness of the procurement process for a company impacts much on cost control, assurance of quality, the availability of goods and services, and success in general. Effective procurement procedures have operational performances and competitiveness where materials are assured of being procured at the best cost, quality, and delivery terms. Businesses are always finding ways to enhance procurement performance to achieve cost reduction, simplify processes, and reach a continuous competitive advantage. One of the best ways to achieve these ascertains is to apply lean manufacturing principles whose guiding philosophies are waste elimination, continuous improvement, and adding value to the customer.

Lean manufacturing is all about smoothing the processes and eliminating non-added-value activities to minimize waste and ensure the utmost value. It helps not only in enhancing the operational performance by building stronger relationships with suppliers, decreasing lead times, and improving inventories but also makes a significant contribution to procurement performance. Both JIT and continuous improvement are lean concepts that are closely related to the drive of procurement objectives, since cost, quality, and delivery performance are concerned. Firms applying these techniques within a lean manufacturing environment often record remarkable improvements in procurement performance that often bolster the overall organizational performance.

Lean manufacturing has led to better procurement performance in the USA, Europe and Asia. In the US, lean ideas have been implemented by companies like Toyota and General Electric in making their procurement processes more efficient and less costly. Other European companies like Airbus in France and BMW in Germany have also applied lean manufacturing to further their procurement performance and enable them to be more competitive in the international market. Lean manufacturing has been widely utilized by firms in Japan and South Korea, such as the industry giants Toyota and Samsung, in accomplishing world-class procurement and operational performance.

Lean manufacturing is fast gaining popularity in Africa, and most businesses are increasingly aware of the impact that the concepts can have on their competitiveness and procurement performance. Companies like Sasol and Eskom have started to employ the principles of lean in their operational activities in South Africa, thus enhancing operational efficiency and purchasing processes. In Kenya, manufacturing firms such as East African Breweries Limited incorporate lean methodologies in enhancing the efficiency of procurement for cost reduction in their operations. In sub-Saharan Africa, there is an increasing trend in embracing lean manufacturing, where local companies are tapping its benefits to gain a competitive advantage in enhancing their procurement and, subsequently business performance. Rezaei et al., 2020. This is more so happening in Nigeria and Ghana.

While most of these companies in Uganda are still in the process of adopting lean manufacturing techniques, some have set the bar on what it means to boast about its potential benefits. In an attempt to improve productivity and reduce waste, Crown Beverages Limited has embarked on an initiative of implementing lean concepts into procurement processes as a way of cementing relationships with its suppliers. Crown Beverages is interested in becoming more competitive in the Ugandan market by focusing on lean procurement in a bid to develop better cost control, higher quality, and firmer delivery performance regarding Hani 2021. Crown Beverages activities are

proof of the greater value of lean manufacturing to procurement performance and general business successes that may be applied as a model by other firms operating in Uganda according Ariadi et al., 2021.

## **1.2 Problem statement**

All organizations would wish to comfortably stand out and boast of exemplary procurement performance. In fact, they may achieve this through the actualization of concepts such as lean manufacturing, among others. However, the reality on the ground is a far cry from this, as most businesses, including the company representing Pepsi, Crown Beverages Limited, have witnessed a decline in their overall procurement performance. For instance, in a study by Mwelu et al. (2023), it was established that Crown Beverages Limited posted a 12% rise in procurement cost in the last two years, an 8% drop in compliance to quality, and a 15% rise in lead times. Furthermore, the company has recorded a 20% rise in the cost of maintaining inventory and a loss of supplier relationships as indicated by Nagaaba (2022).

All this might relate to procurement process inefficiencies and a failure to integrate lean manufacturing techniques that could be so vital in optimizing operations and reducing waste therein. Failure to do so may lead to Crown Beverages Limited experiencing a deteriorating competitive position in the market, as it may face further declines in its operational efficiency and profitability. Moreover, previous studies on various performance measures induced by lean manufacturing, conducted by scholars such as Sahoo (2020) and Deshmukh et al. (2022), have been adequately conducted. Yet, only a few studies focus on its impact specifically on procurement performance in the beverage industry, thereby showing a significant research gap that this study would wish to address. Based on the above premise, the researcher seeks to ascertain.

## **1.3 Purpose of the study**

The purpose of the study will be to establish the impact of lean manufacturing on procurement performance in a firm: a case of Crown Beverages Limited (Pepsi).

#### **1.4 Objectives of the study**

- i. To assess the extent to which lean manufacturing principles have been implemented in the procurement process.
- ii. To determine the relationship between the level of lean manufacturing, implementation and procurement cost reduction.
- iii. To examine the influence of lean manufacturing on procurement quality performance.

#### **1.5 Research questions**

- i. To what extent have lean manufacturing principles been implemented in procurement process?
- ii. What is the relationship between the level of lean manufacturing implementation and procurement cost reduction?
- iii. How does the implementation of lean manufacturing influence procurement quality performance?

#### **1.6 Scope of the study**

Three dimensions, namely; content, geographical, and time, the scope of this study is discussed in detail below.

##### **1.6.1 Content scope**

Through this study, an endeavor shall be made to establish the lean manufacturing principles adopted by Crown Beverages Limited Pepsi in the bid to improve its procurement performance, ascertain challenges faced in the implementation of lean manufacturing principles in Crown Beverages Limited - Pepsi procurement function, and establish the relationship between lean manufacturing and procurement performance at Crown Beverages Limited - Pepsi.

##### **1.6.2 Geographical scope**

The study will be geographically conducted in Crown Beverages Limited, situated on Plot M214 Nakawa Industrial Area, P.O. Box 20021, Kampala-Uganda. Crown Beverages Limited is selected for this study because of the established complexity in applying lean

manufacturing practices and hence would form a great case for assessing the impact of such principles on procurement performance.

### **1.6.3 Time scope**

Materials consulted will be scholarly ones, precisely between the periods of 2019 to 2024. The study will also be carried out for a period of three months from April to June, 2024.

### **1.7 Justification of the study**

The justification for this study is based on the high need for improving Crown Beverages Limited's Pepsi procurement performance by practicing lean manufacturing methods like Just-in-Time, VSM, TPM, and Continuous Improvement. While there is some literature on the general benefits of lean manufacturing, little, if any, prior research has focused on its impact on procurement performance in domains including cost reduction, improvement of quality, reduction of lead time, supplier relationship management, and inventory management. This paper tries to bridge the gap by creating valuable understanding for both the academic and industrial fraternities.

### **1.8 Significance of the study**

The knowledge to be derived from this study will benefit Crown Beverages Ltd. by Pepsi, in that the procurement performance through lean manufacturing may result in cost savings and operational efficiencies. This study will also benefit procurement managers and professionals because it provides them with practical strategies as well as evidence regarding the application of lean manufacturing to improve procurement processes, thus aiding their decision-making.

