A STUDY TO IMPROVE INTEGRATED LOGISTICS SUPPORT IN JOHOR PORT BERHAD

MOHAMMAD ASYIQ BIN AZMAN

APPROVAL

I hereby declare that I have checked this report entitled "A Study to Improve Integrated Logistics Support in Johor Port Berhad" originally done by myself and this thesis complies with the partial fulfilment for awarding the award of the degree of Bachelor Technology Management and Supply Chain (Logistics) with Honours.

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This report is presented as a requirement for the Bachelor of Technology Management (Supply Chain Management and Logistics) With Honours

Faculty of Technology Management and Technopreneurship
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14 FEBRUARY 2025

DECLARATION OF ORIGINAL WORK

I acknowledge that this report is the result of my own work except for summaries and quotations, for each of which I have explained the source.

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DEDICATION

This research is dedicated to the unwavering support system that has always been my foundation: my family. To my beloved parents, Mr. Azman Tamyis and Mrs. Runiza Abu Hassan, I cannot express enough gratitude for your constant love and encouragement. You instilled in me the value of perseverance and the belief that anything is achievable with hard work. Throughout the challenges and triumphs of this research journey, your unwavering support provided the strength and motivation I needed to keep pushing forward. Your quiet confidence in me fuelled my determination, and your excitement for my accomplishments made every milestone even sweeter. This research is a testament to the impact you both have had on my life, and I hope it serves as a small token of my appreciation for the countless sacrifices you have made for me.

APPRECIATION

The successful completion of this research project would not have been attainable without the invaluable assistance of several different people and resources.

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I want to thank my friends and family for their consistent support and encouragement during this journey.

Thank you very much.

ABSTRACT

Optimizing Integrated Logistic Support (ILS) within Bulk and Break Bulk Terminals is crucial for port efficiency and competitiveness. This research explores ILS implementation at Johor Port's Bulk and Break Bulk Terminal using a qualitative approach with constructivist grounded theory. Through semi-structured interviews with logistics managers, the study delves into how their perceptions and experiences regarding current supply chain practices, performance-based logistics, and collaboration practices influence overall ILS effectiveness. By gaining a deeper understanding of these factors, the research aims to identify areas for improvement and develop practical recommendations for enhancing ILS within similar terminals. Ultimately, this can lead to increased efficiency, cost reduction, and a competitive advantage for ports like Johor Port. The study's findings contribute to a more robust and effective ILS framework, benefiting stakeholders across the global logistics industry.

ABSTRAK

Mengoptimumkan Sokongan Logistik Bersepadu (ILS) dalam Terminal Pukal dan Pukal Cerai adalah penting untuk kecekapan dan daya saing pelabuhan. Penyelidikan ini meneroka pelaksanaan ILS di Terminal Pukal dan Pukal Cerai Pelabuhan Johor menggunakan pendekatan kualitatif dengan teori berasaskan konstruktivis. Melalui temu bual separa berstruktur dengan pengurus logistik, kajian ini menyelidiki bagaimana persepsi dan pengalaman mereka berkenaan amalan rantaian bekalan semasa, logistik berasaskan prestasi dan amalan kerjasama mempengaruhi keberkesanan keseluruhan ILS. Dengan memperoleh pemahaman yang lebih mendalam tentang faktor-faktor ini, penyelidikan bertujuan untuk mengenal pasti bidang untuk penambahbaikan dan membangunkan cadangan praktikal untuk meningkatkan ILS dalam terminal yang serupa. Akhirnya, ini boleh membawa kepada peningkatan kecekapan, pengurangan kos dan kelebihan daya saing untuk pelabuhan seperti Pelabuhan Johor. Penemuan kajian menyumbang kepada rangka kerja ILS yang lebih mantap dan berkesan, yang memberi manfaat kepada pihak berkepentingan di seluruh industri logistik global.

