

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF COMMERCE

DEPARTMENT OF ECONOMICS



**AN EVALUATION ON THE IMPACT OF LOGISTICS MANAGEMENT ON LEAD
TIME. A CASE OF MUTARE PROVINCIAL HOSPITAL**

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ABSTRACT

This study sought to address the impact of logistics management on lead time of Mutare Provincial hospital. The research intended: to examine the logistics elements that influence lead time, introduce the implications of logistics management on lead time, and lastly to ascertain the consequences of lead time changes at Mutare Provincial Hospital. The fundamental motive of the research was to recommend the ways of overcoming challenges in logistics so as to reduce lead time at the public healing center. The qualitative and a little bit of quantitative approach methods were used in research as the research design. Data was gathered from 20 stakeholders of the hospital. Information was acquired through the use of questionnaires and interview questions. Data was gathered and presented in both qualitative and quantitative terms. Percentages and frequencies displaying quantitative data on graphs, charts, and tables. The research managed to found out the variables affecting Mutare Hospital's lead time, and these are poor transport networks and poor information flow, and bureaucracy in government. It was also found that, the most effects of logistics management on the hospital's lead time are poor logistics management, insufficient scheduling of products, and uncoordinated order shipping. Product communication and poor order planning are some of the implications which increase Mutare hospital's lead time. It was also found that changes in lead time has consequences to the hospital, and these excessive inventories, inventory shortages, and stockouts. Shortening lead time result to excessive inventories and delaying delivery result to inventory shortages. More so, longer lead times results to stockouts. It was found that changing lead time does not have any change shortage costs.

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Table of Contents

APPROVAL FORM	iii
RELEASE FORM NAME OF AUTHOR	iv
DECLARATION.....	v
ABSTRACT.....	vi
ACKNOWLEDGEMENTS	vii
CHAPTER I	1
INTRODUCTION.....	1
1.0 INTRODUCTION.....	1
1.1 BACKGROUND OF THE STUDY.....	1
1.2 Problem statement	3
1.3 Objectives of the study.....	4
1.4 Research questions.....	4
1.5 Assumptions.....	4
1.6 Significance of the study.....	4
1.7 Limitations to the study	5
1.8 Delimitations.....	6
1.9 Definition of terms	6
1.10 Chapter summary	6
CHAPTER II.....	8
LITERATURE REVIEW	8
2.0 Introduction.....	8
2.2 The scope of logistics.....	8
2.3. Key components of logistics	10
2.3 Support activities	10
2.4 Application of logistics in organizations	11
2.5 Importance of logistics.....	11
2.6 Lead time	11

2.7 Logistical variables which influence Lead Time	13
2.7.1 The Simultaneous Lot sizing and Lead-time setting (SLLS) via queuing theory and heuristic search.....	14
2.8 Logistical implications directly affecting lead time.....	15
2.8.1 Transportation.	15
2.8.2 Processing orders	16
2.8.3 Information systems.....	16
2.8.4 Distance	16
2.9 Consequences motivating the shortening of lead times	17
2.10 Empirical evidence.....	17
2.11 Gap analysis.....	19
2.12 Chapter Summary	19
CHAPTER III	20
RESEARCH METHODOLOGY	20
3.0 Introduction.....	20
3.1 Research approach.....	20
3.2 Research Design	20
3.2.1 Descriptive research design.....	21
3.3 Research population	21
3.4 Sample size.....	21
3.4.1 Non-profitability sampling.....	22
3.5 Data sources.....	22
3.5.1. Primary data.....	22
3.5.2 Secondary data	23
3.6 Research Instruments.....	23
3.6.1 Questionnaires.....	23
3.6.2 Interviews.....	24
3.7 Data Collection Techniques.....	24
3.8 Validity and Reliability.....	24

3.9 Data Presentation and analysis	25
3.10 Ethical Consideration	25
3.11 Summary.....	26
CHAPTER IV.....	27
DATA PRESENTATION AND ANALYSIS	27
4.0 INTRODUCTION.....	27
4.1RESPONSE RATE	27
4.2 DEMOGRAPHIC DATA.....	28
4.2.1 Age.....	28
4.2.2 Gender.....	30
4.2.4 Years of service.....	32
4.3. Reliability Tests	32
4.3.1 The cronbach' alpha reliability tests	32
4.4 PREFERENCES ON FREQUENCY OF ORDERS FOR GOOD LOGISTICS MANAGEMENT	33
4.4 LEAD TIME OF ORDERS.....	34
4.6 Logistical variables affecting lead time	35
4.7 Effects of logistics management on lead time	37
4.8. Consequences/results of changes in lead time	39
4.9 Chapter Summary	41
CHAPTER V	42
Summary of conclusions, findings and recommendations	42
5.0 Introduction.....	42
5.1. Summary.....	42
5.2 Conclusion	43
5.2.1 To examine the logistics elements that influence lead time at Mutare Provincial Hospital.	43
5.2.2. To introduce the implications of logistics management on lead time at Mutare Provincial Hospital.	44

5.2.3. To ascertain the consequences of lead time changes at Mutare Provincial Hospital..... 45

5.3. Recommendations 45

5.4. Chapter Summary 45

List of figures

Figure 2.1: Connection between fundamental tasks	10
Figure 4.1 Age distribution	29
Figure 4.2 Distribution of Gender	30
4.2.3 Level of Education	30
Figure 4.3 Respondents' level of education	31
Figure 4.4 length of service	32
Figure 4.5 Preferences on frequency of orders.....	33
Figure 4.6 The hospital's lead time of orders	34
Figure 4.7 Logistical variables affecting lead time.....	35
Figure 4.8. Effects of logistics management on lead time of Mutare Hospital	38
Figure 4.9. Consequences of changes in lead time at Mutare Hospital	40

List of tables

Table 3.1: Research population	21
Table 4.1. Response rate	27
Table 4.2. Reliability Statistics	32

List of appendices

Questionnaire	53
SECTION A: BACKGROUND	53
Section B: THE IMPACT OF LOGISTICS MANAGEMENT ON LEAD TIME	54
Appendix 2.....	57
Interview guide.....	57

CHAPTER I

INTRODUCTION

1.0 INTRODUCTION

This study aims to describe how lead times for Mutare Provincial Hospital are impacted by logistics management. This chapter introduces potential research topics. Pay great attention to the history of the issue. As this chapter contains information about the investigation's background, including the problem's description, its key aims and open ended research questions, and an outline of the organization's brief history, it acts as the investigation's backdrop. Examined were the importance of the inquiry and the assumptions used in this paper. During performing the study, researchers encountered several of the previously mentioned restrictions. This study aims to describe how lead times for Mutare Provincial Hospital are impacted by logistics management.

1.1 BACKGROUND OF THE STUDY

Professionals in logistics, transportation, and distribution may get the information they need thanks to logistics management. It focuses on planning and managing the transportation of materials as well as providing details about related entities in the public and private sectors. In general, logistics management's main objective is to deliver the right goods to the right place at the right time while maximizing a particular performance indicator, like lowering total operating costs and adhering to a budgetary restriction. It is a fundamental activity in modern civilizations. The relationship between the subsystems and components is characterized by coordination and the interchange of materials and information. The objective is to efficiently serve customers with the products and services they require. By storing them, moving them, and other methods, each subsystem controls the amount of materials that move through the system.

The need for governments to handle an expanding number of goods, services, and patients has caused supply chain management in public health systems to become more of a priority and worry for many countries in recent years. Supply chain managers may be responsible for a larger number

and volume of products due to the significant increase in funding and donor support for various health programs, but they may only have access to a small number of additional resources to assist them in managing, storing, and distributing these products. Staff who already works in this area, frequently faces additional pressure to increase internal capacity in order to fulfill service delivery targets. However, many hospitals deal with this issue. This leads to the acknowledgment that these hitherto ancillary functions to the principal function have become crucial. Construction of infrastructure, including as roads, railroads, ports, airports, supply warehouses, and vehicles to transport troops and weapons, was done in response to the outburst of the First World War. The word logistics at first showed up in this context. Logistics management, a subset of supply chain administration, plans, actualizes, and directs the effective, compelling forward and invert flows and storage of goods, administrations, and related data between the point of root and the point of utilization in arrange to fulfill client requests. Supply management and logistics, distribution and material movement, production logistics and administration, reverse logistics, and manufacturing and product return are the four primary divisions. These categories each concentrate on a certain level of the supply chain. Inbound and outbound transportation administration, fleet administration, warehousing, material handling, order fulfillment, logistics network plan, inventory management, supply demand planning, and third-party logistics benefit supplier administration are included within the administrative duties.

Since it describes the latent (time lag) between the start of a task and its completion, lead time is an essential indicator for any product-based businesses. Lead time is the amount of time from the start of a process to its end. It estimates the overall length of time required to complete a procedure. The typical components are waiting time, setup time, actual time, and post-processing time. It is a crucial metric for every company because it aids in sales forecasting, improves operational effectiveness, and raises customer satisfaction. However, it is extremely difficult to cut wait times without efficient inventory management systems, an efficient manufacturing process, and dependable suppliers. Lead time is a crucial indicator. To avoid a supply delay that can negatively affect customer happiness, contractor reliance, and overall cost effectiveness, the business may need to carefully evaluate lead times. By minimizing supplier storage and delivery times, lead time encourages the adoption of strategies that will streamline the supply chain and boost efficiency. For the analysis of material purchases and deciding when to make new purchases, lead times must be understood. To counteract the effects of temporal uncertainty, the

corporation must either use safety stock or give itself more lead time. A plant's inability to meet targets and have longer average throughput is primarily caused by high lead time variability, and greater inventories are needed for higher variability. Due to greater competition and a wider range of products, there is currently more pressure on supply chains to invest less in inventories. Managers are looking for ways to improve so they can decrease inventory without compromising the caliber of the services provided. The reduction of supplier replenishment lead times and the unpredictable nature of lead times are the two areas managers are focusing on.

The pressure to reduce inventory investments in supply chains has increased as competition expands and product variety grows. Managers are looking for areas they can improve to reduce inventories without hurting the level of service provided. Two areas that managers focus on are the reduction of the replenishment lead time from suppliers and the variability of this lead time. The normal approximation of lead time demand distribution indicates that both actions reduce inventories for cycle service levels above 50%. The normal approximation also indicates that reducing lead time variability tends to have a greater impact than reducing lead times, especially when lead time variability is large. There is a service-level threshold greater than 50% below which re-order points increase with a decrease in lead time variability. Thus, for a firm operating just below this threshold, reducing lead times decreases reorder points, whereas reducing lead time variability increases reorder points. For firms operating at these service levels, decreasing lead time is the right lever if they want to cut inventories, not reducing lead time variability.

1.2 Problem statement

It takes top-notch logistics management to improve patient outcomes. It must make sure that they are sourced and delivered in a timely manner in order for medical supplies and drugs to be used. Zimbabwe has had a tough time achieving the basic aims of logistical management since the country's current economic problems have had a significant influence on the finances for health services. Less funding is being provided to healthcare facilities and offices as a result of the high levels of inflation from 2019 to 2023, which restricts their ability to buy goods, services, and medical equipment as well as to support the logistical activities necessary for the delivery of adequate health services. One of the provincial health sectors that has been negatively impacted by this circumstance is the public health facility known as Mutare Provincial Hospital. As a result, the hospital ran out of medications, and it took some time for supplies to be replenished. The main

reason for this delay, which has an influence on the efficiency of the entire hospital, is poor logistics that lead to a lengthy lead time. Therefore, the research aims to suggest, identify, and assess how lead time at Mutare Provincial Hospital is influenced by transportation, information system, order processing time, and distance.

1.3 Objectives of the study.

This study aimed:

1. To introduce the logistics elements that influence lead time at Mutare Provincial Hospital.
2. To examine the implications of logistics management on lead time at Mutare Provincial Hospital.
3. To ascertain the consequences of lead time changes at Mutare Provincial Hospital

1.4 Research questions.

1. What are the logistical variables which affect lead time at Mutare Provincial Hospital?
2. What are the effects of logistics management on lead time?
3. What consequences have lead time modifications had at the provincial hospital in Mutare?