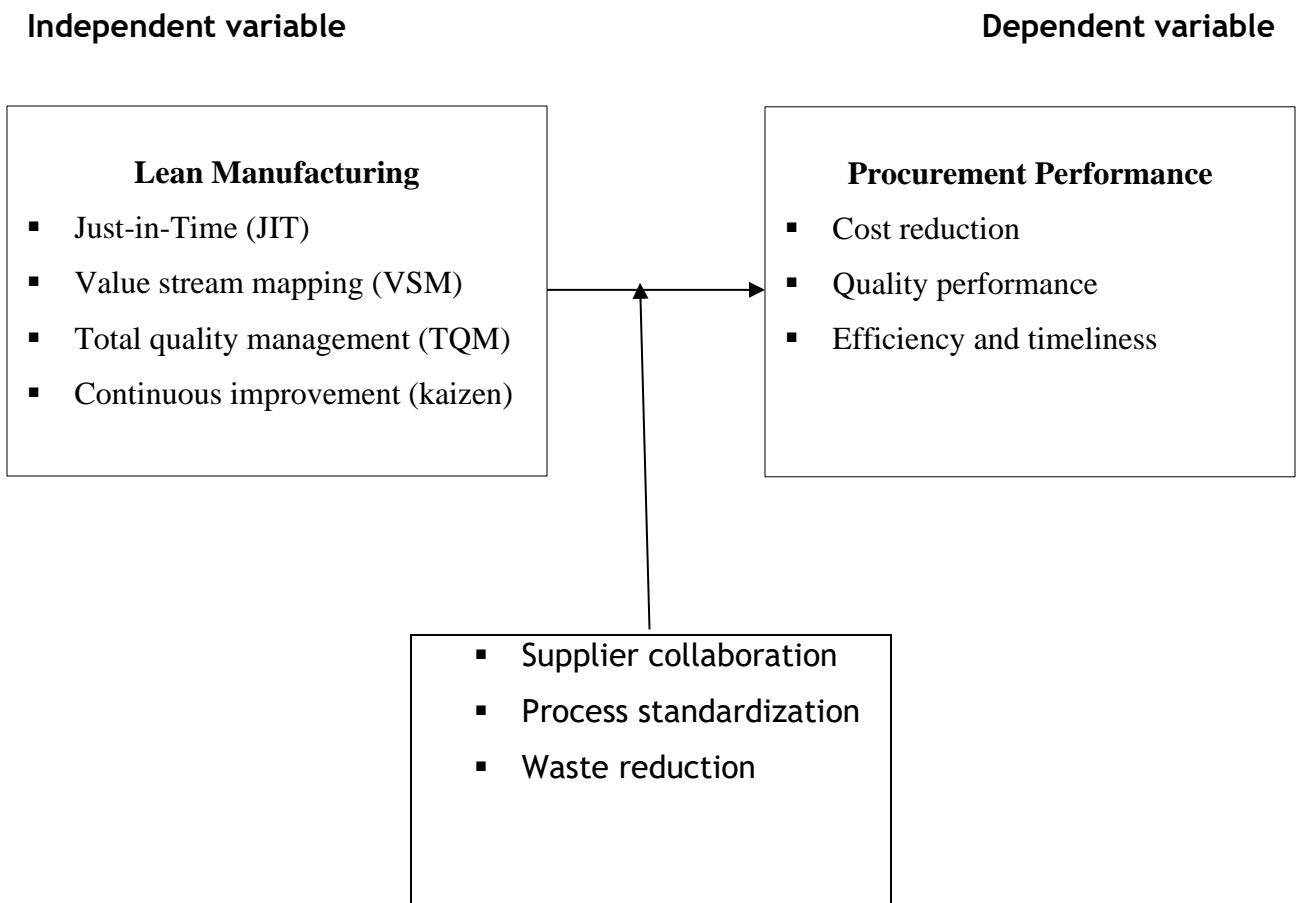
The study will be useful to industry practitioners because the illustration of successful cases of lean manufacturing that will be used as benchmarks by other firms to bring improvement in procurement performance.

It will be useful to policy makers as it brings out the supportive organizational policies that are necessary for lean manufacturing to take place leading to improvement in procurement performance within the industry as a whole.

It will contribute to other future researchers and academicians in benefiting the research gap that exists in the lean manufacturing study on specific impacts on procurement performance. This will be the basis of further academic exploration and research.

### 1.9 Conceptual framework

Figure 1: Conceptual Framework



## CHAPTER TWO LITERATURE REVIEW

### 2.0 Introduction

Literature review is a review of the scholarly materials put forward by several personalities on the effect of lean manufacturing on procurement performance in a company as well as critically analyzing the deviations in the explanations to find out the research gap in the study variables. In reviewing the literature, a concept will be objectively defined followed by reviewing the objectives. Sources to be used are newspaper articles, magazines, encyclopedia and books related to the people.

### 2.1 Definitions and concepts of key variables

#### 2.1.1 Lean manufacturing

According to Hao et al. (2021), lean manufacturing is the process for the systematic reduction of wastes to maximize productivity, initially developed from the TPS or the Toyota Production System. According to Sahoo, 2020, Lean manufacturing is about value creation through the elimination of non-value-added activities, which in turn enhances operational efficiency. The concept has its deep roots in principles of JIT stating that only the required amount of production should be made at a time, so that it would reduce costs of inventories and enhance the responsiveness of the entire system as a whole.

Lean manufacturing is not just about waste reduction; rather, it comprises a culture of continuous improvement to which all employees are empowered to contribute for enhanced productivity and quality of the processes. Möldner et al. (2020) have stated that lean manufacturing practices are not confined to the shop floor itself, but they are very well integrated across different functions of an organization through which innovation in processes and overall performance improvement is ensured. Lean manufacturing is in line with sustainability practices, enabling more efficiency in resource usage towards the perpetuity of the manufacturing process. Hao et al. 2021 re-echo the imperatives of lean manufacturing on sustainable issues.

On this note too, the incorporation of lean principles into manufacturing has increased over time and considerably helped to enhance operational and financial performance. Khalfallah & Lakhal, 2021. As per Aripin et al. (2023), the adoption of the lean manufacturing practice brings improvement in cost efficiency, quality, and customer satisfaction. Lean manufacturing also works to improve relations with suppliers and their integration, which is very important to achieve a perfectly integrated supply chain for better performance in procurement. The overall goal of the lean manufacturing concept is to achieve higher value for customers but with fewer resources. It therefore underlines its role in driving competitiveness and profitability in a manufacturing environment. Ariadi et al. 2021

### **2.1.2 Procurement performance**

Purchasing performance could be defined as an integral part of organizational efficiency and effectiveness. Various scholars have also addressed the issue regarding definition and conceptual framework. According to ElAmmari et al. (2024), procurement performance is commonly defined as the ability of an organization to achieve cost efficiency, quality, and timely delivery through effective procurement practices, especially when integrated with Industry 4.0 technologies. This definition emphasizes digital transformation in enhancing procurement outcomes—a proposition aligned with broader trends in supply chain management. Manda et al. Echoed the same argument, emphasizing the use of lean supply chain practices on grounds that procurement performance is directly linked to the potentials of a lean management system for waste reduction and enhancement in the use of inputs. This perspective puts a focus on how procurement performance can be considered the point at which lean principles would come into play, optimized processes through the eradication of inefficiencies.

More importantly, Khalfallah & Lakhal, 2021 broaden the definition of procurement performance by relating it to operational and financial aspects. They showed that improvement in procurement practices affects not only the effective supply chain operation but also influences financial performance. Their study, therefore, unfolds that procurement performance mediates between lean manufacturing and overall

financial performance, hence underlining its strategic role in organizational performances. Rezaei et al. (2020) emphasize this further by focusing on the two major dimensions of procurement performance, supplier selection and order allocation, both making use of a multi-criteria decision-making approach with an aim to optimize these processes. Their work has identified that procurement performance is related to how well the capabilities of suppliers fit the goals of the organizations and how this can help in achieving strategic objectives.

Besides these frameworks, Mölnder et al. (2020) explore how procurement performance influences process innovation within the context of lean manufacturing. The authors advance that procurement performance is linked not only to operational efficiency but also to the ability to drive innovation through strategic relationships with suppliers and improvement practices. This view is reiterated by Mwelu et al. (2023), who established that procurement performance, in fact plays an important role in the mediating role between outsourcing and firm profitability. Their findings indicate that effective procurement practices will improve significantly a firm's competitive advantage in ensuring that the outsourced processes are cost-effective and strategically viable for the firm (Mölnder et al., 2020; Mwelu et al., 2023).

## **2.2 Lean manufacturing principles adopted by companies**

**Just-In-Time:** This is the lean manufacturing principle of reducing inventory levels by synchronizing production schedules with customer demand and supplier deliveries. The implementation of JIT can be done whereby companies reduce the costs associated with storing stock and waste resulting from overproducing a product. Because of this principle, material or components would be available exactly when needed, improving procurement efficiency and shortening lead times. For this reason, JIT leads to a seamless buying experience and, in general, to higher performance and operational results. **Kaizen/Continuous Improvement:** Another lean principle that could be mentioned is continuous improvement, known as Kaizen, which justifies small-step changes and processes of endless perfection. Organizations that apply Kaizen in purchasing focus on the periodic review and enhancement of their procurement strategies and processes. The continuous improvement culture can locate deficiencies

in the procurement process and implement minor effective changes with significant long-term benefits. Business operations should be continually refined to enable organizations to stay ahead of the competition and raise their standard of procurement performance.

**Value Stream Mapping:** VSM is one of the Lean tools that visually represent and analyze the flow of materials and information that is required to bring a product to a customer. In procurement, it underpins firms in mapping non-value-adding activities, bottlenecks, and inefficiencies within supply chains. According to Khalfallah and Lakhali 2021, mapping all the procurement processes can help an organization to find opportunities for improvement in different ways that will improve the effectiveness and efficiency as well as reduce the procurement operation cost. Companies can enable the smoothing of the procurement process through the use of VSM and thus improve the whole performance, according to Mady et al., 2020.

