

A Project Report on

**“A STUDY ON LEAN MANAGEMENT IN TIME LAG REDUCTION AND
EFFICIENCY IMPROVEMENT IN ICTT VALLARPADAM ”**

In partial fulfillment of the requirements for the award of the Degree of

MASTER OF BUSINESS ADMINISTRATION

(International Transportation and Logistics Management)

Submitted by

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SCHOOL OF MARITIME MANAGEMENT

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CERTIFICATE

This is to certify that the Project titled “**A STUDY ON LEAN MANAGEMENT IN TIME LAG REDUCTION AND EFFICIENCY IMPROVEMENT IN ICTT** ” submitted by **Rehana Shamsudeen** Reg. No **2105305026** student of MBA (ITLM) is a bonafide record of her Project report and submitted to the School of Maritime Management, Indian Maritime University, Kochi campus, under the supervision of Dr. Sreejith. U, Faculty IMU, Kochi campus. It is also certifying that the above work has not previously formed or submitted for the award of any degree, diploma, associateship, fellowship or other similar titles, and it is an independent work done by the candidate.

Dr. Sreejith. U

(Project Guide)

SELF DECLARATION

I, Rehana Shamsudeen (Registration No: 2105305026) student of School of Maritime Management, Indian Maritime University, Kochi hereby declares that this project report titled “A STUDY ON LEAN MANAGEMENT IN TIME LAG REDUCTION AND EFFICIENCY IMPROVEMENT IN ICTT” submitted in partial fulfilment of the requirement for the degree of Master of Business Administration in International Transportation and Logistics Management is my original work carried under the guidance of Dr. Sreejith. U.

I also confirm that the report is only prepared for my academic requirement, not for any other purpose. It might not be used with the interest of the opposite party of the corporation.

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I appreciate my institution for helping me develop this project, and I am thankful to those who willingly contributed their abilities.

This opportunity is a significant milestone in my career development. I will endeavor to utilize the skills and knowledge gained in the best possible way and continue to work on improving them to achieve my desired career objectives. I look forward to continued cooperation with everyone in the future.

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CHAPTER 1
INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

Lean management is a philosophy and methodology aimed at improving operational efficiency and reducing waste across all aspects of an organization. The methodology has its roots in the manufacturing industry, where it was first introduced by Toyota in the 1950s. However, over the years, Lean has found widespread application across various sectors, including the Information and Communications Technology (ICT) industry.

In today's fast-paced business environment, reducing time lags and improving efficiency are critical factors that determine an organization's success. In the ICT industry, time lags and inefficiencies can have a significant impact on a company's ability to deliver products and services to customers. As such, ICT companies have increasingly adopted Lean management techniques to streamline their operations, reduce waste, and improve efficiency.

One of the primary areas where Lean management can be applied in the ICT industry is in the management of Information and Communications Technology Terminals (ICTTs). An ICTT is a device that allows users to access information and communicate with others over a network. Examples of ICTTs include personal computers, smartphones, tablets, and other devices that can connect to the internet. The efficient management of ICTTs is critical to ensuring that an organization's network is functioning optimally.

However, the management of these devices can be challenging, particularly in large organizations with a vast network of devices. Lean management can help reduce the time lags and improve the efficiency of ICTT management. One of the central tenets of Lean management is the identification and elimination of waste. In the context of ICTT management, waste refers to any activity that does not add value to the organization. Examples of waste in ICTT management include the duplication of efforts, excessive paperwork, and unnecessary bureaucracy.

To eliminate waste in ICTT management, Lean management techniques such as Value Stream Mapping (VSM) can be applied. VSM is a tool that helps identify the activities in a process that add value and those that do not. Once identified, the non-value-added activities can be eliminated or streamlined, reducing time lags and improving efficiency.

Another Lean management technique that can be applied in ICTT management is the implementation of Kaizen events. Kaizen events are short, focused improvement projects aimed at improving a specific process. In the context of ICTT management, Kaizen events can be used to identify and address inefficiencies in the management of ICTTs. For example, a Kaizen event could be used to improve the process of installing software updates on ICTTs, reducing the time it takes to complete the process and improving overall efficiency.

In addition to eliminating waste and improving processes, Lean management can also help reduce time lags in ICTT management by improving communication and collaboration across teams. In large organizations, different teams may be responsible for managing different aspects of the ICTT network, such as hardware, software, and security. By improving communication and collaboration between these teams, time lags can be reduced, and efficiency improved.

Finally, Lean management can also be applied to the management of the ICTT lifecycle. The ICTT lifecycle refers to the stages of an ICTT's existence, from procurement to disposal. By applying Lean management techniques such as Lean Procurement and Lean Disposal, organizations can reduce time lags and improve efficiency across the entire lifecycle of the ICTT.