1.5 Assumptions

It is anticipated that the COVID 19 pandemic will not have an effect on the study. The outcomes should fairly represent the companies operating in the same sector. Order lead times in the order they appeared were correctly recorded. According to the judgment of the respondents, the information needed to contribute to the research was presented honestly, fairly, and objectively. Also, it was anticipated that the researcher would not be constrained by a lack of time, money, or other resources needed to complete the investigation. Business policies and procedures did not prevent the researcher from gathering the required data. The researcher also considered that the data gathering techniques were appropriate, current, and accurate.

1.6 Significance of the study.

The research study gave the researcher practice conducting in-depth investigation; as a result, it provided a solid platform for subsequent work.

Benefits to the researcher.

The researcher will have a thorough understanding of the subject and increase their knowledge of how logistics management affects lead times in public hospitals. It will also help the researcher to make personal ties with eminent public health faculty members.

Furthermore, the research may help the researcher develop the knowledge and experience necessary to conduct future studies and integrate theoretical concepts with real-world techniques.

Benefits to the host organization

From the perspectives of management, staff, and customers, this study informed Mutare Provincial Hospital on the evaluation of logistics management strategies employed by retailers to obtain a competitive advantage. This study aids the business in problem-solving, determining what to do to dominate the market and lower customer churn.

Benefits to other researcher.

Other researchers will benefit from the research's information on how to control logistics to shorten lead times. Furthermore, it offers details that later scholars may exploit.

Benefits to the university

The study will be available for reference in the school library and will inform other students about how logistics may be managed to shorten lead times.

1.7 Limitations to the study

The researcher encountered a few constraints, some of which are listed below.

i Organizational Integrity

The researcher was not authorized to access some highly sensitive information and data; as a result, the researcher had to speak with top management and different stakeholders who are knowledgeable with hospitals and are prepared to give researchers the information they require.

ii Unwillingness to disclose data

The hospital administration didn't want to share information because they felt it was too sensitive. However, the researcher informed them that the data was solely intended for academic purposes, and they provided a little amount of information that was sufficient for the research to move on.

iii *Insufficient time*

Due to the researcher's stringent deadlines, the study was completed in a very short amount of time; as a result, the researcher had to make the most of the time available.

1.8 Delimitations

- i. The subject of the study was based on the primary hospital in the province, Mutare Provincial Hospital, therefore it has a higher level of efficiency and effectiveness in its medication distribution.
- ii. Secondary data from publications like annual reports and financial statements of Mutare Provincial Hospital were used in the study.
- iii. Only hospital stakeholders who currently work there or have in the past have participated in this survey.

1.9 Definition of terms

Lead time is the period of time from the start of a procedure till its end. Lead time is a crucial metric for any product-based enterprises. It can also be described as the latent (time interval) between the commencement of a certain job and its completion.

Logistics is that portion of the supply chain process that plans, executes and controls the effective, viable flow and storage of products, administrations and related data from the point of beginning to the point of utilization in order to meet the customers' necessities. (Lysons. K, 2016). The transportation or placement of items and the associated supporting operations, as well as their planning, execution, and management, all take place inside systems that are structured to fulfill certain organizational objectives.

1.10 Chapter summary

Therefore, the context of the study, the problem statement, the study's purpose, and the goals the researcher set out to accomplish were all sufficiently described in the chapter. It also emphasized

the hypothesis, the researcher's presumptions, the study's restrictions, and its limits. To clarify the meanings of some words, definitions of some terminologies were provided.

CHAPTER II

LITERATURE REVIEW

2.0 Introduction

A literature review is a detailed overview of prior studies on a specific subject. This chapter was written to list, explain, summarize, objectively, and elucidate the study's importance. It will aid in comprehending existing study and discussions concerning the impacts of logistics on lead time.

2.1 Overview of Logistics

The new directions in logistics by Donald Watters, (2010) starts by identifying and understanding customer's needs. The process of satisfying customer demands is very important. Christopher et al (2010), expounds that, the logistics theory is a strand that knits together key procedures and serves as the foundation for creating systems that can offer value to customers economically. By using this approach, products are created, produced, and supplied to clients, and ongoing service requirements of those customers are satisfied. A major alter within the business's focus away from the more inside centered generation and sales attitude that already dominating most businesses has resulted from the acknowledgment of the concept's significance (Martin Christopher, 2010).

2.2 The scope of logistics

Logistics management is pivotal for expanding the firm's benefit and competitive execution. Giving the leading conceivable client benefit, guaranteeing top-notch item quality, accomplishing the least costs, and being adaptable to proceeding showcase changes are all objectives of logistics inside an organization. James R. Stock (2010). The goal of logistics, agreeing to (The Council of Logistics Management), is to have the correct item within the right sum at the correct area at the proper time for the proper cost. Two essential aims that logistics management must balance are service quality and low cost.

The extent of logistics, according to Murphy, (2003), affects how managers carry out their duties. So, the scope must be created in a way that is both beneficial to the firm and profitable. In support of this, Christine and Christopher (2003) assert that a well specified scope will increase the

company's reputation, respectability, and ability to be trusted. According to Kasillingam (1998), every stage of the physical distribution process is secured by logistics management, counting requesting and conveying raw materials and component parts to the manufacturing plant, fabric dealing with and capacity, stock control, and sales forecasting, which decides the requirements for particular components parts, transport, and capacity. Other assignments incorporate the organization and operation of a fleet administration, framework, planning, order processing, packing, and delivery in addition to the administration and operation of a logistics information framework that acts as a recording framework.

Bowersox et al (2007)'s perspective, however, sees it as a wide function made up of a number of connected tasks. A purchase order delivered to a supplier typically starts the procurement process. To obtain the materials into the company in advance of this, the procurement department must take all necessary steps. It must select qualified suppliers, negotiate prices and terms, plan for delivery, set up insurance, and handle payment. The inward transport department of an organization is in charge of transporting materials from suppliers to the firm's receiving location. Managers must therefore decide which method of transportation to use. Reception entails that, the conveyed materials match the order, recognizing receipt, emptying delivery trucks, looking at the materials for damage, and categorizing them. In the arrangement to guarantee that the assets are open when required, the warehousing/stores move the commodities received into storage. The stock control department determines the policies for inventory.

According to Bowersox et al. (2007), packing encloses materials in order to ensure that damage is kept to a minimum during transportation. The active transportation now picks up items from the takeoff area and conveys them to clients. Physical distribution refers to all operations, including outbound transportation, that convey finished commodities to clients. Logistics tasks might be incomplete even after products have been delivered to clients. There are times when materials are sent and returned because they were either damaged, or were of wrong kind. Reverse logistics, along with the accompanying informational flow, are actions that include bringing things back to an organization. (Stock, 1998). Coordination of information flow is never simple, and logistics managers usually define their job as processing information rather than delivering goods.

2.3. Key components of logistics

Concurring to Couriel (1998), logistics' essential parts can be isolated into major and auxiliary capacities. Center operations are those that happens in all supply courses. They are pivotal to the compelling coordination and execution of the logistics task and contribute altogether to the general cost of logistics. Customer service, transportation, stock administration, information streams, and order processing are among the fundamental obligations. The figure below portrays the association between the fundamental tasks.

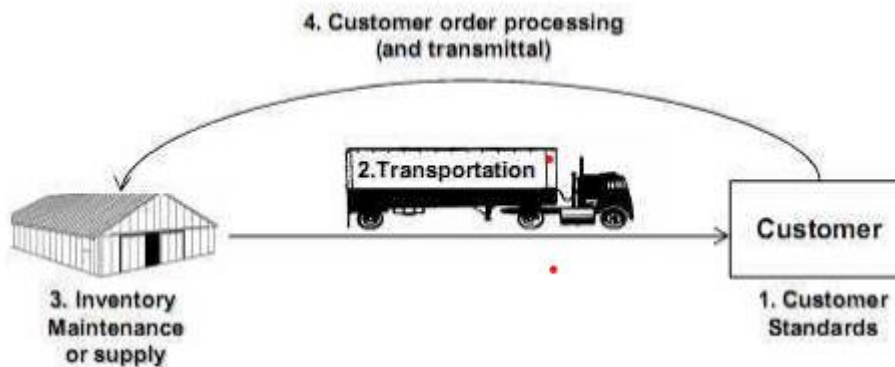


Figure 2.1: Connection between fundamental tasks

Source: Ballou, H. Ronald (1997)

2.3 Support activities

Support activities vary from company to company (Ronald, 2001). These activities include warehouse storage, which primarily deals with space determination, warehouse allocation, configuration, and warehouse placement. Another support activity is material handling. It deals with equipment selection and replacement, picking procedures, and inventory storage and acquisition. The next activity is a purchase. It deals with the selection of supplier, purchase time and purchase quantity. Another support activity is a protective package intended for handling, storage and protection against loss or damage. The next activity is to work with production or operations to schedule aggregate quantities, production output order and time, and delivery.

Finally, there is information maintenance that handles the collection, storage, manipulation, data analysis, and control procedures of information.

2.4 Application of logistics in organizations

Laundry and Beaulieu (2002) claim that, logistics by its collection of plan, arranging, and execution of operations, empowers the securing, stock administration, and recharging of products and administrations encompassing the arrangement of therapeutic care to patients,. More businesses are using service standards like delivery additives and after-sales support to stay competitive (Sanders et al., 2002). The fact that so many service organizations were putting excellent logistics practices into practice and understanding the benefits of having an end-to-end supply chain view was wonderful to see (Rushton et al., 1988).

Logistics is imperative for the healthcare segment. As a result of the costly medical technology advancements and rising life expectancy, there is a greater need for health care, and hospitals are working to deliver better care at reduced rates. According to Mangan et al. (2008) hospitals apply fundamental logistics principles to their day by day operations and grasp a higher exhaustive supply chain see on all parts of patient care. In addition, Jeyakumar (2008) had quicker access to a number of services that streamline the system and enable patients to heal more quickly and leave the hospital.

2.5 Importance of logistics

Conveying the proper goods or administrations to the correct place at the correct time within the right condition is corporate logistics' pronounced reason in arrange to optimize the company's benefit (Ballou, 1997). By carefully regulating operations that considerably improve logistical customer service and minimize expenses. According to Ballou (1997), logistics are essential since they benefit the company's stakeholders, including its customers and suppliers. This was further corroborated by Murphy (1992), who goes on to say that the esteem of logistics is verbalized in terms of time and location. Products and services have small to no esteem unless the buyer decides when and where to utilize them.

2.6 Lead time

In the past, the primary factor influencing consumers' purchasing decisions was price. While price is still significant, according to Christopher (2008), the cost of time has recently replaced price as the main factor in choosing a supplier or brand. Christopher (1992) defined the term "cost of time" as the extra expenses a consumer must pay while awaiting delivery or looking for alternatives. As a result, buyers now have a more difficult time completing the procurement process since they must take into account both cost effectiveness and the responsiveness of the incoming material flow.

The need to decrease time squander within the supply chain and the distinguishing proof of time as an imperative variable have recently raised concerns about responsiveness and timing. One of a company's most crucial competitive advantages is lead time. Delivery time begins with the first reception of the customer's order and concludes with the receipt of the goods or service by the customer. Hence, lead time is defined as the period of time between receiving an order and when the delivered product is received by the client (Azad, 2004). The delivery time will vary if the period between placing the order and delivery differs from the anticipated time. As a result, lead-time variations are connected to those that may occur with purchased goods and internally produced goods (Heard and Plossl, 1984). Quality problems are the main cause of this variability. It is usual to utilize security stock or lead time to reduce the effects of these varieties. Delivery variability, according to Heard and Plossl (1984), is the primary cause of facilities' inability to reach inventory targets and increase average throughput. However, the type of merchandise will affect the delivery time.