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LIST OF ABBREVIATIONS

ABBREVIATIONS	MEANING
ILS	Integrated Logistic Support
PBL	Performance-Based Logistic
SCM	Supply Chain Management
JPB	Johor Port Berhad
BBT	Bulk and Break Bulk Terminal

CHAPTER 1

INTRODUCTION

1.0 Introduction

This chapter concentrated on identifying the research problem, formulating research questions and purpose, determining the research scope, and emphasizing the research's significance. This topic did provide an understanding of the research direction and its outcomes.

1.1 Background of Study

Integrated logistics can be defined as a comprehensive, system-wide view of the entire supply chain as a unified process, encompassing raw materials supply through finished goods distribution. Rather than managing individual functions separately, all supply chain elements were treated as a single entity. Gligor and Holcomb (2012b) suggest that integrated logistics capabilities were developed through connecting and streamlining diverse logistics capabilities among supply chain participants.

Integrated Logistic Support (ILS) is crucial for optimizing port operations, ensuring efficiency and cost-effectiveness. It involves the organized planning, execution, and management of all logistics operations from the starting point to the ultimate delivery location of a shipment. This research study focuses on implementing ILS in the Bulk and Break Bulk Terminal of Johor Port. Handling bulk and break-bulk cargo, which includes large, project-specific items, poses distinct challenges that demand efficient coordination across various logistics activities.

By exploring the perceived impact of current practices, the effectiveness of performance-based logistics, and the impact of collaboration between departments on ILS success, the study provides practical recommendations and valuable knowledge for enhancing ILS implementation within Bulk and Break Bulk terminals. Ultimately, this can improve efficiency, reduce costs, and increase competitiveness for ports like Johor Port.

1.2 Problem Statement

Integrated Logistic Support (ILS) is critical in port operations worldwide. Despite this, there were persistent obstacles to obtaining a fully integrated strategy. Achieving seamless coordination across departments, optimizing performance measurement systems, and streamlining information flow were all areas that necessitate ongoing improvement. These challenges can appear in different forms, such as obstacles in incorporating real-time data from multiple sources for well-informed decision-making or inconsistent communication practices impeding department collaboration.

Johor Port Berhad is an integrated Multi-Purpose Port providing a comprehensive range of port services to meet the individual needs of its customers.

Equipped with 24 berths and a total berthing length of 4.9 kilometres, the services and facilities within Johor Port include the Bulk & Break Bulk Terminal, Container Terminal, Liquid Terminal, and Warehousing Facilities. The Bulk & Break Bulk Terminal processes a wide range of cargo of different types and sizes, including Edible and Non-Edible Dry Bulk and Break Bulk. Nevertheless, there is a significant obstacle to achieving optimal ILS within the terminal to provide efficient services due to outdated material handling and internal transport equipment, including quay cranes, forklifts, and mobile cranes. This ageing equipment can reduce operational efficiency, resulting in delays, increased maintenance costs, and safety concerns.

Although there were difficulties to overcome, ports can gain substantial advantages from implementing well-established ILS practices. Integrated logistics can streamline the allocation of resources, reduce delays, and improve overall efficiency at ports. An integrated approach can result in enhanced cargo handling, reduced costs, and increased customer satisfaction at Johor Port's Bulk and Break Bulk Terminal, enhancing the port's competitive position in the region.

1.3 Research Questions

i. How do Bulk and Break Bulk Terminal Johor Port logistics managers perceive the impact of current supply chain management practices on integrated logistics?

ii. What are the managers' experiences at Bulk and Break Bulk Terminal Johor Port regarding the effectiveness of performance-based logistics in supporting integrated logistics?

iii. In what way do collaboration practices between departments at Johor Port influence the effectiveness of integrated logistics support?

1.4 Research Objectives

i. To explore the perceptions of logistics managers at the Bulk and Break Bulk Terminal of Johor Port regarding the impact of current supply chain management practices on integrated logistics.

ii. To understand managers' experiences at the Bulk and Break Bulk Terminal of Johor Port concerning the effectiveness of performance-based logistics as a method for supporting integrated logistics within the terminal.

iii. To investigate how collaboration practices between departments at Johor Port influence the overall effectiveness of integrated logistics support within the port.