In conclusion, Lean management is a powerful methodology that can be applied to the management of Information and Communications Technology Terminals (ICTTs) to reduce time lags and improve efficiency. By identifying and eliminating waste, implementing Kaizen events, improving communication and collaboration across teams, and applying Lean management to the ICTT lifecycle, organizations can streamline their operations, reduce costs, and improve their overall competitiveness in the ICTT industry.

1.2 OBJECTIVE OF THE STUDY

- To analyse the current time lag in ICTT operations.
- To evaluate the effectiveness of lean management in reducing time lag.
- To assess the impact of lean management on efficiency improvement.
- Develop recommendations for implementing lean management in ICTT operations.

1.3 RESEARCH METHODOLOGY

The study was undertaken by collecting secondary data. Secondary data refers to data that has already been collected and analysed by someone else for a different purpose. This type of data can come from a variety of sources, including government agencies, research institutions, and private organizations.

Examples of Secondary data include :

- Published research studies or reports
- Census data and other public records
- Company financial reports
- Marketing research studies
- Social media analytics

- Existing data sets in various fields of study

Secondary data can be a valuable resource for researchers as it can provide access to data that may not be feasible or practical to collect on their own. Additionally, secondary data can allow for comparisons across different studies or datasets, which can enhance the validity of research findings. However, secondary data also has limitations. It may not precisely fit the research question or goals of the researcher, or the quality of the data may be questionable. Therefore, researchers need to critically evaluate the secondary data they use and ensure that it is appropriate and reliable for their research purposes.

Qualitative Analysis

Qualitative analysis is a research method used to understand and interpret social phenomena through non-numerical data such as words, images, and observations. It involves systematically examining and categorizing data to identify patterns, themes, and relationships. Qualitative analysis is often used in social sciences, such as anthropology, psychology, and sociology, to gain a deeper understanding of human behaviour, experiences, and social interactions. This method allows researchers to explore complex and nuanced aspects of a phenomenon that may not be captured by quantitative data alone. Qualitative analysis is often conducted through interviews, focus groups, ethnographic observation, and content analysis of documents or media.

The study relies mostly on published secondary data

1.4 LITERATURE REVIEW

- Hayes and Pinsano (1994) has briefly described the term lean as it uses less, or the minimum of everything required to produce a product or performance service.
 - Naylor et al (1999) has defined as leanness as developing a value stream to eliminate all waste, including time, and to ensure a level schedule.
 - Comm and Mathew (2000) defined leanness as a philosophy intended to significantly reduce cost and cycle time throughout the entire value chain while continuing to improve product performance. This value chain is composed of a number of links exist within government as well as within industry, and they exist between government and industry.
 - Haque and Moore (2004) has defined lean as an enterprise initiative with a common format for all business processes with the single strategic goal of eliminating waste and improving the flow of value.
- 1) Naslund (2008) mentions that there are five basics for the lean process steps:
 - 2) specifying value and all value added aspects in the process.
 - 3) recognizing the value stream.
 - 4) pushing the activities to flow without disruption.
 - 5) permitting the customer to pull the product or service over the process.
 - 6) continuously overtaking perfection of the process.
- Andersson et al (2006) explain the benefits of lean, such as decreasing the work in process and cycle time, increasing the inventory turns and capacity utilization, and improving customer satisfaction. These improvement areas include operational improvements (the reduction of lead time and work in process, increasing productivity, administrative improvements (the reduction of processing errors, and strategic improvements (reduced costs, etc.).
 - El-Haik and Roy (2005) declare that the majority of measures in a service or process will focus on speed, cost, quality, efficiency, and effectiveness. This concept aims to achieve high speed, low cost, high quality, high efficiency, and high effectiveness.

CHAPTER 2
COMPANY PROFILE

2.1 ICTT VALLARPADAM

The International Container Transshipment Terminal (ICTT) at Vallarpadam is a state-of-the-art container terminal located in the city of Kochi, Kerala, India. It is the first transshipment terminal in India, and one of the largest and most advanced container terminals in South Asia.

The ICTT is operated by DP World, a global leader in port and terminal management. DP World is a Dubai-based company that operates more than 80 marine and inland terminals across six continents. The company has a strong presence in India, with terminals in Mumbai, Chennai, and Mundra, in addition to the ICTT at Vallarpadam.

The ICTT at Vallarpadam was inaugurated in February 2011, after several years of planning and construction. The terminal has a handling capacity of 1.8 million TEUs (twenty-foot equivalent units) per year, making it one of the largest container terminals in India. The terminal has a quay length of 600 meters, with a depth of 15 meters, and can accommodate vessels with a capacity of up to 14,000 TEUs.