Logistics services, planning, supply chain management, and, the separation between customers and suppliers, all have an impact on lead times. If delivery periods are predictable and demand is steady, long lead times are not a problem. Long lead periods, however, can be expensive if future demand is unclear, even though the buyer is aware of the specific delivery date. A lack of inventory results in expenses in the form of lost sales or potential client losses if future demand is underestimated. In order to avoid being penalized for discounts or, in the worst case scenario, being eliminated from the bidding process, other businesses must follow the lead of those that can minimize lead times. Hetzel (1988) contends that forecast errors make it possible to more quickly meet unexpected demand while interruptions lead to queues and missed deliveries. Throughput varies over time, safety stock requirements increase, and the entire supply chain becomes

asynchronous. The forecast timeframe and forecast accuracy grow longer and more inaccurate as the cycle time increases. Without the need for focused efforts to cut cycle time, this kind of feedback loop can spread throughout the entire organization. Variable delivery periods have a substantial impact on lot size and storage costs, as demonstrated. (Gross and Soriano, 1969).

The date of delivery of the internally produced product may differ somewhat from the date of the purchased goods. Issues with quality are the main cause of these variations. Usually, safety stock are employed to lessen the impact of these variations. In either instance, there is a need to raise inventories to a greater extent.

2.7 Logistical variables which influence Lead Time

Gabriel (2011) claims that lead times depend on the activities that happen at a capacity, which in turn is subject to the apparatuses utilized and the choices taken. Distance is crucial because it affects how quickly goods and services are produced. Short lead times are the result of close proximity, while long lead times are the result of longer proximity. The lead time increases with distance, while the lead time decreases with distance. Order variations may be an element which results in lead time variability. As the delivery of orders will be delayed, pickers might also additionally stay idle for a few time. (Gabriel, 2011).

The performance of the warehouse is more influenced by this decreases in the usage of order choosing, meaning, it reduces the performance of the warehouse from 100% as they will be in the process of reducing the lead-time. (Piroird and Dale, 1998) acknowledged, in a distribution center making plans is one of the most extreme basic components influencing lead-time. There are different elements that have an impact on lead time, and these include listing orders, choosing order, sorting, packing and shipping. (Spitter et al, 2003) posits that, the dynamics of manufacturing and stock value plays a crucial role in the variability of lead. Furthermore, Spitter, (2003) advocates that, ready time is likewise an element that could elect the variability of lead time. During production structures, there are a number of elements which contributes to a longer manufacturing lead-instances, and one of these difficulties is machine failure. (Zong, 2008).

A system may breaks down, and imply to restore may be lengthier, thereby motivating decrease system availability, and resulting to a longer manufacturing lead instances. A crucial role for the ready time is played by lead time variability. It is basic to be beyond any doubt the expected

prepared time for a single server line when applying the lining hypothesis in this circumstance, where the supplier time and the inter-arrival time between the orders have a favored conveyance. In case an order comes in whereas the server is as of now active, the order will hold up in line. The order will only be produced, when all orders that have arrived already are done.

Kingman, (1962) contends that, this ultimately resulted to the variety in lead time. Lead time performance variance results in either more inventory, a shortage of goods, or both, both of which have a notable impact on the bottom line. The majority of organizations, however, no longer have a firm grasp on lead-time variability, and this is more widespread than most groups could have imagined.

The ideal deliberate lead time for an item is determined by the type of demand, the cost of the resource used to make the item, and the price difference between the item and the replacement item it is used in. (Spitter et al. 2003). For the variation inside the call for and the distinction in preserving fees, it is genuine that the ideal deliberate lead time will lengthen as the expense of one or both parameters climbs. For the usage charge, this function works best when there is a large difference in value preservation between the item made by the capacitated aid and the give-up devices. Within the bounds of the maximum deliberate lead time, the sustaining value shape completes the primary task. Safety shares may drop with longer deliberate lead times if demand variation and/or consumption rate are considerable, although this is most likely to occur if work-in-system costs do not rise too quickly with the same lengthy deliberate lead periods. S. Muthuvelu (2003) suggests the simultaneous lot sizing and lead-time setting (SLLS) through queuing idea and heuristic search as an essential tool to assist those elements above.

2.7.1 The Simultaneous Lot sizing and Lead-time setting (SLLS) via queuing theory and heuristic search

The author said Materials requirements planning (MRP) is a widely used method for production planning and scheduling. Planned lead-time (PLT) and lot size are two of the input parameters for MRP systems, which determine planned order release dates. Presently, planned lead-time and lot size are estimated using independent methodologies. No existing PLT estimation methods consider factors such as machine breakdown, scrap rate, etc. Moreover, they do not consider the capacity of a shop, which changes dynamically, because the available capacity at any given time

is determined by the loading of the shop at that time. The absence of such factors in calculations leads to a huge lead-time difference between the actual lead-time and PLT, i.e., lead-time error or lead time variation. Altering the size of a lot will have an effect not only on the lead-time of that lot but also on that of other lots. The estimation of lot size and lead-time using independent methodologies currently does not completely capture the inter-dependent nature of lead time and lot size.

2.8 Logistical implications directly affecting lead time

Menter (2008) asserts that, the logistics-related costs are created by exercises that assist within the logistics process. The four cost drivers in logistics are information, inventory, facilities, and transportation. The data fetched rises in significance with diminished supply lead times. It's crucial to monitor shipment data in order to modify carriers and means of transportation if delivery lead times are short. The main factors affecting lead times in logistics are transportation costs, order processing/information system costs, distance, and inventory carrying costs.

2.8.1 Transportation.

Outbound to customers and inbound from suppliers are the two main drivers of transportation costs, (Closs and Cooper, 2012). Supply chain inflow is the one that affects lead time. While a global supply chain helps businesses to take advantage of reduced cost production, transportation managers face substantial difficulties in ensuring that long-distance deliveries of goods arrive on schedule and are dispersed to the proper locations. Companies can increase the effectiveness of their supply chains overall with better transportation management. Transport time and cost estimates are challenging because of hazards including unavoidable delays and lengthier lead times with international suppliers. Since the Just-in-Time concept can only be connected when transportation is effectively overseen. In order to decrease transportation costs and guarantee that the right item arrives at the proper location on time, transportation directors require a centralized look into all of their transportation activities and the capacity to understand how transportation influences product inventories (Screenivas and Scrinivas 2004).

2.8.2 Processing orders

Ordering costs have an enormous effect on how much lead times increase in a company. The amount and consistency of orders are impacted by the amount of lead time required before a conveyance can be made. Additionally, the facility's vicinity to the provider may have an impact on the cost of ordering. In contrast to a facility further away, a public healthcare facility next to a therapeutic warehouse is more likely to get deliveries frequently. Order packaging may increment the waiting time in public healthcare if medical supplies and equipment are not defended from harm and are not fitting for guaranteeing safe transit. Order packaging has an impact on the adequacy of the supply chain inside the healthcare framework since it acts as a conduit between the supply chain and its clients and represents them.

2.8.3 Information systems

Insufficient information flow, in accordance with Drew and Smith (1995), has a negative effect on the health system, the caliber of healthcare, and the capacity to save lives. When information is managed improperly, medical supply shortages can happen, extending the time needed to treat the patient successfully. Medical professionals, who are in charge of obtaining the correct and suitable medications as well as other medical supplies and equipment, handle this information for administrators and procurement officers. It is essential to layout the activities and resources that will be required in order to protect the health facility's functionality within the occasion of a subpar order shipping.

2.8.4 Distance

Lead times are also claimed to be directly impacted by distance. Due to the country's limited ability to generate its own medications, some of the medical supplies used in Zimbabwe are imported. Some of them can be shipped, some can be moved by road, and some can be moved by air. There is a good likelihood that pharmaceuticals coming from outside the country will have longer lead times when they are shipped or conveyed by road. Because of this, and depending on the mode of transportation being used, the further the distance, the longer the lead time. In order to ensure that the hospital operates efficiently and avoid running out of imported drugs, it must now place

replenishment orders as soon as possible. To avoid the lengthy lead times that will result from distance when importing drugs from abroad, the hospital must also use buffer stocks methods on these imported drugs. Also, it is advised that the hospital use air transportation for pharmaceuticals that are imported from outside in order to satisfy delivery deadlines and periods before running out of stock, particularly if the hospital is working under JIT. The hospital can safely use road transport for drugs to the hospital so as, to meet the delivery periods, thereby fostering the efficient operation of the hospital. Additionally, shorter distance signifies a shorter lead time.

2.9 Consequences motivating the shortening of lead times

Reducing lead-time variability, according to (Stevens 2010), promotes predictability. Organizations are superiorly able to predict and consistently grasp when something can be provided by lowering lead-time variability. The system's credibility is improved through consistent provisions. One of the incredibly positive benefits of rising system confidence is the fact that the acceleration is significantly delayed once the system becomes predictable and firms are unused to their clients based on the high level of consistency they yield. There is a chance of making an offer. (Bauman 1993) also contributed to a reduction in lead times by indicating that it was intended to speed up feedback. Faster feedback results from shorter lead periods. Higher quality may result from quicker feedback. This is due to a number of factors. Less work is finished in accordance with the tasks that need to be re-done. The more frequently feedback can be gathered and used, the higher the cycle's applicability. Quick feedback allows the team to reduce the amount of work necessary to accomplish their objectives. Moreover, Hetzel (1988) favored reducing lead times .According to the author, cutting lead times improves responsiveness and flexibility. Lead times are shortened by predictability, while flexibility options are expanded by reliability. Before delivering the solution specifics to the system, some decisions can be delayed for a very long time. You can also promise your consumers new things because of your greater adaptability and responsiveness.

2.10 Empirical evidence

The control of lead-time variability in transportation was the subject of a 2013 study by Alan Harison and Johannes Fichtinger. The Global Sea Shipping Network (GOTN) time-related factors and shipper inventory management performance were the main subjects of their investigation. The

filling rate was based on daily and weekly departures, and the author also examined how changes in that rate might affect the shipper's inventory control system. Using simulation modeling of the aforementioned variables as a strategy, the author also conducted interviews with numerous line operators, 3PLs, freight carriers, and executives of heavy vehicle shippers. According to their findings, the cause of the variability as well as the frequency of broadcasts influenced how the variability was improved. High reliability and increased frequency together offer the most possibilities for inventory reduction. A study on Ugandan logistics systems for public health items was undertaken by Raja et al. in 2000. The logistics of family planning were the focus of this investigation. Many findings from the research were used to develop suggestions. It has been discovered that a number of different logistics systems are used to provide public health raw materials to clients. The logistics system used by the Ministry of Health has some components that are interconnected and others that are controlled separately.

Systematic supply chain integration can speed up service delivery, decrease costs and time, and increase product availability. Another study by Chopra et al. in 2004 looked at the effect of lead time on safety stock. . This study's primary goal was to demonstrate the presence of service level thresholds above 50 degrees, where reorder points rise as lead time variability falls. They claimed that these measurements would lower the cycle service level inventory level to more than 50%, which is consistent with a normal approximation of the lead-time demand distribution. Moreover, it is shown using normal approximations that when lead-time variability is significant, lowering lead-time variability frequently has a bigger impact than reducing lead-time variability. For enterprises slightly below this threshold, the study found that increasing lead time variability lowers reorder points while reducing lead times raises them. Instead of lead time variations, lowering lead times is a useful approach for businesses adopting various service levels to lower inventory levels. Hetzel (1988) conducted research on multi-step processes' cycle times and effective warehouse placement. The main pillars of Eastman Kodak's corporate strategy, lead time and inventory reduction, were the subject of this study. The results show that these mitigating strategies cannot be applied separately. Instead, they are the result of the underlying industrial process in the supply chain being improved.