**Supplier development in lean:** Lean supplier development is made up of collaborative relationships with suppliers for the purpose of developing and enhancing procurement performance. By involving the suppliers through close interactions, it's possible to ensure alignment with lean principles related to the reduction of waste, improvement in quality, and enhancement of delivery performance. The result of this cooperation will be more reliable and efficient processes for procurement whereby suppliers will be in a better position to meet comprehensively the needs of the company. Apart from that, the development of lean suppliers develops mutual trust and long-term collaboration considered very critical to sustain procurement excellence.

**Standardized work:** Standardized work follows the process creating consistent and repeatable processes for procurement activities to ensure efficiency, besides reducing variability. By standardizing procedures on ordering, receiving, and inventory among other procurement activities, companies manage to streamline their procurement activities with minimal errors, said by Mölnder et al. 2020. Standardization has also facilitated the communication and coordination that occurs between the different procurement teams, thereby helping to increase the overall level of performance

(ElAmmari et al., 2024). Moreover, the availability of an acceptable pattern or norm allows the highlighting of deviation from the norm more easily to be then improved using continuous improvement (Hao et al., 2021).

**Lean six sigma:** Lean Six Sigma embeds the principles of lean manufacturing into those of six sigma, reducing variability to achieve quality with a high signal-to-noise ratio. In the procurement process, Lean Six Sigma methods are applied to remove wastes and eliminate defects in purchased goods to optimize procurements. This will allow a company to raise its procurement performance by ensuring that there is consistency in the standard of materials and services procured. Lean Six Sigma also allows data-driven decision-making, important to achieve continuous improvement in procurement practices. According to Deshmukh et al., 2022, a significant attribute of lean six sigma is that it combines principles of wastes elimination from Lean with methods and tools for process improvement adopted from Six Sigma.

**5S methodology:** The 5s methodology, respectively Sort, Set in order, Shine, Standardize and Sustain, refers to a lean principle which focuses on workplace organization and efficiency. 5S methodology, when applied to procurement, helps companies organize their procurement processes, ensuring that all the tools and materials are present and that the items are well managed. This organizational discipline reduces wastage of time and further promotes efficiency in operations concerning procurements. A well-organized procurement environment improves the overall performance of procurement and brings better results.

### **2.3 Challenges faced by companies in implementing lean manufacturing principles in its procurement function**

One major threat that companies are facing during the implementation of lean manufacturing in a procurement function is resistance to change within the organization itself. Most principles of lean would imply that a fundamental process of how procurement processes are being executed has to be overturned for which employees may resist and are accustomed to old habits. This could be due to a lack of awareness about lean principles or due to insecurity over job losses that come with the

efficiency of lean processes. In addition, lean implementation is highly dependent on employee commitment. Without stakeholder buy-in to lean implementation, the process is highly hindered.

The other challenge is integrating lean principles with existing procurement systems and technologies. Most companies have systems that are so deeply entrenched and may not easily allow the use of lean methodologies, thereby causing some operational resultant snags. The process for integration may require heavy investment in new technologies or modification of existing ones to suit lean practice. Besides that, integrating lean into digital supply chains can be very complex as to further complicate processes of delays and increase costs for the firms. This is in light of Rahamneh et al. 2023.

Thirdly, some of the challenges are the lack of proper training and lean principle knowledge in the procurement staff. Lean manufacturing requires an in-depth understanding and knowledge of lean tools and techniques, which most procurement professionals' lack. Without an appropriate training program, implementation may become ineffective in terms of extracting all the benefits of lean. It also requires continuous education and training due to their changing nature, which might be costly for firms to acquire. According to the state of Hani, 2021

Supply chain complexities represent one of the major challenges regarding the implementation of lean manufacturing in procurement. On the other hand, lean principles insist on just-in-time inventory management. For this to take place, there should be an exacting coordination with the suppliers. According to Mady et al. 2020, on the other side, global supply chains see lead time variations, quality issues, and logistical complications which impact the JIT approach of procurement practices hard to be pursued. Moreover, operating lean with dependency on few suppliers will enhance likelihood of disruption within the supply chain, too. This is in accordance with the views of Rezaei et al., 2020.

Among common challenges facing application of lean manufacturing into buying, cost issues are also included. In as much as lean practices are purposed towards waste

elimination and enhanced efficiency, initial costs of implementation such as training, system integration, and process redesign usually remain very high according to Khalfallah & Lakhal, 2021. Furthermore, there is a need to trade off the costs related to lean implementation against its expected benefits in the long term (Hao et al., 2021). Continuous investment in the lean initiative puts unnecessary stress on finances, especially in the case of small and medium-scale enterprises (Mölnder et al., 2020).

Cultural challenges at the organizational level may further complicate the process of implementing lean manufacturing in procurement. Most of the lean principles result in a culture of continuous improvement that may just run in direct opposition to existing organizational norms and values. Negative responses can also arise from the middle management levels because such practice may weaken their power. Thirdly, a lean culture cannot be built overnight; it requires continued patience and resolve, which might be challenging to persevere for a very long period, as indicated in the study by Okita et al. (2021).

The second challenge involves non-measurability of procurement performance vis-à-vis lean manufacturing. Several organizations have reported the inability to set up metrics that can effectively demonstrate that a lean practice employed in procurement has enhanced it, more so according to Jing et al. The challenge is compounded in that the results might take time to materialize, hence necessitating difficulty in demonstrating immediate benefits. This would be according to Nagaaba, 2022. Besides, the lack of uniform measurement tools may lead to inconsistency in the measurement of success of such initiatives across various departments and functions. This is according to Sahoo, 2020.

Finally, market volatility and changes in regulatory environment are some of the exogenous factors likely to hinder the implementation of lean in procurement. Market fluctuations disrupt the supply chains, making the process of maintaining lean inventories very difficult. Changes in regulations may require the firm to change some of the lean processes to add some complexity to them. The firms need to be more agile and adapt to such external challenges, which stretches resources and further

complicates the lean implementation process. Besides, geopolitical influences of trade tariffs and international disputes can further complicate the current corporate operations in trying to maintain lean procurement practices in a global perspective up to date, as stated by Rahamneh et al. (2023).

#### **2.4 Relationship between lean manufacturing and procurement performance**

Lean manufacturing impacted on procurement performance was discussed by Ariadi et al., 2021, and Jing et al., 2021. They postulated that lean principles do, to a large extent, promote procurement effectiveness in practice. Ariadi et al. (2021) investigated the Indonesian bottled water industry and determined that the integration of lean and agile supply chain strategies strengthens procurement performance toward lead time and cost reduction, which is an important contributor in terms of competitive advantage. Jing et al. (2021), in their case study on value stream mapping, demonstrated how the application of lean tools in procurement might streamline processes and cut down waste in the function and improve supplier relationships toward greater procurement outcomes. These two studies demonstrate the importance of strategic integration of suppliers as a key element for managing procurement to realize optimum gains from lean.

Khalfallah & Lakhal, in the year 2021, and Deshmukh et al., in 2022, analyzed the lean manufacturing impacts on procurement performance related to operational and financial efficiency. Khalfallah & Lakhal, in 2021, noticed that these practices-such as just-in-time procurement and continuous improvement-will help to achieve a great deal in improving operational performance by minimizing the levels of inventory and reducing the procurement cycle time. Deshmukh et al. Echoed these findings when they cited that lean strategies in procurement enhance the process efficiency and add to financial performance through a reduction in procurement cost and improvement in the supplier performance metric. These studies pinpoint the twin benefits of lean manufacturing in enhancing both operational and financial dimensions of procurement performance.

Kamble et al. (2020) and Hao et al. (2021) researched how lean manufacturing impacts the development of sustainable procurement practices. Kamble et al. (2020) focused their investigation on Indian manufacturing companies and found that incorporating lean into Industry 4.0 technologies for procurement purposes will lead to the development of more sustainable and effective procurement through the rational use of resources and more efficient means of waste management. Similarly, Hao et al. (2021) investigated how lean production, in its integration with servitization, would complement sustainable procurement by encouraging resource efficiency and reduction in environmental impact. Both of these studies reveal the possible role that may be played by lean manufacturing in inducing sustainability into procurement and therefore becomes an important strategy for companies to reach their environmental objectives.