The ICTT at Vallarpadam is equipped with state-of-the-art infrastructure and technology, including modern cranes, container handling equipment, and advanced IT systems. The terminal also has dedicated rail and road connectivity, with direct access to major highways and rail networks, enabling fast and efficient movement of cargo to and from the terminal.

The ICTT at Vallarpadam has been a game-changer for the container shipping industry in India, as it has reduced transit times and costs for shippers, and improved the competitiveness of Indian ports in the global market. The terminal has also helped to create employment opportunities in the region and has boosted the local economy.

Overall, the ICTT at Vallarpadam is a modern and efficient container terminal that has helped to transform the container shipping industry in India. With its advanced technology, strategic location, and excellent connectivity, the terminal is poised to continue to play a crucial role in the growth and development of the Indian economy.

CHAPTER 3
LEAN MANAGEMENT IN TIME LAG REDUCTION

3.1 INTRODUCTION

Lean management is a methodology that aims to improve business processes and increase efficiency by reducing waste and minimizing non-value-added activities. The methodology was originally developed in the manufacturing industry, but it has since been applied to various other industries, including information and communication technology (ICT). ICTT refers to the use of technology to facilitate communication and information sharing within an organization. Lean management can be applied to ICTT to optimize the use of technology and streamline business processes.

In ICTT, lean management involves identifying and eliminating waste in the use of technology. Waste can be in the form of unnecessary steps in a process, duplicated effort, or the use of outdated technology. By eliminating waste, organizations can improve productivity and efficiency, reduce costs, and improve customer satisfaction.

One of the key principles of lean management in ICTT is continuous improvement. This involves continuously reviewing and improving business processes to eliminate waste and improve efficiency. Continuous improvement can be achieved through regular analysis of processes, identifying bottlenecks, and implementing changes to streamline operations. This approach allows organizations to adapt to changing business environments and stay competitive.

Another important principle of lean management in ICTT is the focus on customer value. This involves identifying the needs and expectations of customers and delivering products and services that meet or exceed their expectations. By understanding the value that technology can provide to customers, organizations can design processes that deliver this value efficiently.

Lean management in ICTT also involves the use of visual management tools to facilitate communication and collaboration within teams. Visual management tools can include dashboards, Kanban boards, and process maps. These tools can be used to visualize the flow of work, identify bottlenecks, and track progress. They also help to facilitate communication and collaboration between team members.

Finally, lean management in ICTT requires a culture of continuous improvement and a commitment to the principles of lean management. This involves creating a culture where employees are encouraged to identify waste, suggest improvements, and implement changes. It also involves providing training and support to employees to ensure they have the skills and knowledge to implement lean management principles.

Lean management in ICTT is a methodology that can be used to optimize the use of technology and streamline business processes. By identifying and eliminating waste, organizations can improve productivity and efficiency, reduce costs, and improve customer satisfaction. Continuous improvement,

a focus on customer value, the use of visual management tools, and a culture of continuous improvement are all key principles of lean management in ICTT.

3.2 TIME LAGS IN ICTT OPERATIONS

Information and communication technology (ICT) has revolutionized the way we live, work and communicate. The ICT sector has seen a rapid growth in the last few decades, and its impact has been felt across all industries. However, despite its many benefits, there are still several time lags in ICTT operations all over the world.

One of the most significant time lags in ICTT operations is the digital divide. This refers to the gap between those who have access to technology and those who do not. According to a report by the United Nations, almost half of the world's population does not have access to the internet. This divide is particularly evident in developing countries, where access to technology is limited by factors such as poverty, inadequate infrastructure and lack of technical skills.

Another significant time lag in ICTT operations is cybersecurity. The increasing use of technology has made organizations vulnerable to cyber-attacks, and the threat of cybercrime is only growing. According to a report by Cybersecurity Ventures, the cost of cybercrime is expected to reach \$6 trillion annually by 2021. The lack of adequate cybersecurity measures can result in data breaches, financial loss, and damage to an organization's reputation.

One of the challenges of ICTT operations is the pace of change. Technology is constantly evolving, and organizations need to adapt quickly to stay competitive. However, this pace of change can be challenging for organizations to keep up with, particularly those with limited resources. Organizations need to invest in regular training and development to ensure that their staff have the necessary skills and knowledge to use technology effectively.

Another time lag in ICTT operations is the lack of interoperability between different systems. Many organizations use different technologies, which can create compatibility issues when trying to integrate these systems. This can result in time-consuming workarounds or manual processes, which can be inefficient and prone to error.

Furthermore, the issue of data privacy is becoming a significant concern for organizations. The use of technology has resulted in an exponential increase in data collection, storage, and analysis. Organizations need to ensure that they are complying with privacy regulations and protecting the personal data of their customers.

Lastly, the issue of digital literacy is a significant time lag in ICTT operations. Many people lack the necessary skills to use technology effectively, particularly in developing countries. This digital divide can create a significant barrier to education and employment opportunities, further exacerbating existing inequalities.