1.5 Expected Outcomes

This qualitative study aims to understand how logistics managers at the Bulk and Break Bulk Terminal of Johor Port perceive and experience factors that influence integrated logistics within the terminal. The research identified key themes and potential areas for improvement by exploring their perspectives on current supply chain management practices, the effectiveness of performance-based logistics, and collaboration between departments. Ultimately, this provided valuable insights to enhance the effectiveness of integrated logistics support at the terminal.

1.6 Significance of the Study

Integrated logistics were essential for enhancing efficiency and competitiveness in Bulk and Break Bulk terminals. Although previous studies have examined various aspects of integrated logistics practices, more is needed to know about the perspectives and experiences of logistics managers as these practices impact their daily operations.

This qualitative study addresses this gap by focusing on the Bulk and Break Bulk Terminal of Johor Port. Through an in-depth exploration of the managers' perspectives on current supply chain management practices, the effectiveness of performance-based logistics, and collaboration practices between departments, the research provided valuable insights into the human element and its influence on achieving integrated logistics within the terminal.

Understanding these perceptions and experiences can contribute to the development of more effective strategies for integrated logistics at the terminal. The findings can inform improvements in modern machinery and technologies,

communication, collaboration, performance measurement, and overall management practices to foster a more integrated approach. The qualitative insights might also be relevant to other Bulk and Break Bulk terminals facing similar challenges in achieving integrated logistics.

1.7 Summary

The chapter's research concluded by analysing the study's context, including the organization's background, problem statement, research questions, research objectives, expected outcomes, and significance of the study. The results obtained from this study had the potential to significantly enhance the integrated logistics support provided at the Johor Port Bulk and Break Bulk Terminal in numerous ways.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

Integrated logistics were critical in modern port operations, enabling efficient and cost-effective cargo movement. Integrated logistics enhances a port's overall competitiveness by optimizing the flow of goods, information, and resources throughout the supply chain. Within Bulk and Break Bulk terminals, where cargo handling involves large, project-specific items, integrated logistics were crucial for ensuring smooth operations and timely deliveries.

One of the primary goals in developing new systems is to satisfy customer needs cost-effectively. Cost-effectiveness is determined by how well a system fulfils its mission and the total cost over its entire operation. Experience has shown that logistics plays a significant role in influencing these factors. Implementing the concept of Integrated Logistic Support (ILS) is crucial to ensure a cost-effective service output.

Despite the established importance of integrated logistics, there is limited research exploring the human element and its influence on achieving this integrated approach. Understanding how logistics managers perceive and experience current supply chain management practices, performance measurement systems, and collaboration strategies can provide valuable insights for optimizing integrated logistics within Bulk and Break Bulk terminals.

This literature review delves into these aspects by examining existing research on integrated logistics concepts, the role of human factors in logistics management, and applying qualitative research methods in supply chain research. The review aims to establish a strong foundation for the current study, which explores integrated logistics at the Bulk and Break Bulk Terminal of Johor Port through a qualitative approach. The following sections explored existing knowledge in these areas, highlighting relevant research findings and methodologies.

2.1 Supply Chain Management Practices Impact on Integrated Logistic Support

In recent years, there has been a shift in focus from managing isolated logistics to adopting a more comprehensive approach to supply chain management (SCM). This change reflects the increasing recognition that efficient supply chains provide a strategic advantage that goes beyond simple cost reduction (Christopher, 2016; Mentzer et al., 2008). While some might consider supply chain management (SCM) and logistics to be synonyms, SCM covers a broader area. It starts with identifying what customers want and seeks to unify all tasks across the supply chain to secure a competitive advantage in satisfying those desires. Meanwhile, logistics management focuses more on orchestrating the physical movement of materials and goods to meet particular demands within the supply chain.