For example, Rezaei et al. (2020) and Mölnder et al. (2020) concentrated on how lean manufacturing affects supplier selection and innovation in procurement. In this vein, Rezaei et al. (2020) applied a multi-criteria decision-making approach to show how the criteria of lean manufacturing can be integrated into the selection processes of suppliers to make sure that the suppliers will align with the principles of lean and will be in a position to contribute to the general efficiency of procurement. Mölnder et al. (2020) examined the effect of lean practices on process innovation in purchasing and established that lean manufacturing facilitates continuous improvement and innovations in suppliers, thereby enhancing procurement performance. These studies therefore bring out the need to align the competencies of suppliers with the objectives of lean manufacturing for effective and efficient procurement performance.

Lean manufacturing as a mediator between outsourcing and procurement performance has also been studied. Using the structural equation modeling approach, Rahamneh et al. (2023) found that digital supply chain practice adoption coupled with lean manufacturing contributes to the efficiency of outsourced procurement activities by reducing delays and enhancing communication between buyers and suppliers. Mwelu et al. (2023) further affirm this through a presentation of measures of lean manufacturing practice, such as standardized work and process optimization, which mediate the effect of outsourcing on profitability and, finally, procurement performance. These findings

point out the critical function of lean manufacturing in streamlining outsourced procurement functions.

Manda et al. (2022) and Sahoo (2020) investigated challenges and benefits which accrued to industries specifically from the application of lean manufacturing in procurement. Manda et al. (2022) focus on the construction industry in Zambia and present evidence that lean supply chain practices, once implemented at procurement, have the potential to help reduce waste and enhance procurement efficiency. However, resistance to change and shortage of expertise might become a hindrance. Sahoo (2020) explored some of the social and technical factors that affect lean procurement. He found that lean practices indeed enhance procurement performance through a culture of continuous improvement, but the implementation process is susceptible to stiff barriers in the form of employee change resistance and lack of sufficient training. These studies underline the necessity of strategies that approach industry-specific and effectively manage change to realize potential benefits from lean manufacturing for procurement.

Okita et al. (2021) and Suresh and Nathan (2020) investigated firm readiness for competitiveness in adopting the lean procurement practice. Okita et al. (2021) evaluated grain milling firms in Kenya. It was established from the study that lean management practices, including procurement standardization and collaboration with suppliers, contribute to enhancing the competitiveness of firms through a reduction in lead times and improvement in procurement accuracy. Suresh and Nathan (2020) researched lean procurement readiness in construction projects and concluded that "firms with a higher level of lean maturity in procurement will be more capable of securing competitive advantages via cost savings and process efficiencies." These studies further indicate the readiness of an organization and strategic planning that may be involved to realize the benefits of lean manufacturing-enabled procurement.

Aripin et al. (2023) and ElAmmari et al. (2024) delve deeper into the theoretical and practical aspects of how lean manufacturing affects procurement performance. Aripin et al. (2023) systematically reviewed the literature and highlighted some important

theories that might explain how lean manufacturing has an improving role on procurement performance, such as the resource-based view and dynamic capabilities theory, which purport that lean practices in procurement lead to sustained competitive advantages. ElAmmari et al. (2024) presented a case study on the integration of Industry 4.0 and lean manufacturing into procurement. Results from the case have proven that such an integrated approach allows the Procurement Department to analyze data in real time and make decisions on necessary changes which enhance procurement efficiency at large. These studies give an insight into how the principles of lean manufacturing may be effectively applied to enhance procurement performance in different contexts.

## **2.5 Summary and literature gap**

The literature review discusses how lean manufacturing influences procurement performance by integrating the principles of lean manufacturing, such as Just-In-Time, Kaizen, and Value Stream Mapping in improving the efficiency and waste reduction of procurement processes. This indicates that the practices of lean manufacturing provide a very significant enhancement to procurement performance, which consequently improves operational and financial performance. However, remarkably, little study has been done on the challenges that corporations face in the implementation of lean principles in procurement, such as people-resistant-to-change, system integration difficulties, and complexity in supply chains. As such, this calls for a greater dimension on the research to overcome such barriers in order to achieve the full benefits of lean manufacturing in procurement.

## CHAPTER THREE RESEARCH METHODOLOGY

### 3.0 Introduction

This chapter describes the methodology that shall be adopted in this study. It shall detail how this study shall be conducted. It covers the design of study, population of study, sample size. It shall also describe the sampling procedure, definition of variables, research instruments, data analysis and management, ethical considerations, and limitations of study.

### 3.1 Research Design

According to Bloomfield & Fisher, 2019, a research design is an approach to conducting research organized. This study will adopt a cross-sectional survey research design because it intends to collect data from respondents in the representative population at one particular point in time without repetition. The reason it will be adopted is that it takes less time to execute as compared to other designs. It will also be applied because it will enable the researcher to collect data on variables related to information acquired at a point in time. The subjects that will make up the pool of data collection will have different factors, or distinct characteristics and demographical features. Further, by applying a cross-section research design, the findings of the research will be useful in replacing assumptions with actual data concerning the specific variables analyzed (Patrik & Ugo, 2019).

The research will also rely on mixed-method research; this integrates both quantitative and qualitative research methods. In light of this, the quantitative research will be carried out through questionnaires with the selected employees from the various departments in Crown Beverages Limited. Qualitative study will be done through interviews with the top management of Crown Beverages Limited, Pepsi, such as the procurement manager and his assistant, the store's manager, finance manager, and the IT manager, who shall form part of this study as key informants for the purpose of getting a comprehensive analysis of the subject; similarly, these shall be treated as key informants because they possess relevant knowledge about the subject under study. The quantitative approach will be adopted in this study with an aim of assessing the

impact of lean manufacturing on procurement performance at a company, a case of Crown Beverages Limited (Pepsi).

### **3.2 Area of the study**

This study will be conducted in Crown Beverages Limited (Pepsi) located on Plot M214 Nakawa Industrial Area, P.O. Box 20021, Kampala- Uganda. Crown Beverages Limited (Pepsi) has been selected for the case study because it has a wide application of lean manufacturing practices, hence offering a strong case towards assessing its impact on procurement performance.

### **3.3 Study population**

According to Trochim 2006, the population is defined as the group from which a researcher requires taking a sample for drawing generalizations. The population of this research would encompass all employees and senior staff members of Crown Beverages Limited (Pepsi). The headquarters has a total of 100 workers, according to human resource management records from CBL in 2024. It is from this that the sample size to assist the researcher in getting the required data shall be sourced.

### **3.4 Sampling procedure and sample size**

The sample size will be gotten using on the Krejcie and Morgan (1970) table as shown below;

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	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	100000	384

Note: N is Population Size; S is Sample Size Source: Krejcie & Morgan, 1970

Source: Krejcie & Morgan (1970)

Thus, from the table above, the sample size is 80 respondents obtained from the total population of 100 employees working in different departments in Crown Beverages Limited (Pepsi).

The study will also involve the top management of Crown Beverages Limited (Pepsi), consisting of the procurement manager and his assistant, stores manager, finance manager, and the IT manager, totaling 5 as key informants for qualitative data.

Table 1: Target Population, Size and Selection

Category of Respondents	Population Size	Sample size	Sampling Techniques
Employees of CBL	100	80	Stratified sampling
Procurement manager & his assistant	1	1	Purposive sampling
Stores manager	1	1	Purposive sampling
Finance manager	1	1	Purposive sampling
IT manager	1	1	Purposive sampling
<b>Total</b>	<b>105</b>	<b>85</b>	

Source: Crown Beverages Limited (2024)

### **3.5 Sampling techniques and methods**

Stratified and purposive sampling methods will be used in this study. Stratified sampling method will be adopted for the selection of the employees who work in various departments in Crown Beverages Limited (Pepsi). In stratified sampling, the population is divided into distinct subgroups, or strata, that share similar characteristics, and a sample is taken proportionally from each stratum. In this way, each subgroup is well represented in the sample, allowing greater validity and generalizability of the results of the study. In this study, the employees within the various departments in Crown Beverages Limited (Pepsi) will be stratified according to the departmental sizes of the employees. From these strata, a proportionate number of employees will be randomly sampled. In this study, stratified random sampling will be used because it enables representation of the diverse characteristics within each organization's departments on lean manufacturing and procurement performance.