While ICTT has transformed the way we live, work and communicate, there are still several significant time lags in ICTT operations all over the world. These include the digital divide, cybersecurity, the pace of change, lack of interoperability, data privacy, and digital literacy. Addressing these challenges will require a collaborative effort from all stakeholders, including governments, businesses, and individuals. Organizations need to invest in developing their staff's skills and knowledge, adopting new technologies and implementing appropriate security measures, to ensure they remain competitive in a rapidly changing technological landscape.

3.3 CAUSES OF TIME LAG's IN ICTT

3.3 (i) CRANE CLASH

Crane clashes can cause significant delays in the operation of an ICTT (Integrated Container Terminal). ICTTs are highly automated facilities that require the smooth coordination of various processes and machinery to function efficiently. A crane clash occurs when two cranes collide with each other, resulting in damage to the cranes and potentially causing disruptions to the terminal's operations.

The impact of a crane clash can be severe. It can result in the closure of a portion of the terminal while the damaged cranes are repaired or replaced. This can lead to delays in the processing and handling of containers, resulting in missed deadlines and increased costs for shipping companies and their customers. Additionally, if the damage is extensive, it may require significant resources to repair or replace the cranes, which could result in prolonged downtime for the terminal.

Furthermore, crane clashes can impact the safety of workers at the ICTT. Collisions between cranes can cause injury or even death to workers who are operating or working near the affected cranes.

3.3 (ii) RTG BREAKDOWNS

A breakdown of a Rubber Tyred Gantry (RTG) crane can have significant impacts on the operations of an Integrated Container Terminal (ICTT). Here are some potential effects:

- **Delayed container handling:** RTG cranes play a critical role in the efficient handling of containers at an ICTT. A breakdown of an RTG crane could cause delays in container handling, leading to a backlog of containers waiting to be loaded or unloaded.
- **Reduced productivity:** When an RTG crane breaks down, the remaining cranes have to work harder to compensate for the loss, which can result in reduced productivity. This can lead to longer waiting times for customers and increased costs for the terminal operator.
- **Increased maintenance costs:** If an RTG crane breaks down frequently, it can increase maintenance costs for the terminal operator. This can be due to the cost of repairs, replacement of parts, or the need to hire additional staff to handle maintenance.
- **Safety concerns:** A breakdown of an RTG crane can also create safety concerns. If the breakdown occurs while the crane is in use, it can result in accidents or injuries to personnel. This can further delay operations and increase costs.

3.3 (iii) SYSTEM FAILURE

System failures can have a significant impact on the functioning of ICT operations. ICT (Information and Communications Technology) systems are critical for many organizations, and any disruption in their functioning can cause serious consequences. Here are some ways in which system failures can affect ICT operations:

- **Downtime:** System failures can result in significant downtime for ICT operations. This can result in delays in completing tasks and meeting deadlines, leading to lost productivity and revenue.
- **Data loss:** System failures can result in the loss of critical data. This can cause major disruptions to the operations of the organization, and in some cases, can lead to significant financial and legal consequences.
- **Security breaches:** System failures can also result in security breaches, leaving the organization's sensitive information vulnerable to unauthorized access. This can result in data theft, fraud, and other security risks.
- **Increased costs:** System failures can result in additional costs for the organization. This may include costs associated with repairing or replacing hardware, software, and other components, as well as the cost of lost productivity and revenue

3.3 (iv) LASHING/UNLASHING DELAY

The delay in lashing or unleashing can have an impact on the working of ICTT (International Container Transshipment Terminal) operations. Here are some potential impacts:

- **Delays in loading and unloading:** If there is a delay in lashing or unleashing containers, it can cause delays in the loading and unloading of the ship. This can result in longer turnaround times for ships, which can impact the overall efficiency of the terminal.
- **Safety risks:** Lashing and unleashing containers must be done carefully to avoid safety risks. A delay in this process can increase the risk of accidents and injuries to workers.
- **Congestion:** If containers are not lashed or unleashed in a timely manner, it can result in congestion at the terminal. This can impact the flow of cargo and increase the waiting time for trucks and other vehicles.
- **Increased costs:** Delays in lashing or unleashing containers can lead to increased costs for shipping companies and terminal operators. This can include costs associated with longer ship turnaround times, increased labor costs, and storage fees for delayed cargo

- **Reputational damage:** System failures can also damage an organization's reputation. Customers and clients may lose confidence in the organization's ability to handle their data and may be hesitant to do business with them in the future.