Adaptable and responsive supply chain designs were essential in meeting changing customer needs within the Bulk and Break Bulk Terminal industry. Recent progressions support this requirement. Yang et al. (2019) and Liao et al. (2018) have emphasized the importance of effective supply chain management for gaining and maintaining a competitive edge. Closer integration of production planning with logistics activities facilitates smoother material flow for these large, project-specific cargo shipments (Gunasekaran et al., 2017). The strategic outsourcing of non-core functions such as transportation and warehousing enables terminals to optimize

resource allocation for core ILS activities (Hines et al., 2017). Additionally, the establishment of collaborative supply networks among manufacturers, distributors, and logistics providers promotes seamless information sharing and coordinated efforts throughout the supply chain (Christopher, 2016). This collaborative approach is particularly crucial for Bulk and Break Bulk Terminals, guaranteeing that all stakeholders were aligned in delivering efficient and timely project cargo handling. Furthermore, the transition to localized production closer to markets (delayed differentiation) and the shift from mass production to adaptable batch production models can enhance responsiveness to specific project requirements handled by Bulk and Break Bulk Terminals (Hines et al., 2017; Gunasekaran et al., 2017). These advancements in supply chain design and operation significantly contribute to the effectiveness of ILS within Bulk and Break Bulk Terminals.

2.2 Performance-Based Logistics Impact on Integrated Logistic Support

The adoption of performance-based logistics (PBL) has emerged as a predominant strategy for augmenting the efficiency of Integrated Logistics Support (ILS), as explored through qualitative analysis by Jüttner et al. (2014) and further advanced in the studies by Blome et al. (2016). This approach emphasizes the qualitative assessment and rewarding of logistics service providers based on predetermined performance indicators that align with the objectives of ILS, thereby driving innovation and ongoing enhancement across supply chains. It is normally incorporated as spontaneous employee workplace behaviours, top-level leaders' behaviours, leadership capital, organizational structure, flexibility, culture, knowledge management and the uncertainties in which the organization functions (Birasnav et al., 2019; Chou & Ramser, 2019). This strategy leads to a more effective and agile ILS system. Central to the advantages of PBL is the alignment of service providers' objectives with the broader goals of ILS, focusing on achieving specific qualitative outcomes like punctual deliveries, reduced incidences of damage, and enhanced cost efficiency while also encouraging a culture of continuous innovation and procedural improvements to amplify ILS performance. However, despite these apparent benefits, the work of Blome et al. (2016) underscores the criticality of a meticulous deployment process for PBL, highlighting the necessity for clearly defined performance indicators, the formulation of a just reward mechanism, and the assurance of data transparency to ensure successful implementation.

2.3 Collaboration Between Departments Impact on Integrated Logistic Support

In qualitative research exploring the challenges of Integrated Logistics Support (ILS) within port operations, it is revealed that efficient collaboration across diverse departments is essential for ILS's success. Central to this multidisciplinary collaboration is acquisition logistics, which, as highlighted by Wang et al. (2019), involves the procurement of goods and services vital for sustaining port operations. This cross-functional cooperation, particularly between acquisition logistics and departments like operations and maintenance, leads to streamlined procurement processes, thereby ensuring timely and cost-effective resource acquisition for ILS activities. Moreover, it facilitates improved information sharing, enabling precise communication of ILS necessities and ensuring that acquisition logistics secure the right materials and equipment. Additionally, enhanced coordination through collaborative planning promotes the seamless integration of ILS activities within the port environment. The significance of engaging with external stakeholders, such as suppliers and logistic service providers, is also underscored (Jüttner et al., 2014), indicating that open communication and information exchange with these partners is crucial for effective material flow, heightened supply chain visibility, and superior ILS performance. This synthesis underscores the pivotal role of intra- and inter-organizational collaboration in refining ILS implementation in port settings.