On the other hand, in the case of the procurement manager and his assistant, stores manager, finance manager and the IT manager, the method that will be applied is the purposeful sampling method. Purposive sampling is a non-probability sampling technique whereby selected individuals are chosen on the basis of possessing characteristics or attributes vital to the study. The procurement manager and his assistant, stores manager, finance manager, and the IT manager will be selected for the study since they have specialized knowledge and expertise regarding automation and warehouse operations optimization. These top management officials will be purposively selected in order to provide in-depth insights and detailed information relevant to the research objectives. This method is used in ensuring that data collected is rich, relevant, and directly applicable since they are the ones involved in enhancing lean manufacturing for better procurement performance in relation to the study's focus. Therefore, this category of respondents will be targeted by the researcher.

### **3.6 Sources of data**

**Data source:** primary data are paramount in all fields of research, for they are actual details concerning the outcome of an experiment or observation. Field data shall be sourced from personal interviews and self-administered questionnaires from a selection

of respondents to obtain their views. Primary data shall enable the researcher to collect information for specific purposes of the study. The researcher shall collect data himself using questionnaires and interview guides.

**Secondary source:** Secondary data refers to handling, collecting and possibly processing data by people other than the researcher in question. This source shall be used to collect data from already written literature for example e-books, journals, published articles and periodicals. Documentary resources are classified in order to facilitate the data collection and textual analysis (Mubazi 2008).

### **3.7 Data collection methods**

#### **3.7.1 Questionnaire Survey**

According to Amin 2005, a "survey is a self-report investigation used for gathering information about variables of interest". To obtain quantitative data regarding automation and optimization of warehouse operations of CBC and the selected employees of CBC, a questionnaire survey will be utilized. The questionnaire will be composed of structured items prepared to seek responses in connection with the objectives of the study. This methodology of surveying will be adopted for this study because through this approach, the data collection is on a large scale and in an effective manner, and in return, the researcher can quantify identified trends, correlations, and patterns concerning the lean manufacturing and procurement performance of a company (Mchumu, 2011).

#### **3.7.2 Interviews**

As discussed by Desncombe, 2008, interviews are open questions, which are usually administered to key informants to provide the widest latitude to talk about the subject. These interviews will compliment and triangulate the information gathered from the respondents and the available documents (Patton 2001). This will be intended to elicit a wide view on the subject. Interviews will be both face to face and telephone interviews. These will contain both structured and semi structured questions. Interviews will be adopted because they have the advantage of ensuring probing for more information clarification and capturing facial expression of the interviewees.

Somekh and Lewin, 2015) On the other hand they equally provide an opportunity for the researcher to revisit some of the issues that have been an oversight in other instruments yet they are considered vital for the study.

### **3.8 Data collection instruments**

The study will use a structured questionnaire and interview guides to collect information.

#### **3.8.1 Questionnaires**

Their structure will include in the questionnaires close items with a list of possible alternatives from which the respondents will be requested to mark the answers that best describe their opinion about the problem of investigation and situation. All questions will be standardized, rigid, not allowing any flexibility, and answers are to items set in the questionnaire. It facilitates enlisting validity and control of the extraneous variables. A structured questionnaire with sections as per study variables will be designed for collecting information on the subject. It will be administered to the respondents. Response choices will be on a five point Likert scale, such as, (5) strongly Agree, (4) Agree, (3) Not sure, (2) Disagree, (1) Strongly Disagree. The Likert format is preferred because it gives the respondents a variety for response choices and also the format makes it easy to tabulate the data obtained for comparison purposes. The data collection will be obtained through a questionnaire that will be administered to the selected 80 employees in various departments at Crown Beverages Limited (Pepsi), with informed consent.

#### **3.8.2 Interview guide**

An interview topical guide will be developed and used in gathering information; this will ensure that there is consistency. They are preferred for top management who are an informed category by virtue of their offices and wide latitude to talk about the subject at length without limit. The interview guide will contain unstructured items on each and every variable in the conceptual framework on lean manufacturing and procurement performance. According to Ragin, 2009, interview guide has items that are used to guide the interviewing process henceforth the process has the advantage of

ensuring probing for more information, clarification and capturing facial expression of the interviewees. The researcher will conduct interviews with the 5 key informants who are the procurement manager and his assistant, stores manager, finance manager and the IT manager.

### **3.9 Data collection procedure**

The researcher will seek a recommendation and an introductory letter from Uganda Christian University, then he approaches the various respondents in Crown Beverages Limited (Pepsi) for permission to use as a case study. The researcher approaches the respondents for interviews and issuance of the questionnaire guides.

### **3.10 Validity and reliability of the research instruments**

#### **3.10.1 Validity**

According to Cohen, Manion and Keith (2007), Validity is ensured by; choosing an appropriate scale, ensuring that there are adequate resources for the required research to be undertaken, selecting an appropriate methodology for ensuring the research questions, avoiding having too long or too short an interval between pre-test and post-test, ensuring standardized procedures for gathering data or for information administering tests, and tailoring the instruments to the concentration span of the respondents.

The questions will be validated with a view to establishing whether it had the capacity to capture the required data. Research experts go through the questions to see whether they have the capacity to capture the intended response. The researcher will calculate a Content Validity Index, CVI so as to establish the validity of the research instrument. The following is the formula the researcher used in establishing the validity of the research instruments.

Content validity Index (CVI) = Relevant items by all judges as suitable

Total number of items judged.

If the CVI is equal to or greater than the recommended 0.70 (Kent, 2001), this will imply that the questionnaire is valid for data collection.

### **3.10.2 Reliability**

Mugenda and Mugenda (2003) viewed the concept of reliability as the degree to which a research instrument yields consistent results or data when used on several trials. In this study, reliability of the questionnaire instrument will be checked using Cronbach's coefficient alpha. A pilot study will be conducted on 5 respondents, and the reliability results will be computed using the SPSS. In the event that the coefficient equals or exceeds the recommended .70, this will mean that the questionnaire is adequate to collect data.

### **3.11 Data Analysis**

#### **3.11.1 Analysis of quantitative data**

The package will enhance the data analysis; SPSS version 26, besides being user-friendly, is appropriate for the handling of correlations between variables, plus regressions in the study. SPSS will be used to help the researcher analyze the quantitative data from the questionnaires. All the variables within the study will be assigned names and coded for computer entry. Then, all the responses will be coded for computer data entry. Thirdly, after completion of data entry, negatively worded scales will be recorded and assigned new values. Fourthly, to obtain composite scores for items on a scale, target variables will be computed. Fifthly, data will be screened so as to minimize data entry errors. Descriptive, bivariate, and multivariate analyses will, therefore, be done for quantitative data to determine the level of association of the independent variables and the dependent variable.

#### **3.11.2 Analysis of qualitative data**

This involves the use of thematic review. Thus, qualitative data will be edited and reorganized into meaningful phrases. In other words, qualitative data analysis will be done in a thematic approach where themes, categories, and patterns will be identified. Results will, therefore, discuss the recurrent themes that emerged in relation to each

guiding question from the interviews, with selected direct quotations from participants presented as illustration.

### **3.12 Ethical Considerations**

The researcher will seek a recommendation and an introductory letter from the School of Business in Uganda Christian University, after which she will seek permission from the different respondents in Crown Beverages Limited (Pepsi) to use as a case study. The researcher will approach various respondents to conduct KIs and distribute the questionnaires.

More so, ethical behavior will be observed in the course of the implementation of the study, with confidentiality in that information derived from the field will only be used for academic purposes. Anonymity of respondents will also be exhibited in order to give them freedom of expression. All respondents should have informed consent before they are included in the study.

Also, all data gathered shall be used solely for the purpose of this research and nothing else. The research procedures will be briefed with all respondents before they participate in this research and secure their consent. All the sources of literature used shall be acknowledged throughout the entire study by means of proper citations and referencing. Personal bias will not occur throughout the study that is during interviews, data analysis, and reporting.

### **3.13 Anticipated limitations and delimitations of the study**

Some of the respondents may not be willing to provide information because they may be suspicious of where the information will go. This will be resolved through the remarkable reputation in the study context as an institution of learning and also obtaining an introductory letter from the university.

The researcher is also likely to be limited by funds that will be needed to facilitate the research such as motivating the respondents, printing fees and even daily transport to the university to collect data. However, the researcher will use self-initiatives and strategies to mobilize financial assistance from family and friends who wish him well.

Finally, not all questions might be filled in, nor all interviews conducted due to circumstances on the part of respondents, including travels, sickness, hospitalization, and refusal/withdrawal to participate.