3.3 (v) CHANGE IN VESSEL PLAN

The operation of an International Container Transshipment Terminal (ICTT) can be affected by a change in vessel plan in several ways. Here are some of the potential impacts:

- **Terminal Capacity:** If there is a change in the vessel plan, it could lead to an increase or decrease in the number of vessels calling at the terminal. This could affect the terminal's capacity and its ability to handle container traffic efficiently. For example, if a larger vessel is scheduled to arrive at the terminal, it may require more berthing space and equipment to handle the increased volume of containers, which may pose a challenge if the terminal is not adequately prepared.
- **Equipment Availability:** A change in vessel plan could also impact the availability of specific types of equipment required to handle containers. For instance, a change in vessel size could necessitate the use of larger or smaller cranes to load and unload containers, and if such equipment is not readily available, it could affect the terminal's ability to operate efficiently.
- **Workforce:** If a change in vessel plan results in a sudden surge in container volumes, it may be necessary to increase the workforce at the terminal to manage the additional workload. This could involve hiring new staff or requiring existing staff to work overtime, which could affect the overall efficiency and productivity of the terminal.
- **Berthing and Scheduling:** A change in vessel plan could lead to changes in berthing and scheduling, which could affect the overall productivity of the terminal. For instance, if a vessel is delayed or rescheduled, it could impact the terminal's ability to manage the arrival and departure of vessels efficiently, leading to congestion and delays.

3.3 (vi) AGENT RELATED DELAY

Agent related delay can have a significant impact on the efficiency and effectiveness of ICTT (Information and Communication Technology and Telecommunications) operations. Here are a few ways in which agent related delay can affect ICTT operations:

- **Increased response time:** Agent related delay can increase the response time of customer service agents, which can lead to frustrated customers and a negative impact on customer satisfaction. This can result in decreased customer loyalty and increased customer churn.

- **Reduced productivity:** Delay in agent response can result in reduced productivity, as agents may not be able to handle as many customer interactions as they would if there were no delays. This can result in longer wait times for customers, further exacerbating the negative impact on customer satisfaction.
- **Increased costs:** Agent related delay can increase costs for ICTT operations, as it may require additional resources to handle customer interactions, such as hiring additional staff or implementing new technology to streamline operations.
- **Decreased accuracy:** Delay can result in a decrease in accuracy in customer service interactions, as agents may rush through interactions or may not have the necessary information readily available due to delays.
-

3.3 (vii) BAD WEATHER

Bad weather can have a significant impact on the functioning of Information and Communication Technology (ICT) infrastructure, including ICTT (Information and Communication Technology and Telecommunications) systems. Here are some ways in which bad weather can affect the working of ICTT:

- **Power Outages:** Severe weather such as thunderstorms, hurricanes, or snowstorms can cause power outages that can disrupt the functioning of ICTT systems. Without power, servers, routers, and other network equipment can't function properly.
- **Damage to Infrastructure:** Strong winds, heavy rain, and snow can damage ICT infrastructure, including communication towers, fiber optic cables, and wireless communication systems. This can cause network outages, data loss, and interruption of services.
- **Internet Connectivity:** Bad weather can affect internet connectivity as well. Thunderstorms and high winds can damage telephone lines, while heavy rain can cause flooding, which can damage underground cables. This can result in slow internet speeds, or even complete internet outages.
- **Data Loss:** Bad weather can also cause data loss due to power surges, equipment damage, or other network disruptions. This can result in lost or corrupted data, which can be costly and time-consuming to recover.

3.3 (viii) CUSTOMS DELAY

Customs delay can have a significant impact on the working of ICTT (International Container Transshipment Terminal) operations. ICTT is a crucial hub for transshipment operations, which means that goods arriving at the port are transferred to another vessel for further transportation to their final destination. Customs clearance is a critical step in this process, as it allows goods to enter or leave a country and ensures compliance with customs regulations.

When there are customs delays, it can cause several issues for ICTT operations. Firstly, it can lead to congestion at the port as the goods wait for clearance, causing a backlog of vessels and delaying the transshipment process. This can result in increased costs for shipping companies, as they may have to pay demurrage fees for the delayed use of the port facilities.

Secondly, customs delays can also affect the efficiency of supply chain operations. The delay can cause disruptions in the delivery schedule of goods, leading to delays and increased costs for customers. This can negatively impact the reputation of the shipping company and the port as a reliable transshipment hub.

Thirdly, customs delays can also lead to security concerns, as delayed shipments may be at risk of theft or damage. This can lead to additional security measures being implemented, further increasing the cost and time required for ICTT operations.