2.4 Conceptual Framework

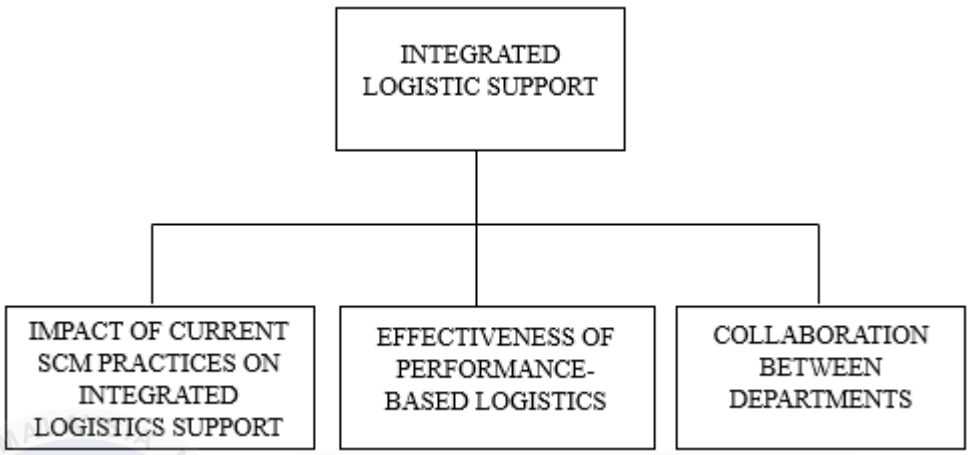

Figure 2.1: Conceptual Framework

2.5 Summary

This chapter, prepared by the researcher, thoroughly examines and precisely defines all the pertinent concepts related to the study of Integrated Logistic Support (ILS) in ports. The chapter outlines the many obstacles to achieving truly integrated logistics. In addition, the chapter examines the case of Johor Port's Bulk and Break Bulk Terminal, where aging equipment poses an extra challenge to achieving optimal ILS implementation. Moreover, the study investigates the perceived influence of existing methods, the efficacy of performance-based logistics, and the impact of collaborative practices on the overall achievement of Integrated Logistics Support (ILS) in the terminal. Ultimately, the researcher suggested a conceptual framework or model for enhancing the implementation of ILS in Bulk and Break Bulk terminals, accompanied by a comprehensive explanation of its functionalities.

CHAPTER 3

RESEARCH METHODOLOGY

3.0 Introduction

This chapter examines the research methodology used to study the implementation of Integrated Logistic Support (ILS) at Johor Port's Bulk and Break Bulk Terminal. The chapter begins by providing an overview of the selected research design and its justification. Subsequently, the chapter outlines the specific method techniques employed to collect data from logistics managers at the terminal. The chapter details the purposive sampling strategy used to select participants and the underlying reasoning behind its implementation. Next, the intended methodology for examining the qualitative data obtained from interviews. The chapter outlines the chosen research design, the specific data collection methods used to gather information, the sampling strategy for selecting participants, and the planned approach for analysing the collected data. The summary section targets this chapter's most critical concepts, ideas, points, and understandings.

3.1 Research Design

Research design encompasses researchers' comprehensive approach to tackling the research's questions or hypotheses. The chapter outlines the methodologies and procedures for gathering, analysing, and interpreting data. The selected research design was crucial to ensure that the study was carried out systematically and that the resulting findings were reliable and valid.

Bryman and Bell (2019) define research design as the comprehensive strategy a researcher employs to address the research question or test the research hypothesis (p. 32). The research design plays a crucial role in guiding the research process by setting the course of the study and ensuring that the chosen research methods are suitable for addressing the research questions.

Research designs encompass a range of types, such as experimental, quasi-experimental, correlational, and descriptive designs, among others. The selection of research design depends on the research question, objectives, and the phenomenon's characteristics. This study seeks insights from terminal managers with extensive knowledge and experience in the field. This would be achieved using a qualitative methodology. The study would specifically employ constructivist grounded theory to collect and analyze data.

Recent research has highlighted the significance of choosing suitable research designs for research questions. Kvale and Brinkmann (2021) emphasize the importance of selecting an appropriate research design for qualitative research, stating that the study's design should align with the research questions (p. 113). According to Parker et al. (2018), it is advisable to choose research designs that align with the research objectives to ensure the proper execution of the study.

Data collection and analysis were conducted using a qualitative approach. This approach enables adaptability and comprehensive data gathering, which is crucial for understanding and revealing essential components and concerns from all parties involved.