At Nairobi supermarkets, Bosire et al. (2011) performed a survey to determine how outsourcing affected lead times and customer service. According to the survey, supermarkets contract out a

variety of services, such as fleet management, maintenance, and marketing and advertising. The study assessed how outsourcing affected lead times as well. Lead time has been observed to positively correlate with outsourcing, and supermarkets that use variables identify customer service management as a tactic for competitiveness and retaining customers. Rad (2008) also investigated ways to shorten lead times. This study's goal was to cut down on leads, orders, and produced. We have discovered that locating and reducing waste makes it simpler to concentrate on activities that bring value while also being more cost-effective.

A study on time and logistics as trade barriers was undertaken in 2006 by Nordas, Pinali, and Geloso Grosso. The study came to the conclusion that effective logistics management is crucial for cutting lead times. Rad's (2008) further investigation into reducing lead times revealed that an effective logistics system is a crucial component.

2.11 Gap analysis

According to the research mentioned above, lead time and logistics management have apparently been studied. The majority of studies, though, are on other nations. As of the study on the effect of logistics management on modifications in lead times in public health systems, no research has been done in Zimbabwe. The purpose of the inquiry is to close this gap. The survey took into account the following inquiries: What logistical issues affect Mutare State Hospital's lead time? What effect does logistics management have on Zimbabwe's lead times for public health?

2.12 Chapter Summary

This chapter looked at the numerous authors' focuses of view on the subject of the research from a range of scholarly works. Based on the objectives of the study, a review of the literature was done. Handouts, articles, reports, periodicals, and course readings were utilized to make this review.

CHAPTER III

RESEARCH METHODOLOGY

3.0 Introduction

This chapter will approve the study and display dependable logical discoveries. It'll include all of the activities and strategies carried out all through the research and detail how it was conducted. Learn about the research techniques that were employed and why, as well as how data was gathered and processed. This chapter is concerned with issues including survey design, sample design, the sources of the data, and the innovations utilized for data collection. Benefits and drawbacks of each technique employed in this chapter are also discussed, along with the rationale for doing so. The procedure will be streamlined, efficient, and manageable for the researcher if he has a comprehensive plan that keeps him on course.

3.1 Research approach

The researcher chose this method to gather, analyze, and interpret data. The researcher employed both a quantitative and a qualitative technique in this investigation. In this study, a quantitative approach was adopted in line with the quantitative nature of the study. This approach enabled the researcher to utilize statistical measures to show the impacts of logistics management on lead time. This method also enabled the researcher to conduct a survey using questionnaires with close-ended questions. The qualitative approach was utilized to gather and look at non-numerical information in order to understand how individuals feel about the study.

3.2 Research Design

According to Cooper et al. (2018), it is the planning and structuring of informative research to find answers to research questions. The overall approach is what enables a researcher to logically and coherently combine the various study components. The logistical influences on public health lead times in Zimbabwe were examined in this study using a descriptive study approach. The

descriptive design was chosen by the researcher because it made it less difficult to deliver clear insights that would help in their understanding of the issue beneath the study.

3.2.1 Descriptive research design

A descriptive research design, according to Bethlehem et al (2012), is one that enables the collection of data that is primarily descriptive in character. The type of research may offer a thorough and precise picture of the traits and tendencies of a specific group or issue. This implies that the researcher can draw inferences about the research findings using human judgment.

3.3 Research population

There are 210 employees overall at the institution. To guarantee that the data are presented fairly and accurately, the research will focus on respondents who are knowledgeable with supply chain, lead time, and logistical activities. Consequently, the hospital's target group is made up of 25 employees from five departments. These are nine from the purchasing department, six from retailers, five from the administrator, two from accounting, and three from the pharmaceutical department.

Table 3.1: Research population

Department	Number of employees	Percentage represented
Procurement	9	36%
Stores	6	24%
Administrator	5	20%
Accounting	2	8%
Pharmaceutical	3	12%
Total	25	100%

3.4 Sample size

According to Brannet (2017), sample size refers to a representative portion of the study that is examined by a researcher in order to understand the demographics of the population. A sample

size should, in accordance with Mackey and Gass (2015), be both large enough to serve as a reasonable representation of the population and small enough to be economical and efficient. However, the researcher purposefully opt to use the entire targeted population of (25) as his sample because few people in the population were aware of supply chain activities and how they affected the hospital. This is due to the fact that sampling only half of the group of 25 logistics experts and excluding the remaining group would have been realistically incorrect. As a result, the researcher used non-probability sampling.

3.4.1 Non-profitability sampling

In this sampling procedure, each element is not given an equivalent opportunity of being chosen for data collection. The following methods were applied:

Judgmental Sampling

Cooper (2003) characterized judgmental testing as a testing procedure where the sample is chosen based on the researcher's ability. Appropriate sample elements for data collection were identified and chosen by researchers using their knowledge and intelligence as part of a judgment sample. Because of this, the researchers carefully selected 25 individuals who are active in or have deeper understanding of the supply chain activities at the hospital. Judgmental inspecting was utilized since it is direct, fast, and centered on the correct things.

3.5 Data sources

The data sources employed by the researcher were primary and secondary sources.

3.5.1. Primary data

In-order to assess how logistics management affects lead times, the researcher gathered primary data. These data were to be gathered using semi-structured questionnaires. According to Kothari (1990), primary data is information that is obtained for the first time. The information is fresh and correct because it has just been gathered. The data helps the researcher limit the number of mistakes committed, in order to produce accurate result. The information is nearly always unprocessed and has little value until it is evaluated and interpreted in light of the topic. For the purpose of gathering primary data, there are four main technical instruments that are employed:

focus groups, surveys using questionnaires, in-person interviews, and observations. Kotler (2000). A questionnaire and an interview were utilized by the researcher to gather data for this study.

3.5.2 Secondary data

Secondary data was acquired from books, public records, journals, electronic journals, and websites. Kothary (1995) defined secondary data as information that has already been gathered and subjected to statistical analysis by other researchers. In order to learn the best practices for logistics management used by various logistics organizations, the researcher quickly gathered secondary data from the internet and libraries.

3.6 Research Instruments

The researcher used questionnaires and interviews to gather primary data.

3.6.1 Questionnaires

In his study, the researcher employed questionnaires to obtain data from participants. A questionnaire is a tool used to get information from respondents, according to (Wild and Diggines, 2009). The researcher asked respondents written, open-ended questions about the information he was after, and they were required to respond in writing. The research questions were straightforward, impartially phrased, and organized. Questionnaires were physically distributed to overview members utilizing the non-profitability testing strategy.

Closed-ended questions, could permit respondents to choose from the alternatives the analyst has displayed. Open-ended questions permit respondents to reply to them anyway they see fit. The researcher can gain various advantages by using questionnaires in the study.

The main survey technique, according to Hair et al. (2003), is more economical and makes it simple for the researcher to understand the data because respondents give uniform answers. Furthermore, the survey saves the researcher's time and enables data collection from a large number of respondents.

Due to the researcher's direction, participants had no inconvenience understanding the impact of logistics management on lead-time inconstancy. More particularly, the researcher made self-

administered surveys to grant respondents adaptability in completing the overview and sufficient time to consider their reactions. To ensure a better grasp of specific terms used in the survey and to provide definitions, the researcher defined some crucial terms; this produced the best results.

However, the research instrument had some demerits to the research. The researcher had to spend a lot of time completing questionnaire.

3.6.2 Interviews

To gather data, interviews were conducted. Open-ended and semi-structured questions were employed. The researcher posed questions that were already on the table during the interview, and the respondents received interview protocol. The researcher's interviews were aided by key informants who provided pertinent information.

The interviews were beneficial in a number of ways. Open-ended questions permit respondents to clarify their expertise in more noteworthy detail, whereas structured questions let the researcher identify themes in-depth. Agreeing to Saunders, Lewis, and Thornill (2016), semi-structured interviews have a list of subjects and imperative issues that have to be tended to. On the other hand, open-ended questions permit respondents to further clarify their views. The research was given more importance because the researcher spoke with the appropriate stakeholders who knew more about the subject. Additionally, the researcher had the opportunity to ask the hospital's top management some additional questions that had not been included in the interview questions.

However, interviews took a lot of time. Several times the meeting with the hospital's top administration was postponed.

3.7 Data Collection Techniques

The researcher set up appointments with the respondents discussing the study's topic via emails, phone calls, and in-person visits to their various workplaces. Two study assistants assisted in completing the questions by hand, and in cases where the respondents had hectic schedules, emails were used instead of paper forms to administer the questionnaires. After five working days, the survey data was gathered. After seven working days, email responses were received.

3.8 Validity and Reliability

Williaman (2011) expounds that, an instrument's validity is its suitability for measuring the characteristics or circumstances of the study. The accuracy with which a tool assesses the research variable is how the author defined dependability. The instruments were exposed to an expert, which is the supervisor, for evaluations and corrections in order to assure the validity of the instruments. A pilot study was conducted to assess the questionnaire's validity. Additionally, the researcher regularly cross-checked and followed up in an effort to ensure that the data is complete, pertinent, uniform, and consistent. Then, a test-retest methodology was applied. By giving the identical instrument to the same group again after a week, validity was also attained. Collecting secondary data from reliable sources added another layer of reliability assurance. The identical replies obtained using both tools ensured validity and reliability.

3.9 Data Presentation and analysis

The researcher initially prepared the data for analysis by the extensive use of tabulation, which included nothing more complicated than putting the data in a tabular format. The researcher tallied the responses, added them to the table, and then did a straightforward tabulation. Then, the Statistical Package for the Social Sciences (SPSS) was used to conduct a quantitative analysis after the data had been entered. Percentage calculations were used to easily interpret data. The researcher then used graphs such as bar graphs, and survey tools such as pie charts to summarize the meaning of the data and make it easier to convey. Survey tools such as pie charts were used. These assisted in comparison of data.

3.10 Ethical Consideration

At the Mutare Provincial Hospital, the researcher requested permission to gather data from five different departments. The relative relevance of the study and the fact that the researcher had been given permission before data collection were both explained to respondents in order to prevent coercion. The researcher concluded by assuring the respondents' privacy and confidentiality of the information and that the data was exclusively gathered for academic research reasons. This was done by the researcher to preserve the credibility of the responses.

3.11 Summary

This chapter portrayed the research approach used. It gave the research strategy utilized. The target populace, sample estimate, sampling strategies, and research instruments were all given. Additionally, this chapter included the strategies for gathering information, legitimacy and steadfastness, information presentation and analysis, and ethical considerations.

CHAPTER IV

DATA PRESENTATION AND ANALYSIS

4.0 INTRODUCTION

The study's outcomes are examined in this chapter. It offers examinations of the crude information that was accumulated within the field through surveys and interviews, as well as presentations and translations of those investigations. Tables, pie charts, and charts are utilized to show and understand the information in order to meet the study's objectives.

4.1 RESPONSE RATE

The response rate refers to the percentage of participants who were able to reply to a survey. The rate of response allows researchers to judge the validity of a study result, so the proportion of respondents who responded is sufficient to facilitate meaningful interpretation analysis. A total number of (25) questionnaires were sent to respondents, and (20) of them were answered from the different departments; 7 from procurement, 4 from stores, 4 from administration, 2 from accounting department, 3 from the pharmaceutical department. This resulted to a response rate of 80%. The table underneath appears the reaction rates.

Table 4.1. Response rate

Department	Number of responses expected	Number of responses obtained	Response rate
Procurement	9	7	77.7%
Stores	6	4	66.7%
Administrator	5	4	80%
Accounting	2	2	100%

Pharmaceutical	3	3	100%
Total	25	20	80%

As from the above table, each department's reaction rate was more noteworthy than 50%, which was considered satisfactory for each department and adequate to speak to each division. Richardson (2005) hypothesizes that, a study must have a great reaction of 65% in arrange to deliver precise, valuable. Subsequently, the overall reaction rate of 80% conclude the well-designation of the survey. The tall overview reaction rates are fundamentally due to the capacity of analysts to send out surveys and get criticism through mail. The reaction rate was large due to the researcher's capability to inquire questions of intrigued to the respondents. More so, questions were specifically relative to the respondents' region of concern, so they openly given data which were a few of the issues they are confronting at the hospital.