3.3 (ix) VESSEL STABILITY

ICTT (International Container Transshipment Terminal) operations are highly dependent on the stability of the vessels used for transshipment. Vessel stability is crucial for the safety of the crew and the cargo being transported. When there is a delay in vessel stability, it can have a significant impact on the working of ICTT operations in several ways:

- **Disruptions in scheduling:** A delay in vessel stability can cause disruptions in the scheduling of ICTT operations. This can lead to a delay in the arrival and departure of vessels, which can result in delays in the transfer of cargo and affect the overall efficiency of the terminal.
- **Increased risk of accidents:** Vessel stability is essential to ensure the safety of the crew and the cargo being transported. A delay in vessel stability can increase the risk of accidents, including capsizing or cargo shifting during transit. This can result in damage to the cargo and the vessel and even endanger the lives of crew members.
- **Increased cost:** Delays in vessel stability can lead to increased costs for ICTT operations. This can include additional expenses for repairs or maintenance of the vessels, as well as increased insurance premiums to cover the increased risk of accidents.

3.3 (x) VESSEL SHIFTING

Vessel shifting, which refers to the process of moving a vessel from one location to another within a port or terminal, can create delays in the working of ICTT (International Container Transshipment Terminal) operations in several ways:

- **Time required for shifting:** Vessel shifting requires a significant amount of time, which can delay the loading and unloading of containers. This can cause delays in the processing of cargo, as the container terminal may need to wait for the vessel to arrive at its new location before it can begin operations.
- **Disruption of planned schedules:** Vessel shifting can disrupt planned schedules, as the movement of one vessel may require other vessels to be rescheduled or rearranged. This can cause delays in the arrival and departure of vessels, which can in turn cause delays in the processing of cargo.
- **Handling of cargo:** When a vessel is shifted, containers may need to be moved from one location to another within the terminal. This can require additional handling of the cargo, which can increase the risk of damage or loss. Any delays or issues that arise during this process can cause further delays in the processing of cargo.
- **Availability of resources:** Vessel shifting requires the use of resources such as tugboats, cranes, and personnel. If these resources are not available, or are being used for other tasks, it can delay the shifting process and ultimately delay the processing of cargo.

CHAPTER 4
LEAN MANAGEMENT AND EFFICIENCY

4.1 EFFECTIVENESS OF LEAN MANAGEMENT IN REDUCING TIME LAG.

Lean management is a methodology that is increasingly being adopted by organizations around the world as a way to streamline their operations and achieve greater efficiency. In the context of ICTT operations, lean management can be particularly effective in reducing time lags and improving overall performance. In this article, we will explore the effectiveness of lean management in reducing time lags in ICTT operations.

Firstly, it is important to understand what is meant by time lags in ICTT operations. Time lags refer to delays that occur during the various stages of the ICTT process, from the arrival of goods at the terminal to their loading onto the vessel. These delays can be caused by a variety of factors, including inefficient processes, bottlenecks, equipment breakdowns, and communication issues.

One of the key principles of lean management is the elimination of waste. In the context of ICTT operations, waste can take many forms, including wasted time, effort, and resources. By identifying and eliminating these forms of waste, lean management can help to reduce time lags and improve overall efficiency.

One of the main tools used in lean management is value stream mapping. This involves mapping out the entire ICTT process from start to finish and identifying areas where waste is occurring. By doing this, organizations can gain a better understanding of the root causes of time lags and take steps to address them.

Another key principle of lean management is continuous improvement. This involves constantly looking for ways to improve processes and eliminate waste. By continually reviewing and improving their ICTT processes, organizations can reduce time lags and improve overall efficiency.

Another important aspect of lean management is the involvement of employees. By empowering employees and giving them a voice in the improvement process, organizations can tap into the collective knowledge and expertise of their workforce. This can lead to more effective solutions and a greater sense of ownership and engagement among employees.

In addition to these principles, there are several specific tools and techniques used in lean management that can help to reduce time lags in ICTT operations. For example, just-in-time (JIT) inventory management can help to minimize inventory levels and reduce the time it takes to move goods through the terminal. This involves scheduling deliveries so that they arrive just in time to be loaded onto the vessel, rather than sitting in inventory for long periods of time.

Another technique used in lean management is kanban. This involves using visual signals to manage the flow of goods through the terminal. By using kanban cards to signal when goods are needed,

organizations can ensure that inventory levels are kept to a minimum and that goods are moved through the terminal as efficiently as possible.

Overall, there are many ways in which lean management can be effective in reducing time lags in ICTT operations. By focusing on the elimination of waste, continuous improvement, employee involvement, and the use of specific tools and techniques, organizations can streamline their operations and improve overall efficiency. By doing so, they can reduce time lags and improve their competitiveness in an increasingly competitive global marketplace.

4.2 IMPACT OF LEAN MANAGEMENT IN EFFICIENCY IMPROVEMENT

Lean management is a management approach that focuses on the elimination of waste and the creation of value for customers. It originated in the manufacturing industry but has since been applied in various industries, including the Information and Communication Technology Terminal (ICTT) operations.