3.1.1 Qualitative Approach

Researchers commonly employ qualitative methods to thoroughly investigate and understand specific phenomena, experiences, and social interactions. Researchers gathered comprehensive descriptive data using interviews. By employing a qualitative approach, researchers gained a deeper understanding of the details, theories, and context-dependent factors that quantitative methods may not comprehensively capture. This technique enables researchers to generate deep understandings, formulate theories, and gain a deeper understanding of the perspectives and subjective experiences of individuals involved in the research topic. Moreover, the adaptability of qualitative research in gathered and analysed data allows researchers to change their methodology as fresh perspectives emerge during the research process.

In addition, the qualitative method shows diversity due to multiple approaches that can be employed in a qualitative analysis. Case studies provide researchers with a means to understand various issues and their contextual elements by concentrating on a particular individual, group, organization, or event. The primary objective is to precisely capture the full extent and intricacy of the case, often employing lengthy explanations and detailed accounts.

Therefore, this research was conducted using qualitative approaches to understand better how logistics managers perceive, and experience Integrated Logistic Support (ILS) at Johor Port's Bulk and Break Bulk Terminal. This method is

particularly suited for exploring subjective experiences and complex relationships between practices, performance-based logistics, collaboration, and overall ILS effectiveness. Additionally, qualitative methods offer flexibility to adapt the research focus as new insights emerge in data collection and analysis.

3.2 Data Collection Methods

The researcher gathered detailed information on the implementation of ILS at Johor Port's Bulk and Break Bulk Terminal by conducting online interviews with logistics managers. This approach allowed flexibility in accommodating participant preferences while maximising the potential pool of participants.

The research aimed to gather rich data about the essential components of an ILS system by interviewing logistics managers at the Bulk & Break Bulk Terminal. Their firsthand knowledge and experience would be crucial in pinpointing the specific needs and challenges of implementing ILS at this terminal. The data collection process adhered to ethical principles, including obtaining informed consent from participants, ensuring participant confidentiality, and maintaining the anonymity of their responses in any reporting or publication of the research findings.

3.2.1 Interview Sessions

The researcher conducted face-to-face, semi-structured interviews with logistics managers to gather detailed information on the implementation of ILS at Johor Port's Bulk and Break Bulk Terminal. These managers were selected explicitly from departments directly involved with ILS practices at the terminal, ensuring they possess relevant experience with the implemented ILS practices. A standardized interview guide was created to guarantee consistency throughout the interviews. The guide included an open-ended question that addresses important topics related to implementing ILS related to the Research Questions. An advantage of the semi-structured interview is that it facilitates a more natural and truthful interaction between the interviewer and interviewee. This can result in more elaborate and subtle answers as the interviewee experiences greater comfort and relaxation.

3.2.2 Interviews Discussion Procedure

Each interview adhered to the predetermined interview protocol, which included a formal greeting, obtaining the participant's consent through signing a declaration form, conducting the interview, expressing gratitude to the participant, and appropriately concluding the interview session. The audio files were transcribed verbatim promptly after each interview for two primary purposes: a) to ensure the interview process is accurately represented and b) to assist in adjusting for the subsequent interview.

Participants were notified that they had the option to request a duplicate of their interview transcript for the purpose of examination. The process of conducting the interviews is an emotionally impactful experience. The participants' emotional expressions would be evident, particularly when they feel undervalued and unsure

about their prospects. For instance, one participant shed tears, while others employed forceful language to emphasise their points. The emotions described form the basis of the information presented in the chapters of this thesis, which document the discoveries made during this research.

Overall, the interviews utilized a semi-structured format, incorporating open-ended questions. This approach allowed for flexibility while ensuring data collection remains focused on the research objectives. By using an open-ended question format, the interview process aimed to gather rich and detailed data on various aspects of ILS implementation at the Bulk & Break Bulk Terminal. This data then was analysed to identify key themes and patterns contributing to a comprehensive understanding of ILS practices at the terminal.

3.3 Population and Sampling

This study's population comprises all logistics managers employed at Johor Port's Bulk and Break Bulk Terminal. This encompasses individuals working in the operations that directly influence the implementation of Integrated Logistics Support (ILS).

The research used purposive sampling to gather detailed insights from individuals with experience in ILS practices. This method enables the identification and recruitment of individuals with specialized knowledge and expertise directly applicable to the research questions. The researcher cooperated with the Johor Port management and identified operation managers from the Bulk and Break Bulk Terminal departments who were directly engaged in implementing the Integrated Logistics System (ILS).