4.2 DEMOGRAPHIC DATA

In this area, key statistic highlights of the respondents are analyzed to supply a few supporting characteristics of the sample subjects such relevant highlights of the population that could have impacted the most progresses of the study. Tavakol and Dennick (2011) posists that, vital characteristics of the research instrument as well as the population requires an inspection to supply a few bits of knowledge into methodology and the study setting varieties which may effect on the examination of the most findings.

4.2.1 Age

The respondents' distribution of age gathered in the study, and are depicted on the figure underneath.

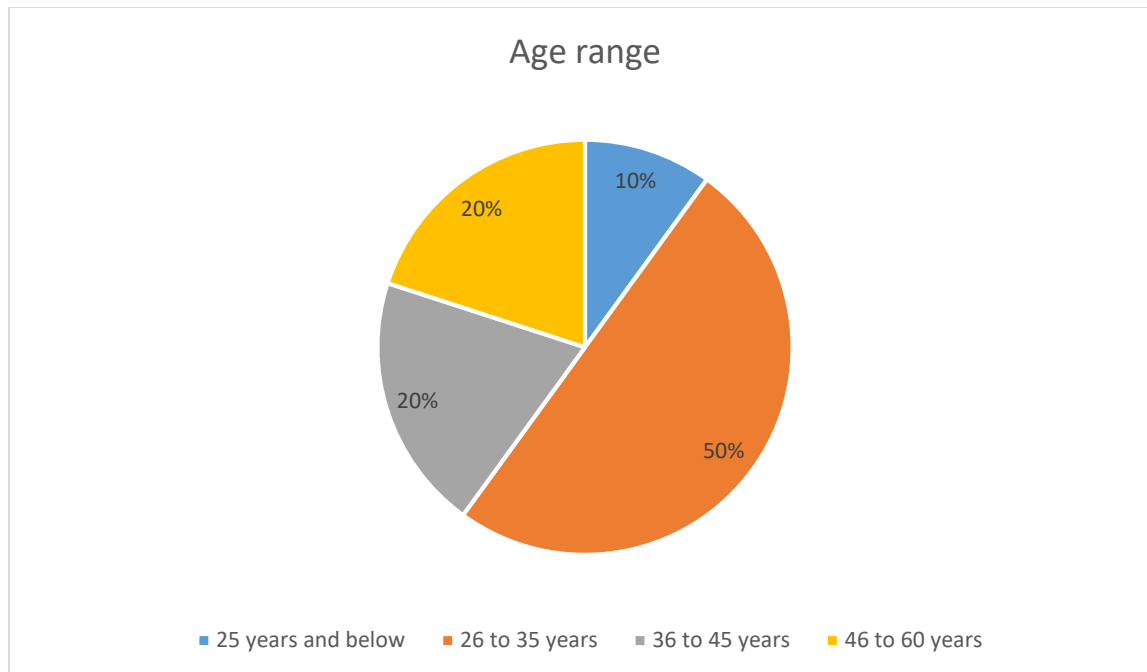


Figure 4.1 Age distribution

As shown on the figure above, the majority of respondents' age ranges from of 26 to 35 years, represented by 50%. Next are the respondents with an age range of 36 to 45 years which are represented by 20%, and those with an age range of 46 to 60 years represented by 20%. Respondents below with 25 years and below were the fewest represented by 10%. As the largest percentage of the respondents are above the age of 25 years, better results were obtained since they were coming from mature people.

4.2.2 Gender

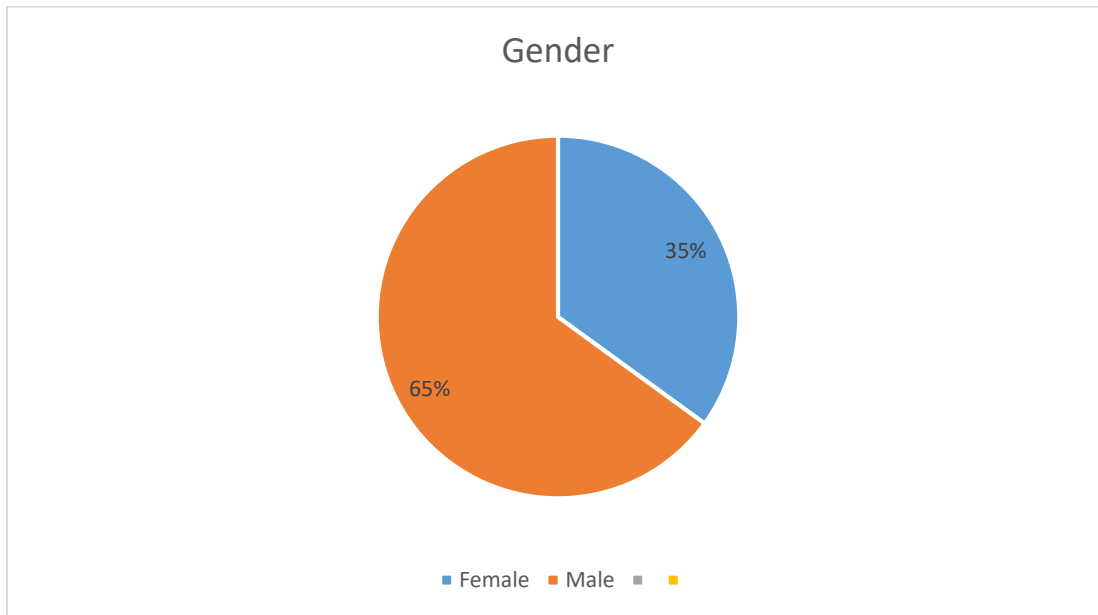


Figure 4.2 Distribution of Gender

The distribution of respondents by gender were also gathered in this study. This research intended to gather information from both men and female. The above figure shows that 65% of the respondents were male and 35% of them were female. This was gathered to show the inclusion of females in the study as encouraged by the United Nations Development Fund for Women (UNDFW, 2009). Due to such a result, the interest of the study was successfully met.

4.2.3 Level of Education

The study also gathered information pertaining the qualifications of respondents, and they are presented on the chart below.

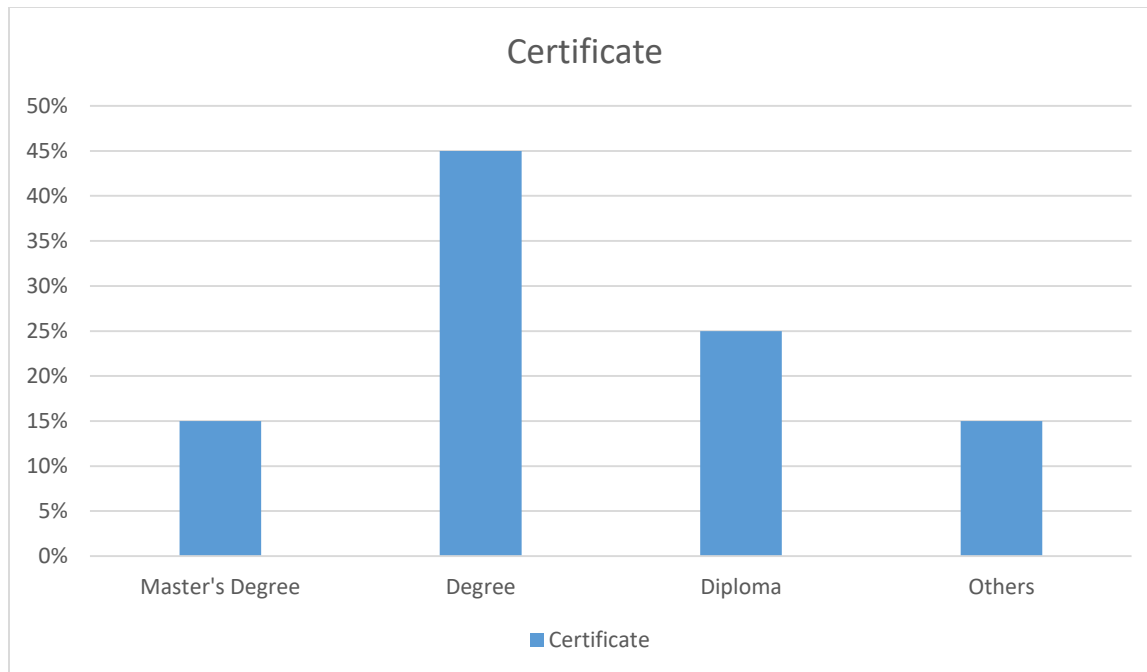


Figure 4.3 Respondents' level of education

Most of the respondents have degree and are represented with 45% in the above chart. The second large number of respondents have diplomas and are represented with 25%. Then 15% of them have master's degrees and the other 15% has other different certificates such as nurse aid certificates, CIPS, and nursing certificates. Therefore, the data collected were more reliable as most of the respondents were highly educated and no one does not have a certificate.

4.2.4 Years of service

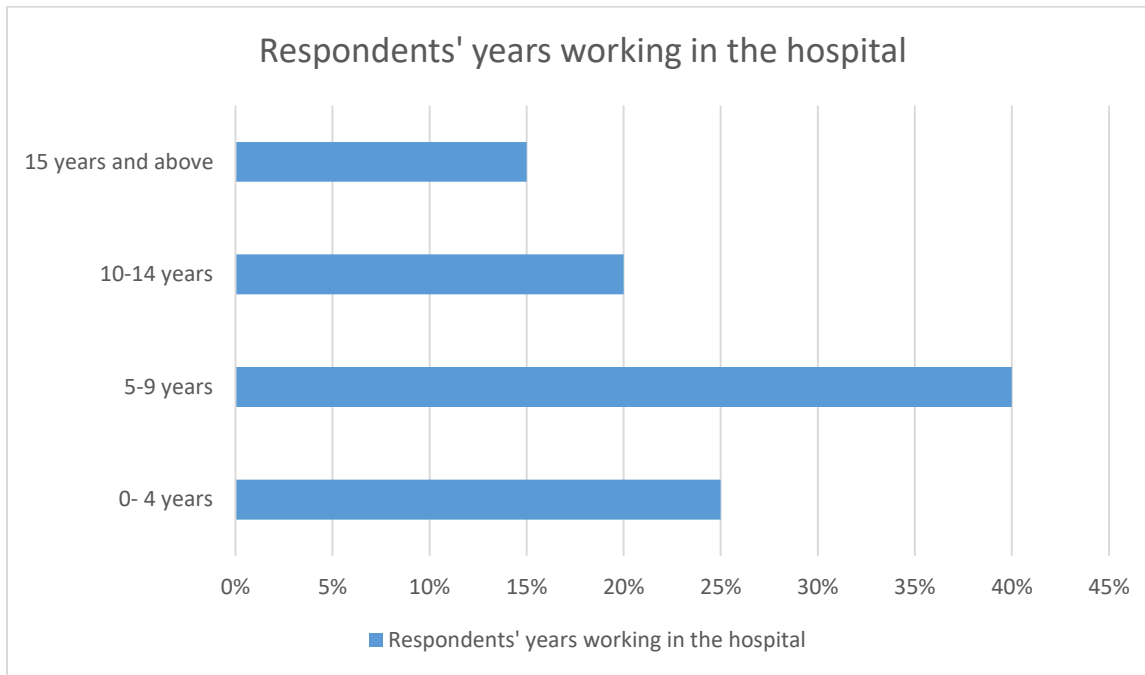


Figure 4.4 length of service

The research made an effort to gather the respondents' working experiences. As presented on the above chart, 40% had 5-9years, 25% of the respondents had 0-5years, 20% had 10-14years, and 15% had 15years and above of working experience. This represents that information gathered was more reliable as most of the respondents had a higher working experience and knowledge.