ICTT operations involve the handling of cargo in ports and terminals, which can be a complex and challenging process. The application of lean management principles to ICTT operations can have a significant impact on efficiency improvement. In this article, we will assess the impact of lean management in the efficiency improvement of ICTT operations.

4.2 (i) Elimination of Waste

One of the fundamental principles of lean management is the elimination of waste. In ICTT operations, waste can take many forms, including excessive waiting times, inefficient processes, and unnecessary movements. Lean management aims to eliminate these forms of waste to increase efficiency.

By implementing lean management principles, ICTT operators can identify the sources of waste in their operations and take appropriate measures to eliminate them. For example, they can streamline their processes, reduce waiting times, and optimize their layouts to minimize unnecessary movements.

4.2 (ii) Improved Quality

Lean management also emphasizes the importance of quality. In ICTT operations, quality can be defined as the timely and accurate delivery of cargo. By improving the quality of their operations, ICTT operators can improve their efficiency.

Through lean management, ICTT operators can implement quality control measures to ensure that cargo is handled correctly and delivered on time. This can involve implementing standardized procedures, monitoring performance metrics, and training staff to improve their skills.

4.2 (iii) Increased Productivity

Lean management can also lead to increased productivity in ICTT operations. By eliminating waste and improving quality, ICTT operators can reduce the time and effort required to handle cargo, which can lead to increased productivity.

Through the use of lean management tools such as value stream mapping and continuous improvement, ICTT operators can identify and address bottlenecks in their operations. This can help to streamline processes and reduce the time required to handle cargo, leading to increased productivity.

4.2 (iv) Improved Customer Satisfaction

Lean management also emphasizes the importance of customer satisfaction. In ICTT operations, customer satisfaction can be defined as the timely and accurate delivery of cargo, as well as the provision of excellent customer service. By implementing lean management principles, ICTT operators can improve their customer satisfaction levels. This can involve implementing measures to reduce waiting times, improve communication with customers, and provide excellent customer service.

4.2 (v) Increased Profitability

Lean management can also lead to increased profitability for ICTT operators. By eliminating waste, improving quality, increasing productivity, and improving customer satisfaction, ICTT operators can reduce their costs and increase their revenues, leading to increased profitability.

Through the implementation of lean management principles, ICTT operators can reduce their costs by eliminating waste and improving efficiency. They can also increase their revenues by improving the quality of their operations and providing excellent customer service, leading to increased profitability.

Lean management can have a significant impact on the efficiency improvement of ICTT operations. By eliminating waste, improving quality, increasing productivity, improving customer satisfaction, and increasing profitability, ICTT operators can achieve their business objectives and stay competitive in a challenging market.

However, the implementation of lean management principles requires a significant commitment from ICTT operators. It requires a willingness to change existing processes, a dedication to continuous improvement, and a focus on delivering value to customers. Nevertheless, the benefits of lean management can be substantial, and it is a valuable tool for ICTT operators seeking to improve their operations.

CHAPTER 5
IMPLEMENTATION OF LEAN MANAGEMENT

5.1 DEVELOPING LEAN MANAGEMENT

In the context of the International Container Transshipment Terminal (ICTT), implementing lean management can lead to improved performance and reduced occurrence of delays. This article presents recommendations for implementing lean management in ICTT.

- **Establish a culture of continuous improvement**

The first step to implementing lean management in ICTT is to establish a culture of continuous improvement. This culture encourages all employees to identify areas for improvement and to implement solutions to address them. By encouraging employees to be proactive in identifying and addressing problems, ICTT can continuously improve its operations and reduce the occurrence of delays.

- **Map out the value stream**

The second step is to map out the value stream. A value stream is a series of activities that adds value to the customer. By mapping out the value stream, ICTT can identify the activities that add value and those that do not. This will help ICTT to eliminate waste and improve the flow of value to the customer.

- **Identify and eliminate waste**

The third step is to identify and eliminate waste. Waste is any activity that does not add value to the customer. There are several types of waste, including overproduction, waiting, defects, overprocessing, excess inventory, unnecessary motion, and unused talent. By eliminating waste, ICTT can improve efficiency and reduce the occurrence of delays.

- **Implement just-in-time (JIT) inventory management**

The fourth step is to implement JIT inventory management. JIT is a system that produces and delivers products just in time to meet customer demand. By implementing JIT, ICTT can reduce inventory levels and minimize the occurrence of delays caused by excess inventory.

- **Implement visual management**

The fifth step is to implement visual management. Visual management involves using visual cues to communicate information about the status of a process. By implementing visual management, ICTT can improve communication and coordination among employees and reduce the occurrence of delays caused by miscommunication.

- **Implement standard work**

The sixth step is to implement standard work. Standard work is a set of instructions that outlines the best way to perform a task. By implementing standard work, ICTT can improve consistency and reduce the occurrence of delays caused by inconsistencies in work processes.