## CHAPTER FOUR

### DATA PRESENTATION ANALYSIS AND INTERPRETATION AND OF FINDINGS

#### 4.1 introduction:

This chapter analyses and interprets data from responses for the purpose of establishing the effect of lean manufacturing on the procurement process. The analysis will be done with the primary intent of determining key patterns and trends and the relationship that may shed light on how principles of lean impact procurement efficiency and cost reduction and enhance the overall process. Although both qualitative and quantitative methods, the findings will give a broad view of how lean manufacturing practices affect procurement activities. This chapter will, therefore, investigate the research questions and shed light on how lean strategies ensure the effectiveness of procurement operations.

#### 4.2 Response rate:

In this study, the number of 85 categories of respondents were sampled, which comprises the company administrators and employees; in return, only 80 questionnaires were returned, which shows the percentage 94%, indicating that the response is good in this study.

*Table 4.2.1. Response rate*

Number of questionnaire administered	Number of questionnaire returned	Response rate (%)
85	80	94%

This has been highly rated, with a response rate of 95%, indicating that the majority of the ones given the questionnaire participated. That would suggest that the findings were important and of interest to them, and it minimizes the possibility of missing or biased data. Therefore, the responses gotten will most likely be correct and give a true picture of what the respondents think or do.

#### 4.2.2 Demographic characteristics of the respondents

Following is some of the information collected about the respondents' background. The respondents, in this questionnaire, stand for a wide variation in demographic characteristics. The sample is very well-representative, with 25% aged 21-30 years, 35% aged 31-40 years, 20% aged 41-50 years, and 20% aged 50 years and above. The gender portrayal is almost equal, with 47.4% identifying as male and 52.6% as female, while the remaining 2% do not declare their gender. Also, for the majority of the respondents, the leading qualification is a college degree or above, making up 60%, reflecting the educated sample shown. The geographical distribution points to a broad spread of representation across urban areas at 40%, suburban areas at 30%, and rural regions at 30%. These demographics provide a comprehensive view of the respondent population, contributing to a nuanced understanding of the data collected.

#### 4.2.2 Gender distribution

Gender	Frequency	Percentage
Male	35	44%
Female	45	56%
Total	80	100

This indicates that the split is almost equal, with 44% being females and 56% males. This minimal difference shows that in this study there was quite a good balance between both genders. Generally speaking, gender doesn't majorly affect the number in this study.

**Table 4.2.3 employee distribution**

This table shows the distribution of employees across different departments in this research study. There are five listed departments, along with perspective frequencies and percentages of the total workforce.

Description	Category	Frequency	Percentage
Department	Administration and logistics	10	12.5%
	Accounts and finance	7	8.8%
	Procurement	15	18.8%
	Sales and marketing	21	26.3%
	Operations	27	33.8%
	Total	80	100

The findings show that there are 80 tasks or activities that are scattered within different departments of the company. The highest is taken by Operations with 33.8%, followed by Sales and marketing with 26.3%. Procurement is the next important one with 18.8%, while Administration and Logistics accounts for 12.5% and Accounts and Finance has the smallest share with 8.8%. Therefore, most of the work lies with the Operations and Sales/Marketing sectors, while the Administration and Accounts have less to deal with.

**Table 4.2.4. Period of service**

This table provides an overview of the period of service for employees in the company (Pepsi), based on the data gathered from the questionnaire.

Description	Category	Frequency	Percentage (%)
Period of service	Less than 1 year	10	12.5%
	1-5 years	37	46.3%
	6-10 years	24	30%
	Above 10 years	9	11.25%
	Total	80	100

The above table shows the period for which 80 employees have been working in the company. Most of the employees have been there between 1-5 years; this is, in other words, the biggest group with 46.3%. About 30% of the respondents have 6-10 years of service, whereas 12.5% of the participants have less than one year of service. Only 11.25% have more than 10 years. The average dominant chunk of experience level, while the employee ratio with just the first year of service or those working for more than a decade, is low on average.

**Table 4.2.5 level of education**

From the questionnaire, the table below gives the level of education among the employees within the company. The frequency and percentage categorize employees based on the highest completed degree, including certificate, diploma, degree, and masters.

Description	Category	Frequency	Percentage
Level of education	Certificate	10	12.5
	Diploma	30	37.5
	Degree	13	16.3
	Masters	27	33.8
Total		80	100

### 4.3.1 Lean Principles

Quantitative results on the assessment of the lean manufacturing principles adopted by crown beverages limited (Pepsi) in the bid to improve its procurement performance.

No	Statement	5	4	3	2	1
1	Lean manufacturing principles have been effectively communicated to all relevant staff in our procurement department.	25(31.3%)	20(25%)	22(27.5%)	-	13(16.2%)
2	We have adopted Just-In-Time (JIT) inventory management practices to reduce procurement costs.	40(50.9%)	25(31.25%)	10(12.5%)	5(6.25%)	-
3	Our procurement processes have been streamlined to eliminate waste and increase efficiency.	45(56.25%)	20(25%)	-	-	15(18.75%)
4	The implementation of lean manufacturing has led to more accurate demand forecasting in our procurement function.	60(75%)	20(25%)	-	-	-
5	Lean manufacturing principles have improved the speed of our procurement cycle.	30(37.5%)	18(22.5%)	4(5%)	16(20%)	12(15%)
6	Training on lean manufacturing principles is regularly provided to our procurement staff.	70(87.5%)	10(12.5%)	-	-	-

The results show lean manufacturing principles are in place in the procurement. Just-In-Time inventory management is also practiced; 81.25% agree that it does help in reducing costs. More than half-56.25%-feel processes are more efficient, but there is still a tug in some areas for speeding of the procurement cycle. Lean principles are

mostly well-communicated to staff; yet, only about a third strongly agree on this, and there are areas to be taken forward.

Quantitative result on the challenges faced by crown beverages limited (Pepsi) in implementing lean manufacturing principles in its procurement function.

#### **4, 4.1 Challenges**

Quantitative result on the challenges faced by crown beverages limited (Pepsi) in implementing lean manufacturing principles in its procurement function.

N	Statements	5	4	3	2	1
1	Resistance to change from staff has been a significant challenge in implementing lean manufacturing principles.	44(55%)	12(15%)	-	8(10%)	16(20%)
2	Lack of adequate training on lean manufacturing principles has hindered effective implementation.	60(75%)	20(25%)	-	-	-
3	Our procurement processes are not yet fully aligned with lean manufacturing principles.	20(25%)	26(32.5%)	4(5%)	10(12.5%)	20(25%)
4	We face difficulties in integrating lean manufacturing principles with our existing procurement systems.	65(81.3%)	10(12.5%)	-	-	5(6.25%)
5	There is a lack of support from top management for lean manufacturing initiatives in procurement.	34(42.5%)	18(22.5%)	8(10%)	8(10%)	12(15%)
6	Resource constraints have impacted our ability to fully implement lean manufacturing principles.	52(65%)	28(35%)	-	-	-

The findings present several difficulties regarding the implementation of lean manufacturing principles. Around 55% of the staff resist change, and the majority of the employees, at about 75%, felt there was not enough training. The procurement process is not fully integrated with the lean principles, as 81.3% report difficulty in integrating lean methods with the present systems. Lack of support from top management is a problem for 42.5%. Finally, resource limitation resulted in difficulty implementing the lean practice principles for 65% of the respondents.

#### 4.5.1 Relationship

Quantitative results on the relationship between lean manufacturing and procurement performance in crown beverages limited (Pepsi)

No	Statement	5	4	3	2	1
1	The adoption of lean manufacturing principles has improved our procurement performance metrics.	42(52.5%)	16(20%)	-	14(17.5%)	8(10%)
2	Lean manufacturing has led to better supplier relationships and communication.	52(65%)	24(30%)	-	-	4(5%)
3	We have experienced a reduction in procurement lead times due to lean manufacturing practices.	64(80%)	16(20%)	-	-	-
4	Lean manufacturing principles have contributed to cost savings in our procurement function.	72(90%)	2(2.5%)	-	-	6(7.5%)
5	There is a noticeable increase in procurement process efficiency due to lean manufacturing.	68(85%)	12(15%)	-	-	-
6	The quality of procured materials has improved as a result of implementing lean manufacturing principles.	38(47.5%)	10(12.5%)	-	20(25%)	12(15%)

The result shows that lean manufacturing has a considerable positively perceived impact on procurement. The majority of responses 80% - 90% feel strongly that it reduces lead times, decreases costs of procurement, increases efficiency, and stabilizes

supplier relations. There is, however, more disagreement over whether the quality of material has improved: only 47.5% agree, while a high number (40%) disagree or remain neutral. This would tend to indicate that even though lean manufacturing is generally viewed as beneficial to procurement, issues of the quality of materials may persist.