4.3. Reliability Tests

Reliability of reactions of the survey is imperative because it impacts on the honesty and strength of the results of the investigate think about. The cronbach's alpha test was connected to test the consistency and solidness of the survey.

4.3.1 The cronbach' alpha reliability tests

Table 4.2. Reliability Statistics

Cronbach's Alpha	N of Items
.867	9

The chronbach's alpha unwavering quality coefficient commonly ranges between 0 and 1. The closer the coefficient is to 1.0, the more essential is the inward consistency of the variables inside the scale. Table 4.2 appears that unwavering quality insights utilizing the chronbach's alpha is 0.867, therefor the inner consistency of the research's survey is acceptable. (Zong, H. 2008).

4.4 PREFERENCES ON FREQUENCY OF ORDERS FOR GOOD LOGISTICS MANAGEMENT

Respondents were requested to give their preferences pertaining the frequency of orders to improve good logistics management, and the outcomes are shown on figure 4.5.

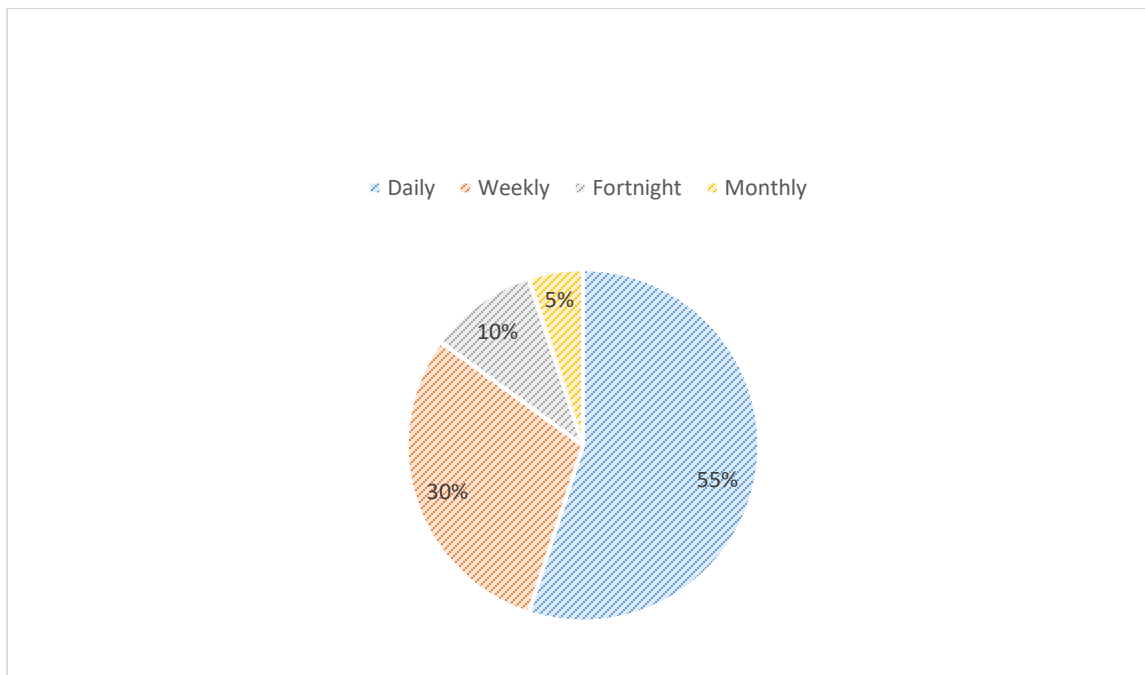


Figure 4.5 Preferences on frequency of orders
Obtained from: Primary data

As from the above pie chart, 55% of the respondents prefer the hospital to order daily for effective logistics management, 30% prefers weekly, 10% goes for after two weeks, and only 5% preferred for monthly orders. This indicates that orders must be received daily for the hospital's smooth, uninterrupted logistics. Respondents emphasized that, hospitals are routinely used as a life-saving facility, as they provide patients with an earlier accession to variety of services that enable them to recover faster and leave the hospital faster. This will improve the effectiveness of the entire system. Results gathered are in line with Sphicas and Nasri (1984) who says, in healthcare systems, increased life expectancy leads to increased demands on health care, and hospitals are demanding

better service and hence leading to the need for daily orders. The healing center expressed that it is essential to require a more comprehensive supply chain point of view on all perspectives of patients care and apply essential coordination standards to every day exercises. Christopher (2010) hypothesizes that, clinics must hold more stock than required to meet obscure request, subsequently the Mutare Provincial Hospital ought to arrange stock each day in large quantities.

4.4 LEAD TIME OF ORDERS

Respondents were asked the times taken for an order is received in after they ordered. The outcomes are displayed on the figure underneath.

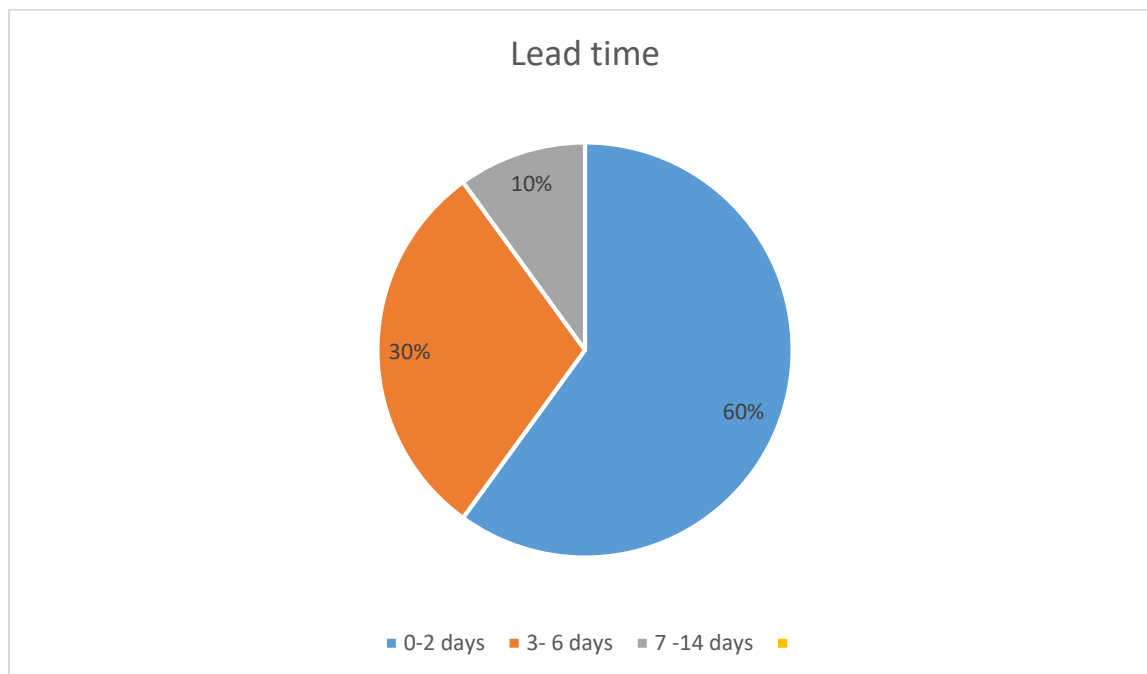


Figure 4.6 The hospital's lead time of orders

Source: Primary data

As from the above diagram, 60% of the respondents said that, lead time of orders after ordering goods is regularly 0-2days. At that point 30% said within the period of after 3-6days after they sent an order, and finally 10% said orders are received from the period of 7-14days after it is placed. Agreeing to the respondents, the contrasts within the lead times are due to the complexity of the merchandise being procured. Requesting a theater machine may take more than (7) days to

get it since it can take a longer time to be transported due to a required parcel of care of handling. The procurement of pharmaceuticals is given a delivery period of usually 2-3days since it requires less time for transportation. Moreover, lead time is influenced by the distance of where the products are being ordered from. High machinery are usually not often in local industries, hence are ordered from international suppliers and will require a higher delivery period basing on the transportation systems utilized. Small equipment and or resources may be obtained from local industries, so requires a shorter delivery period.

4.6 Logistical variables affecting lead time

Respondents were inquired to point out the logistical variables affecting lead time at the hospital. The results are presented on the figure underneath.

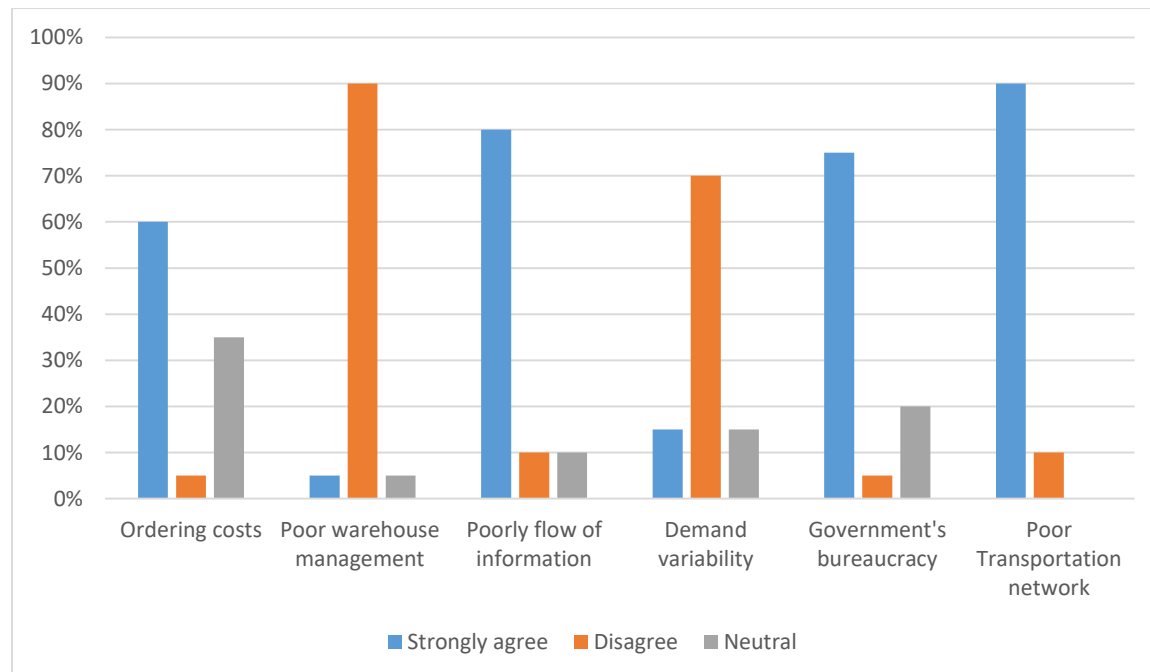


Figure 4.7 Logistical variables affecting lead time.

Obtained from: Primary data

The chart over appears results of what respondents perceives on the logistical variables affecting lead time which are listed in the questionnaire. The graph discloses the most logistic variables of which affect lead time which are: ordering costs, poor warehousing administration, poor flow of information, demand variability, bureaucracy in government and poor transportation systems.

Respondents argued that poor transportation is the most factor affecting lead time followed by poor information flow, bureaucracy in government, and demand variability. The percentage for the strong argument are 90%, 80%, 75%, and 60% respectively. Respondents were neutral on other factors such as ordering costs and poor warehousing management.

According to the respondents, the most factor which affect lead time among the listed on the questionnaire is poor transportation networks. This is indicated by a 90% of respondents unequivocally concurring on the impact of this factor on lead time. Only 5% of the respondents disagreed and 5% of them responded as neutral. One the respondents said that, *“the hospital has a large number of activities that require transportation, therefore there is a great shortage of transportation to cover all the logistics activities required within the hospital”*. Closs and Cooper (2012), postulates that, better transport management is required for a company to improve the efficiency of their entire supply chain.