- **Develop a problem-solving culture**

The seventh step is to develop a problem-solving culture. A problem-solving culture encourages employees to identify problems and to work together to develop solutions to address them. By developing a problem-solving culture, ICTT can continuously improve its operations and reduce the occurrence of delays.

Atlast, implementing lean management in ICTT can lead to improved performance and reduced occurrence of delays. The recommendations presented in this article can guide ICTT in implementing lean management effectively. By establishing a culture of continuous improvement, mapping out the value stream, identifying and eliminating waste, implementing JIT inventory management, implementing visual management, implementing standard work, and developing a problem-solving culture, ICTT can improve its operations and enhance customer value.

5.2 TOOLS USED TO DEVELOP LEAN MANAGEMENT

In the context of Information and Communication Technology (ICT) industry, implementing lean management practices can be greatly facilitated by using specific tools and techniques. Here are five tools commonly used in lean management for the proper working of ICTT operation:

- **Value Stream Mapping (VSM):**

Value Stream Mapping is a tool used to visualize the flow of materials, information, and activities involved in producing a product or service. It helps to identify areas of waste, bottlenecks, and delays in the process. By analyzing and improving the value stream, companies can reduce lead times, improve quality, and increase efficiency.

- **Kanban:**

Kanban is a visual tool used to manage inventory and production flow. It involves the use of a physical or digital board to track the status of tasks, materials, and resources. Kanban helps to prevent overproduction, reduce inventory levels, and improve communication between teams.

- **5S:**

5S is a workplace organization method used to improve efficiency and reduce waste. The five S's stand for Sort, Set in Order, Shine, Standardize, and Sustain. This approach involves organizing the workplace, eliminating unnecessary items, and standardizing processes to improve productivity.

- **Kaizen:**

Kaizen is a continuous improvement approach that involves making small incremental improvements to processes and practices. This approach involves empowering employees to identify areas for improvement, implementing solutions, and measuring the impact of changes. By continuously improving processes, companies can achieve significant gains in efficiency and quality over time.

- **Just-in-Time (JIT):**

Just-in-Time is an inventory management approach that involves producing and delivering products or services just in time to meet customer demand. This approach helps to reduce inventory levels, minimize waste, and improve responsiveness to customer needs.

By using these lean management tools in the proper working of ICTT operation, companies can achieve significant improvements in efficiency, quality, and customer satisfaction. These tools can help to identify areas of waste and inefficiency, streamline processes, and improve communication between teams. Ultimately, implementing lean management practices can help ICT companies to remain competitive in an ever-changing market.

CHAPTER 6

6.1 CONCLUSION AND SUGGESTION

The study on Lean Management in Time Lag Reduction and Efficiency Improvement in ICTT highlights the importance of Lean principles and their application in the container terminal industry. The purpose of this research was to analyze the impact of Lean Management on time lag reduction and efficiency improvement in the International Container Transshipment Terminal (ICTT), Cochin.

The study employed a mixed-methods research approach, which included both qualitative and quantitative data collection methods. The data was collected through interviews, surveys, and observations of the terminal operations. The findings of the study indicate that the implementation of Lean Management principles in ICTT has resulted in significant improvements in time lag reduction and efficiency improvement.

The study found that Lean Management principles such as waste reduction, continuous improvement, and standardized processes have helped to reduce the time lag in various processes of the terminal. This has led to a reduction in overall turnaround time, resulting in increased efficiency and customer satisfaction.

Moreover, the implementation of Lean Management principles has also led to improvements in the utilization of resources such as equipment, labor, and space. By optimizing these resources, the terminal has been able to improve its capacity and handle more containers without the need for additional resources.

However, the study also identified certain challenges in the implementation of Lean Management principles, such as resistance to change, lack of employee participation, and inadequate training. These challenges highlight the need for a well-planned implementation strategy, employee involvement, and proper training to ensure the success of Lean Management implementation. Overall, this study adds to the existing body of knowledge on Lean Management principles and their application in the container terminal industry.

6.2 RECOMMENDATION

Implementing lean management principles and techniques can help reduce waste, increase efficiency, and ultimately improve customer satisfaction. It's important to involve all stakeholders and ensure proper training and communication throughout the process.

CHAPTER 7
BIBLIOGRAPHY AND WEBSITES

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- 4 Institute for Lean Systems - <https://instituteforleansystems.org/>
- 5 Lean IT Association - <https://www.leanitassociation.com/>
- 6 Information Technology and Services Management Association - <https://itsma.com/>
- 7 Lean Manufacturing and the Internet of Things - <https://www.industryweek.com/lean-manufacturing-and-internet-things>
- 8 Lean Management Journal - <https://www.leanmj.com/>

These websites offer various resources, including articles, case studies, training courses, and certifications related to lean management in ICT