## CHAPTER FIVE

### DISCUSSION, SUMMARY, CONCLUSION, AND RECOMMENDATION OF THE FINDINGS.

#### 5.0 introduction

In this chapter, the research talks about the key results of this research and explain what they mean in relation to the original goals. First, we will summarize the main findings, discuss how they relate to what others have found in the field, and point out what these results mean for real-world situations.

This chapter will also discuss the limitations of this study and those areas where future research could improve on what we have learned. Finally, it will present recommendations based on the findings and discuss the wider implications of the research.

#### 5.1 Discussion of the findings.

##### 5.1.1 Lean manufacturing principles adopted by crown beverages limited (Pepsi)

In the words of Aripin et al. (2023), JIT is a lean manufacturing concept whereby the inventory level is reduced by aligning the production schedule with supplier deliveries and customer demand. In relation to JIT, a business can reduce its storage costs as well as also waste arising due to overproduction. It was found from primary data results that Crown Beverages Limited or Pepsi has adopted the inventory management practices of Just-In-Time for reducing procurement costs. Out of which 40 or 50% strongly agreed to the statement and 25 or 31.25% agreed to it. Research from Crown Beverages Limited (Pepsi) states that the company is using the Just-In-Time (JIT) inventory management system extensively with the purpose of reducing the cost of procurement. Thirty-two percent of the respondents agreed while half of the respondents 50% strongly agreed that JIT is being employed. This tends to mean that a majority of the interviewees is of the view that JIT helps Pepsi reduce storage costs as well as the wastage resulting from making too many products. This is because the business can easily level its output against customer demand. All things being equal, the results indicate that JIT is facilitating the company's effort to reduce costs and enhance efficiency.

### **5.1.2 Value stream mapping**

The result shows how Lean manufacturing, in particular VSM, improves the effectiveness and efficiency of buying.

Khalfallah and Lakhali, 2021 also add that the companies will be able to identify areas for improvement while mapping out the whole process. Furthermore, Mady et al., 2020 identify that VSM improves the overall organizational performance. Sixty percent of the research participants at Crown Beverages Limited agreed that their procurement process has moved at a high speed with Lean methods. Some respondents, 35%, disagreed, adding that although lean techniques are normally helpful, how well they are implemented inside the organization may determine how successful they are.

### **5.1.3 Lean supplier development**

In the view of Ariadi et al. (2021), lean supplier development focuses on establishing close and collaborative relationships with suppliers if procurement performance is to be realized.

Through close collaboration with suppliers, the firm is able to align them in achieving some of the lean principles such as waste reduction, improvement of quality, and enhancing delivery performance. From the results obtained from data collected at Crown Beverages Limited, formerly Pepsi, it is indicated that most people believe the company has enhanced its procurement processes in reducing waste and increasing efficiency in line with lean supplier development principles. A majority, 56.25%, strongly agreed, while 25% agreed that these changes are effective. Nobody was undecided or strongly disagreed, although 18.75% did disagree. Overall, this would tend to indicate that the majority view the lean efforts put in by the company as successful, although a minority might have different views.

## **5.2. The challenges faced in implementing lean manufacturing in crown beverages limited (Pepsi)**

### **5.2.1 Resistance to change:**

The challenge that many companies find with the implementation of lean manufacturing in procurement is the internal resistance to change within the organization.

The basic makeup of lean principles in implementation generally requires changing the manner in which procurement processes have been traditionally conducted, which can be met with resistance among those employees who are used to a more traditional way of handling jobs.

It may be because of a misunderstanding of what lean principles are, or because they are afraid of being put out of work because the processes are lean and hence more efficient. According to Suresh & Nathan 2020, resistance might be because of lack of understanding of lean principles or because of fear of loss of work as a result of the increased efficiency that comes with lean processes. The responses from Crown Beverages Limited - Pepsi - indicate the resistance from employees as one of the major problems in implementing the principles of lean manufacturing. The general trend in the responses is noted as approximately 55 percent strongly agreeing and another 15 percent agreeing that this resistance is a significant problem. This suggests that a large number of employees feel the challenges in lean practice implementation. Only 10% strongly disagreed with the notion of resistance, and 20% disagreed, indicating that only a limited number of employees are comfortable with or in support of this change. Such resistance could emanate from incomplete understanding of lean principles and fear of job loss due to gains in efficiency. In this respect, adequate communication and proper training would be required to get the employees habituated with the new processes.

### **5.2.2 Lack of adequate training**

Insufficient Training Deshmukh et al., (2022) Lack of proper or adequate training and education on lean principles in the purchase staff.

A successful implementation of lean manufacturing requires an acquaintance with lean tools and techniques that most purchase professionals would probably lack.

Based on the response from crown beverages limited (Pepsi) Poor training on principles of lean manufacturing In this case 60(75%) strongly agreed, 20(25%) agreed, 0 not sure, 0 strongly disagreed and 0 disagreed

### **5.2.3 Resource constraints:**

A lack of uniform measurement tools has also resulted in fragmented evaluation of the effectiveness of lean programs between departments and functions. According to Sahoo, 2020 findings on evaluating the success of lean initiatives across multiple departments and functions can become fragmented due to a lack of uniform measurement tools. According to the findings from crown beverages limited Resource constraints have impacted their ability to fully implement lean manufacturing principles. Showing 52(65%) strongly agreeing, 28(35%) agreeing, 0 not sure, 0 strongly disagreeing, and 0 disagreeing

## **5.3 relationship between lean manufacturing and procurement performance**

### **5.3.1**

Khalfallah & Lakhali (2021) and Deshmukh et al. (2022) took into account the impact of lean manufacturing on procurement performance, with a particular emphasis on operational and financial efficiency.

Khalfallah & Lakhali (2021) ascertained that lean manufacturing practices, for instance, Just-in-time procurement and continuous improvement, enhance the operational performance of substantially decreasing the level of inventory and shrinking the procurement cycle times.

Such findings have also been supported by Deshmukh et al. (2022), who mentioned that the implementation of lean strategies in procurement not only enhances process efficiency but also contributes to financial performance-as evidenced by reduced procurement cost and improvements in supplier performance metrics. These underline the dual benefits of lean manufacturing to enhance both operational and financial dimensions of procurement performance. From the data collected from crown beverages limited, they have enjoyed shorter procurement lead times from lean manufacturing practices. 64 strongly agreed 16 agreed, 0 not sure 0 strongly disagreed 0 disagreed.

**5.3.2 Improved Performance:** Using lean manufacturing helps us better measure and improve how well our procurement works.

**5.3.3 Improved Supplier Relationships:** Lean manufacturing provides for better communication and hence develops good relations with suppliers and makes it easier to work with them.

**5.3.4 Shortened Lead Times:** Lean practices have quickened the pace of our procurement processes and eventually quickened the pace at which we get our materials.

**5.3.5 Reduced Costs:** Lean manufacturing cuts down on wastes and increases efficiency in all processes; thus, helping us save costs on procurement.

**5.3.6 Improved Efficiency:** Lean principles simplify procurement by eliminating superfluous steps and make everything function better.

**5.3.7 Finer Quality Materials:** Lean manufacturing results in finer quality materials since we work closer with suppliers and have a greater emphasis on quality.

## **5.4 CONCLUSION**

This study shows just how much procurement performance can gain from utilizing lean manufacturing concepts. Lean methods emphasize waste elimination and continuous

process improvement, each of which adds to the heightened efficiency and thriftiness of procurement.

Application of lean concepts in procurement will improve the supplier relationships, costs of inventory, and processes. In other words, all these positive process changes will translate to acceleration of processes, reduction of costs, quality improvement, and timeliness of supply.

Besides, lean methods encourage closer coordination and communication with suppliers, making delivery more reliable, of higher quality. However, to fully exploit the advantages of lean methodologies, companies need to properly train their purchasing teams and also be prepared for the initial costs and changes.

## **5.5 RECOMMENDATION**

### **5.5.1 Foster Supplier Partnerships**

Companies should invest in developing strategic, long-term relationships with their suppliers. Emphasis on coordination and communication will provide confidence that the parties will be aligned with one another's Lean initiatives. This will result in smoother procurement processes and faster responses to variations in demand.