Secondly, another major variable strongly argued by respondents as affecting lead time is the poor flow of information. On the above chart, it is represented by 80% respondents who strongly agreed, 10% disagreed, and 10% were neutral on this factor. At Mutare Provincial Hospital, the stores department and the procurement department are two different but they have a strong link than any other. The flow of information from a stores to the procurement director at the hospital may be slow since it is done a special way, but which is complicated. *“In a large hospital like this, flow of information must not be poor as it delays the start of other works”*, one of the respondents. According to Drew and Smith (1950), flow of information mustn’t be inadequate as it has effects on the quality of service and lifesaving, thereby adversely affecting the turnaround time of the medical system.

The 75% solid assention by respondents speaks that, bureaucracy within the government may be a major variable which influences lead time. The pie chart appears that only 5% of the respondents oppose this idea and the other 20% were impartial. Mutare Hospital is a public hospitable center, all open offices are possessed by the government and require a high degree of bureaucracy that must be carried out in a particular arrange. Due to this fact, there is high resistance to the change of power. So, the hospital hardly adopt to new ways of reducing lead times. The procurement management unit of the hospital sometimes may fail to increase procurement speed as they are guided by the Public Procurement and Disposable of Public Assets Act [Chapter 22;23], which

recommend procurement methods such as the competitive bidding which may delay the procurement process.

Ordering costs is considered one of the factor which affect lead time by the respondents. As per the above pie chart, 60% of the respondents strongly agreed that demand variability affect lead time. Only 5% of the respondents disagreed and the other 35% were neutral. High cost of requesting medications and restorative gadgets increments lead times at Mutare Provincial Hospital. Since hospitals are large hospitals, ordering and simultaneous delivery are delayed, lead times are long, and the cost of ordering various products required by hospitals is very high. Drew and Smith (1995), initiate that the cost of an order has a significant impact on an increase in an organization's lead time. The size and frequency of orders affect the lead time it takes for delivery to take place.

However, respondents disagreed on the other factors (poor warehouse management and demand variability) that they affect the lead of the hospital. 90% of the respondents disagreed on poor warehouse management as a factor that affect lead time. Only 5% agreed on this factor and 5% were neutral. More so, respondents did gave a strong argument on demand variability as a factor that affect lead time. 70% of the respondents disagreed, 15% agreed, and 15% were neutral. Demand for hospital medicines and equipment does not seem to change significantly. Typically since they are usual to a specific schedule which does not alter. They continuously have items that they know are in request and purchase a part of them. Furthermore, there are certain products that are used infrequently. The results of the interview also show that fluctuations in demand are not a major factor affecting hospital's lead times. These factors are inconsistent with Spitter et al. (2003) who have discovered that the optimal planning lead time length for an item depends on fluctuations in demand.

4.7 Effects of logistics management on lead time

Respondents were asked to point out in the questionnaire, the potential effects of logistics management on lead time. The results for their response are shown in the figure below.

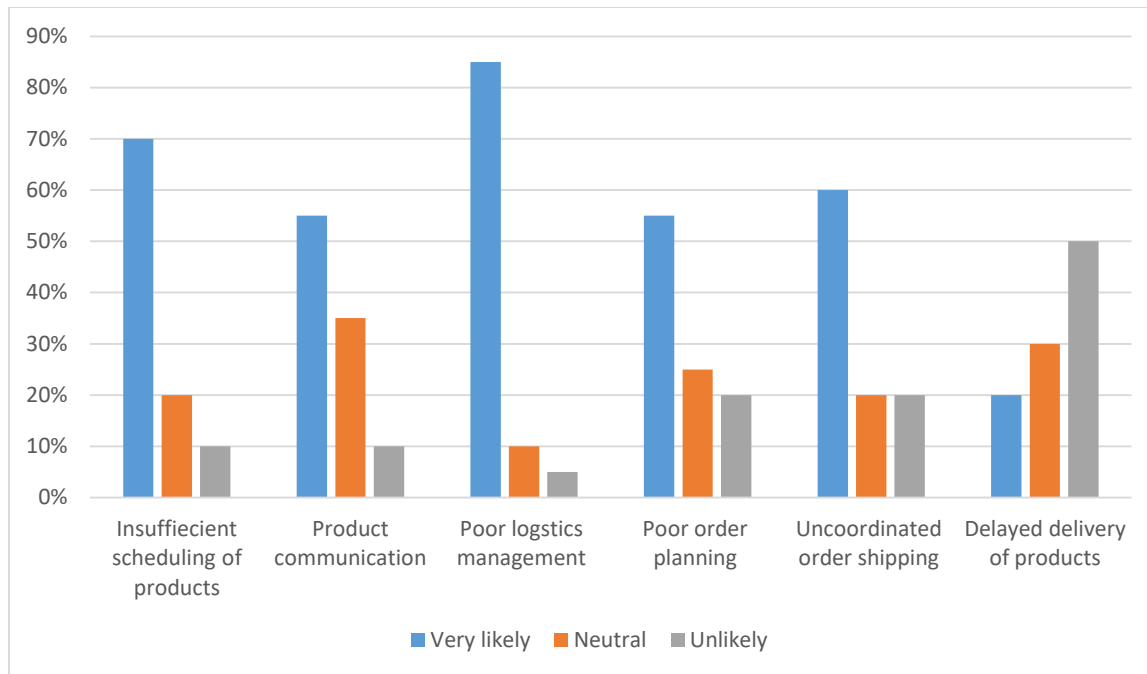


Figure 4.8. Effects of logistics management on lead time of Mutare Hospital
Obtained from: Primary data

The above chart illustrates the potential effects likely to affect logistics management on lead time which are: insufficient scheduling of products, product communication, poor logistics management, poor order planning, uncoordinated order shipping, and delayed delivery of products. The respondents point out poor logistics management as the most effect which changes lead time followed by insufficient scheduling of products, uncoordinated order shipping, poor communication, and poor order planning. The percentage for the strong argument are 85%, 70%, 60%, 55%, and 55% respectively. Respondents were unlikely on the other factor (delayed delivery of products) that it may change lead times.

85% of the respondents were very likely that poor logistics management changes lead time, 10% were neutral and only 5% were unlikely about the effect of this factor. One of the respondents advised that “*poor logistics has been increasing the lead time of most of the products ordered by the hospital*”. This was in line with Gunn (1993)’s point of view that, good logistics management can indeed be a true core competence because it can strategically position the organization for market success and a source of long-run competitive advantage. Inefficient scheduling of products was the second factor to be pointed to have an effect on lead time. 70% of the respondents were very likely about this, 20% were neutral and 10% of the respondents were unlikely. This results

were in line with Stock (1998) who postulates that, poor products scheduling results in product flow imbalances which therefore results in long lead times thus reduced customer service.

Uncoordinated order shipping is also considered as an effect which changes lead time. 60% of the respondents indicated that they are very likely that this factor changes the lead time of the hospital. 20% of the respondents were neutral and the other 20% were unlikely. Usually failure to coordinate order shipping increase the lead time of a product. More so, respondents were very likely that product communication changes the lead time of Mutare Hospital. The above chart shows that 55% of the respondents were very likely, 35% of the respondents were neutral, and 10% were unlikely of the fact. Ineffective product communication increases the lead time of the product. *“To reduce the lead the lead time of the product, there must be effective communication of the product”*, one of the respondents emphasized. In addition, respondents were likely that, poor order planning increases the lead time of the products at the hospital. 55% of the respondents were very likely, 25% were neutral and 20% were unlikely about the fact in the questionnaire about this factor. However the result is in line with Spitter et al (2003)’s point of view that, lead time depends on planning of orders; if they are not planned well they will cause long lead times.

However most of the respondents were unlikely that delayed delivery of products affects the lead time of the products at the hospital. Only 20% of the respondents were very likely about the statement in the questionnaire. 30% of the respondents were neutral and the other 50% of them were unlikely. However delivery of product is also vital in the lead time of a product. According to Murphy (2003), delivery of products is one key activity in the delivery process because it creates time utility for the user.

4.8. Consequences/results of changes in lead time

Respondents were asked to indicate the results of the changes in lead time at the hospital. The figure below shows the results of the changes as provided by the respondents.

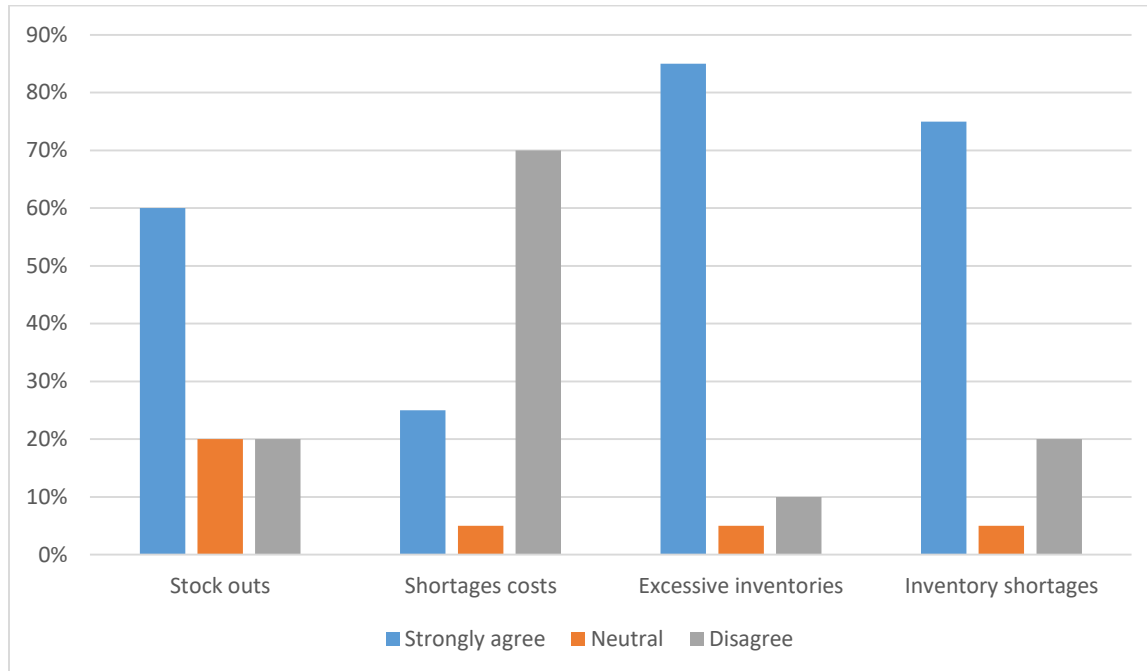


Figure 4.9. Consequences of changes in lead time at Mutare Hospital
Obtained from: Primary data

Respondents were allowed to have an argument on the consequences of the changes on lead times amongst the listed on the questionnaire. The results include stock outs, shortages, excessive inventories, and inventory shortages. The respondents' arguments are presented on the above chart and they strongly agreed that excessive inventories is the most consequence of the changes of lead time followed by inventory shortages, and then stock outs.

Most respondents (85%) strongly agreed that lead time changes impact the inventory level. Shorter lead times result to excessive inventories as products will be received within a short period of time. 5% of the respondents were neutral and only 10% of them disagreed on this aspect. The graph also shows that respondents secondly gave a strong agreement that, changes in lead time results to inventory shortages. This shown by 75% of respondents strongly agreeing on this fact. 5% of the respondents were neutral and only 20% disagreed. Higher lead times lead to inventory shortages as the replenishing of stock will be slower than the rate of usage. Furthermore, the changes in lead time results to stock outs. Basing on the respondents indication, changes on lead times highly result to stock outs. Changes in lead time can have a significant impact on stockouts, as longer lead times

can increase the risk of stockouts occurring. This is because longer lead times mean that businesses need to hold larger amounts of inventory to ensure that they do not run out of stock during times of high demand. Conversely, shorter lead times can reduce the risk of stockouts as businesses are able to quickly replenish their stock when it runs low. The above pie chart shows that 60% strongly agreed on this consequence whilst only 20% disagreed. Only 20% of the respondents were neutral. These results were in line with Chopra (2004)'s findings, who posits that lead times' consequences are stockouts, excessive inventories, and inventory shortages.