### **5.5.2 Invest in Training and Change Management**

The broad-based employee training programs would be able to minimize internal resistance to lean procurement techniques by highlighting the benefits accruing from lean manufacturing. This would comprise developing a culture of continuous improvement and transparent communication both interdepartmentally and with suppliers, respectively as major objectives of any change management projects.

### **5.5.3 Leverage Technology for Lean Procurement**

Technology greatly enables lean procurement techniques for companies operating global supply chains. Purchasing complex technologies-such as supply chain management software and enterprise resource planning (ERP)-can enable better

demand forecasting, tracking inventory, and collaboration with suppliers-all of which are key elements to a Lean implementation.

#### **5.5.4 Continuous Evaluation and Improvement**

It is a continuous process in Lean Manufacturing to review and improve constantly. Also, the organizations should review their procurement procedures routinely for finding innovative ways to reduce waste, cost, and enhance productivity.

### **5.6 AREAS OF FURTHER STUDIES**

**5.6.1 Effect on Lead Times and Inventory Management:** Effects of Lean Manufacturing on Lead Times/Inventory Management: Discuss how the concepts of lean manufacturing have affected lead times and inventory that pertain to procurement. You may want to compare order fulfillment times and inventory turnover rates between the pre and post-implementation periods for using the lean methodology.

**5.6.2 Cost Reduction and Efficiency Gains:** Analyze the impact of lean manufacturing on procurement cost reduction. Investigate specific lean techniques, such as JIT or value stream mapping, and their impact on efficiency and cost of procurement.

**5.6.3 Supplier Relationships and Performance:** Assess how lean manufacturing impacts your suppliers' performance. This may involve analyzing the effect of lean processes on supplier collaboration, communication, and reliability.

**5.6.4 Quality Improvement:** Analyze how lean manufacturing impacts the quality of goods and services that are procured. Consider how the lean principles would affect the quality metrics of the suppliers and the quality control processes.

**5.6.5 Technology Integration:** Determine how technology might support purchasing departments in working with lean manufacturing principles. For instance, how might advance analytics or an ERP system support lean purchasing practices?

**5.6.7 Change Management:** This study researches and identifies challenges which may be faced and suggested steps involved with implementing lean manufacturing at procurement. Knowledge of the best ways of managing change can be very useful.

**5.6.8 Benchmarking against Industry Standards:** This shall investigate how the procurement processes in Crown Beverages Limited for lean manufacturing compares with that of other businesses in the beverage sector, identification of performance gaps and best industry practices.

**5.6.9 Sustainability and Lean Procurement:** Reflect on how the practice of lean manufacturing influences the sustainability in buying. Analyze the effects of lean methods on social and ecological dimensions of purchasing.

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Appendices

Questionnaire

For selected employees of Crown Beverages Limited (Pepsi)

Dear sir/madam

My name is Fiaster; I am a student of BPLM at Uganda Christian University. I am conducting a study on “the effect of lean manufacturing on procurement performance in a company: a case of Crown Beverages Limited (Pepsi).” You have been specifically selected to participate in this study and the information collected shall be purely for academic purpose and treated with the highest level of confidentiality. The success of this study shall greatly dependent on your response. Your cooperation shall highly be appreciated.

**Section A. Bio Data**

Please tick the most appropriate answer

1. What’s your gender?

a) Male

b) Female

2. What’s your age?

a) 21-30 years

b) 31-40 yea

c) 41-50 years

d) Above 50

3. What’s your highest level of education?

a) Certificate

b) Diploma

c) Degree

d) Masters

e) Others specify:.....

4. Which department do you belong to?

a) Administration/ HRM

b) Procurement & Logistics

c) Accounts & Finance

d) Sales & Marketing

e) Operations

5. Period spent working in Crown Beverages Limited (Pepsi)

a) Less than 1 year

b) 1-5 years

c) 6-10 years

d) Above 10

**Guide for Completing the Questionnaire:**

Please answer questions by making a tick (✓) and explain where necessary.

**Section B: The lean manufacturing principles adopted by Crown Beverages Limited (Pepsi) in the bid to improve its procurement performance**

Rate your degree of agreement on the lean manufacturing principles adopted by Crown Beverages Limited (Pepsi) in the bid to improve its procurement performance using a scale of 5(Strongly Agree), 4(Agree), 3(Not sure), 2(Disagree) and 1(Strongly Disagree).

s. no	Statements	5	4	3	2	1
1	Lean manufacturing principles have been effectively communicated to all relevant staff in our procurement department.					
2	We have adopted Just-In-Time (JIT) inventory management practices to reduce procurement costs.					
3	Our procurement processes have been streamlined to eliminate waste and increase efficiency.					
4	The implementation of lean manufacturing has led to more accurate demand forecasting in our procurement function.					
5	Lean manufacturing principles have improved the speed of our procurement cycle.					
6	Training on lean manufacturing principles is regularly provided to our procurement staff.					

Suggest any other lean manufacturing principles adopted by Crown Beverages Limited (Pepsi) in the bid to improve its procurement performance other than the ones mentioned above?

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**Section C: The challenges faced by Crown Beverages Limited (Pepsi) in implementing lean manufacturing principles in its procurement function**

Rate your degree of agreement on the challenges faced by Crown Beverages Limited (Pepsi) in implementing lean manufacturing principles in its procurement function using a scale of 5(Strongly Agree), 4(Agree), 3(Not sure), 2(Disagree) and 1(Strongly Disagree).

s. no	Statements	5	4	3	2	1
1	Resistance to change from staff has been a significant challenge in implementing lean manufacturing principles.					
2	Lack of adequate training on lean manufacturing principles has hindered effective implementation.					
3	Our procurement processes are not yet fully aligned with lean manufacturing principles.					
4	We face difficulties in integrating lean manufacturing principles with our existing procurement systems.					
5	There is a lack of support from top management for lean manufacturing initiatives in procurement.					
6	Resource constraints have impacted our ability to fully implement lean manufacturing principles.					

Suggest any other the challenges faced by Crown Beverages Limited (Pepsi) in implementing lean manufacturing principles in its procurement function other than the ones mentioned above?

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**Section D: The relationship between lean manufacturing and procurement performance in Crown Beverages Limited (Pepsi)**

Rate your degree of agreement on the relationship between lean manufacturing and procurement performance in Crown Beverages Limited (Pepsi) using a scale of 5(Strongly Agree), 4(Agree), 3(Not sure), 2(Disagree) and 1(Strongly Disagree).

s. no	Statements	5	4	3	2	1
1	The adoption of lean manufacturing principles has improved our procurement performance metrics.					
2	Lean manufacturing has led to better supplier relationships and communication.					
3	We have experienced a reduction in procurement lead times due to lean manufacturing practices.					
4	Lean manufacturing principles have contributed to cost savings in our procurement function.					
5	There is a noticeable increase in procurement process efficiency due to lean manufacturing.					
6	The quality of procured materials has improved as a result of implementing lean manufacturing principles.					

**Thank you very much for your cooperation**

**Interview Guide**  
**For Key Informants**

Introduction

Dear sir/madam

My name is Fiaster; I am a student of BPLM at Uganda Christian University. I am conducting a study on “the effect of lean manufacturing on procurement performance in a company: a case of Crown Beverages Limited (Pepsi).” You have been specifically selected to participate in this study and the information collected shall be purely for academic purpose and treated with the highest level of confidentiality. The success of this study shall greatly dependent on your response. Your cooperation shall highly be appreciated.

**Section A: Introductions**

1. Tell me about yourself (*age and level of education*)
2. What position do you hold in Crown Beverages Limited (Pepsi)?
3. How long have you worked with Crown Beverages Limited (Pepsi)?

**Section B: Questions on the Objectives**

4. What specific lean manufacturing principles has Crown Beverages Limited (Pepsi) implemented in its procurement processes?
5. How have these lean manufacturing principles been integrated into the daily operations of the procurement department?
6. What are the main challenges Crown Beverages Limited (Pepsi) has encountered when implementing lean manufacturing principles in procurement?
7. How has the organization addressed or plans to address these challenges?
8. How has the adoption of lean manufacturing principles affected the overall performance of the procurement function at Crown Beverages Limited (Pepsi)?
9. Can you provide examples of improvements in procurement performance that are directly attributed to lean manufacturing practices?

**Thank you for your cooperation**