However respondents were against one consequence listed in the questionnaire. 70% of the respondents disagree that changes in lead time results to shortage costs. Only 25% of the strongly agree whilst 5% were neutral. However, according Johnson (2008), high lead times lead to shortage costs such as bottlenecks costs.

4.9 Chapter Summary

In this chapter, data was presented and analyzed using various techniques that are tables, pie charts, and bar charts. From the data above, we can see that the majority of respondents believe that poor logistics management has a greater impact on lead times. Based on these observations, researchers recommend that all public health facilities in Zimbabwe use best practices in managing logistics to reduce lead times. The results discussed were found to be decisive for researchers as they formed the basis for the summaries, conclusions, and recommendations of the next chapter.

CHAPTER V

Summary of conclusions, findings and recommendations

5.0 Introduction

This chapter summarizes and concludes the results of the research. The researcher additionally provided recommendations for impacts of logistics management on lead time.

5.1. Summary

This study was an evaluation on the impacts of logistics management on lead time of Mutare Provincial hospital. The research intended: to examine the logistics elements that influence lead time, introduce the implications of logistics management on lead time, and lastly to ascertain the consequences of lead time changes at Mutare Provincial Hospital. The fundamental motive of the research was to recommend the ways of overcoming challenges in logistics so as to reduce lead time at the public healing center. Relevant literature from different sources in the field of logistics management and lead time were reviewed. The qualitative and a little bit of quantitative approach methods were used in research as the research design. A sample size of only 25 people was used and was strictly from only 6 departments in the hospital who have knowledge about logistics and lead time. The research used questionnaires and interview guide to gather data. Data was gathered and presented in both qualitative and quantitative terms. Percentages and frequencies displaying quantitative data on graphs, charts, and tables. However, the researcher was not authorized to access some highly sensitive information and data. The hospital administration didn't want to share information because they felt it was too sensitive. The research was done in a very small period but regardless of these obstacles major findings were successfully gathered. The major findings are, Mutare Hospital's lead time is more affected poor transport networks and poor information flow. Bureaucracy in government is one of the logistical variable influencing the hospital's lead time. The hospital's ordering costs influences its lead time of goods. Poor warehouse management and demand variability are some logistical variables but are not influencing the hospital's lead

time. It was also found that, the most effects of logistics management on lead time are poor logistics management, insufficient scheduling of products, and uncoordinated order shipping. Product communication and poor order planning are some of the implications which increase Mutare hospital's lead time. The increase of the hospital's lead time due to delayed delivery of products is not likely to the staff. It was also found that changes in lead time has consequences to the hospital. These consequences include excessive inventories, inventory shortages, and stockouts. Shortening lead time result to excessive inventories and delaying delivery result to inventory shortages. More so, longer lead times results to stockouts. It was found that changing lead time does not have any change shortage costs.

5.2 Conclusion

5.2.1 To examine the logistics elements that influence lead time at Mutare Provincial Hospital.

In line with research questions mentioned in chapter 1, literature review in chapter 2, the research methodology in chapter 3, and basing with the results provided and analyzed in chapter 4, the researcher finds out that there are four main implications or effects which influence Mutare Hospital's lead time, and these are ordering costs, poor information flow, bureaucracy in government, and poor transportation networks. Among those implications, the most affect lead time according to the findings is the poor transportation networks. Poor transportation networks are delaying the delivery of orders. The mode of transport used is not very effective, so it is difficult to implement a just-in-time method. Moreover, rather than being poor, transportation is also lacking at the hospital.

Poor information is another implication of the hospital's lead time. Information is also vital in logistics, since it is the facilitator of transportation of the goods both upstream and downstream in the supply chain. If there is no proper communication flow, asymmetry can take place. Asymmetry is when one party in the chain knows that the other party does not have information. This will thereby lead to a longer lead time since there will be no effective communication (of what is being required) between the two parties. More so, a supplier can hardly ship an order to a destination(s) if there is inadequate information flow, and this can lead to a delayed delivery resulting to a longer lead time.

Bureaucracy in government is also a logistics effect which influence lead time at the public healing center. The government has a high level of bureaucracy. It implements unique ways of operating so as to promote highest level of transparency, integrity, fairness and competitive such the Public Procurement and Disposable of Public Assets Act [Chapter 22;23]. However, these ways or processes affects or delays the delivery of goods.

One more implication which influence Mutare Hospital's lead time is the costs of ordering. High ordering costs are being experienced at the healing center, and this is causing delays delivery of goods. High ordering costs lead to lead to longer times at the public hospital since it makes longer for hospital's staff to complete the necessary paperwork and approvals for each order. More so, the hospital tries to minimize ordering costs by ordering in large quantities, and this makes a longer lead time as it takes long to receive those large shipments and process them inventory and distribution.

The research also found out two logistics implications which usually influence public healing centers' lead times but not affecting Mutare Provincial Hospital's lead time. These are poor warehousing management and demand variability. This is because the hospital had already implemented capacity planning to mitigate the effects of demand variability on lead time, and also they always have products that they know are in demand and buy a lot of them.

5.2.2. To introduce the implications of logistics management on lead time at Mutare Provincial Hospital.

The researcher also gathered the implications of logistics management on lead time at the hospital. These implications are scheduling of products, product communication, logistics management, order planning, order shipping, delivery of products or supplies and can change the lead time of the hospital. The research found logistic management as the most effect of logistics management on lead time. Poor logistics management increases lead time at the public healing center by causing delays in the delivery of essential medical supplies or equipment, leading to longer wait times for patient care.

More so, the research found out that order planning has implications to the hospital's lead time. Poor order planning increases Mutare Provincial Hospital's lead time as it can result in efficient allocation of resources, longer processes times, and delays in production. As according to 55% of

the respondents, poor order shipping increases the hospital's lead time. The researcher finds out that, poor order planning and poor product communication leads to an increase in lead time. 50% were unlikely that delayed delivery of products or supplies increases a hospital's lead time.

5.2.3. To ascertain the consequences of lead time changes at Mutare Provincial Hospital

The successfully gathered the consequences of lead time changes at the hospital. It was found that lead time has some significance to the inventory levels. 85% of the respondents agreed that shorter lead time results to excessive inventory as products will be received within a short period of time. Respondents also agreed, inventory shortages are a result of longer time because replenishing of stock will be slower than the rate of usage. Stockouts were considered by 60% of the respondents as a result from changes in lead time. However, the research founds out that, changes in lead time does not result to shortage costs. This was according to 70% who disagreed to this consequence.

5.3. Recommendations

Basing on the conclusions above, the researcher recommends that the public healing center needs to optimize transportation routes and modes to minimize delays and avoid congestion. The hospital has to implement advanced technologies such as Radio Frequency Identification (RFID) and Global Positioning System (GPS) tracking, and barcode to improve inventory management reduce transit times. In case of insufficient transport services, the hospital may need to consider outsourcing logistics management to specialists who can provide specialized expertise and resources to ensure efficient and timely delivery. Communication and collaboration between suppliers, manufacturers, and logistics providers has to be improved to streamline the supply chain process. The researcher also recommended the hospital to monitor and analyze logistics performance metrics regularly to identify areas for improvement and implement corrective measures as needed. So as to navigate bureaucratic obstacles, the departments more concerned with logistics management and the hospital's lead time must build strong relationships with key stakeholders and or the top management, and engage effective communication to ensure that necessary approvals are quickly obtained as quickly as possible.

5.4. Chapter Summary

This chapter provided introduction at the beginning to guide the reader. After that, a brief summary of the whole research was provided. Then a conclusion was given basing on the findings of the

study and specifically for each objective. Lastly the chapter provided recommendations for the organization to overcome the impacts of logistics management on lead time.

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Dear Sir / Madam

I am Takudzwa Wilson Tauro, a student at Bindura University of Science Education seeking after a bachelor's degree in Purchasing and Supply. As a necessity for getting this degree, I have to be carry out a research for, "The impact of logistics management on lead time of Mutare Provincial Hospital'' You have got been selected to take an interest within the study by replying the questions underneath. Kindly reply them as truly as possible. Any data you will provide will be treated with most extreme privacy and kept for scholarly purposes only.

Questionnaire

Instructions: Please respond to the following questions and where applicable, tick (✓) in the relevant box.

Confidentiality: The responses you provide will be strictly confidential. No reference will be made to any individual(s) in the report of the study.

SECTION A: BACKGROUND

1. Department

Department	Tick
Procurement	
Stores	
Administration	
Accounting	
Pharmaceutical	

2. Age

Age	Tick
25 years and below	
26 to 35 years	
36 to 45 years	
46 to 60 years	

3. Gender

Gender	Tick
Male	
Female	

4. Level of education

Certificate	Tick
Master's degree	
Degree	
Diploma	
Other certificates	

5. Years of spent in the organization

Number of years	Tick
Above 25 years	
11 to 25 years	
6 to 10 years	
0 to 5 years	

Section B: THE IMPACT OF LOGISTICS MANAGEMENT ON LEAD TIME

Indicate the period which is best to receive orders for the whole logistics management process to be effective.

Period	Tick
Daily	
Weekly	
After a fortnight	
Monthly	

Explain why you receive in the period you indicated above.....

.....

6. How long do you receive a product or service after ordering (lead time)?

Period	Tick
0-2 days	
3-6 days	
7-14 days	

Why do you receive in the period you indicated above?.....

.....

7. Point out which are the logistical variables affecting Mutare Hospital's lead time among those listed below.

Factor	Strongly agree	Agree	Disagree	Strongly disagree
Ordering costs				
Poor warehouse management				
Poor information flow				
Demand variability				
Shortage costs				
Poor transportation networks				

Give a reason to your answer you indicated above:

.....

.....

.....

.....

8. Point out how likely the effects of logistics management in the following statements impact the hospital's lead time.

	Statement	Likely	Very likely	Neutral	Unlikely	Very unlikely
1	Lead time is increased by inefficient scheduling of products.					
2	Product communication changes lead time.					
3	Poor logistics results to high lead time.					
4	Poor order planning increase lead lime.					
5.	Lead time is increased by uncoordinated order shipment.					
6.	Delays in delivery of products or suppliers affects lead time.					

Give a reason to your answer:

.....

.....

.....

.....

9. From the following, what are the consequences/results of changes in lead time at Mutare provincial Hospital?

Effect	Agree	Strong agree	Neutral	Disagree	Strongly Disagree
Stock outs					
Shortages costs					
Excessive inventories					
Inventory shortage					

Give a reason to your

answer.....

Appendix 2

Interview guide

1. How often should you place an order to promote effective logistics management?
2. In how long do you receive an order after you have requested
3. Which are the effects of logistics management on lead time at Mutare Hospital?
4. Which logistics variables are affecting Mutare Hospital's lead time?
5. What are the consequences brought by lead time changes at the hospital?

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BINDURA UNIVERSITY OF SCIENCE EDUCATION FACULTY OF COMMERCE DEPARTMENT OF ECONOMICS AN EVALUATION ON THE IMPACT OF LOGISTICS MANAGEMENT ON LEAD TIME. A CASE OF MUTARE PROVINCIAL HOSPITAL BY:

TAKUDZWA WILSON TAURO B190327B SUPERVISOR: MR PANDE II APPROVAL FORM The undersigned certify that they have supervised, read and recommend to the Bindura University of Science Education for acceptance a research project entitled: AN EVALUATION ON THE IMPACT OF LOGISTICS MANAGEMENT ON LEAD TIME. A CASE OF MUTARE PROVINCIAL HOSPITAL submitted by TAKUDZWA WILSON TAURO B190327B in partial fulfilment of the requirements for the Bachelor of Commerce (Honours) Degree in Purchasing and Supply. / / /

(Signature of Student) Date / / / (Signature of the Chairperson) Date / / /

(Signature of Supervisor) Date / / / (Signature of the Examiner (s)) Date III RELEASE FORM NAME OF

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