The operation managers were interviewed in semi-structured interviews to gather standardized data on implementing ILS at Johor Port's Bulk and Break Bulk Terminal. These interviews utilised a predetermined set of open-ended questions asked in the same order for each participant. This approach ensures consistency and facilitates data comparison across interviews.

3.4 Data Analysis

Qualitative data analysis examines data that is not expressed in numerical form, such as transcripts of interviews or responses from surveys. The analysis generally entails classifying data, identifying patterns, and interpreting the significance of the data. This study used interview transcripts to conduct data analysis. The researcher implemented Thematic Analysis to conduct this research.

Braun and Clarke (2021) initially categorized the questions asked during the interviews separately and then integrated them into a more comprehensive system. Both manual transcriptions and audio recordings will be used during the interview sessions. To ensure data protection, the audio will be transcribed verbatim as spoken (Hart & Achterman, 2017). The researcher identified the analytical unit, selected themes for the study, and derived these from the coding of transcribed data and handwritten notes. Subsequently, the data was examined by organizing it into themes. The researcher grouped responses into general categories and further subcategorized them into more specific subcategories. To streamline data processing, the researcher established theme categories.

3.5 Ethical Considerations

When conducting research, it was essential to uphold ethical considerations, which encompass the guiding principles and accepted practices that ensure research was carried out ethically and responsibly. These considerations included aspects such as obtaining informed consent through signed consent forms, securing necessary permissions from the Johor Port Authority (JPB) to conduct research, safeguarding participant privacy and confidentiality, and maintaining transparency throughout the research process. Adhering to ethical guidelines and obtaining approval from the university's ethics committee was necessary to align research with ethical principles and standards.

Approval from the university's ethics committee is imperative before the research is completed. Ethical challenges may arise in qualitative research, particularly in the interactions between researchers and participants. Establishing precise ethical standards to protect the rights, integrity, and well-being of the participants throughout the study is crucial.

Anonymizing the names and positions of the interviewees during the sessions would be done using codes to protect participant privacy and confidentiality. These codes ensured the confidentiality of interview data and the anonymity of participants. Each participant is assigned an identity, and position number in a specific sequence to safeguard their identity.

3.5.1 Maintaining Positive Relationships with Participants

It is important to establish positive and respectful communication with research participants during the interview process in order to carry out productive research. This is especially crucial in qualitative research, where data quality depends significantly on open communication and trust.

Informed consent is a key ethical principle in research. Participants must be fully informed about the study's purpose, potential risks and benefits, and their right to withdraw at any stage. In addition to informed consent, establishing reports with participants during interviews offers several advantages:

1. Enhanced Data Quality: Creating a relaxed and trusting environment encourages participants to share their experiences and perspectives openly, resulting in richer and more nuanced data (Huang et al., 2020).

2. Continued Participation: Maintaining communication with participants throughout the research process helps ensure their ongoing involvement and cooperation (Miles et al., 2019). This allows researchers to address any concerns, clarify questions, and reaffirm the value of their participation (Jones & Wilson, 2022).

3. Deeper Exploration: A positive report allows researchers to delve deeper into specific aspects that emerge during interviews, potentially leading to new insights and a more comprehensive understanding of the topic.

Finally, expressing gratitude to participants for their contributions and providing feedback on the study's progress helps build trust and increases the likelihood of their participation in future research endeavours (Johnson et al., 2023). By prioritising a positive and respectful relationship with participants, researchers can ensure a smooth interview process, gather high-quality data, and contribute to a positive research experience for all involved.

3.5.2 Research Consent

Obtaining informed consent from participants is a cornerstone of ethical research. Logistics managers from Johor Port's Bulk and Break Bulk Terminal were fully informed about the nature and purpose of the study (understanding ILS implementation at the terminal) through detailed informed consent research. This section did outline the interview procedure, the expected time involved, and the purpose of using their answers. It would also emphasize their right to withdraw from the interview and request clarification on any aspect of the research. By obtaining informed consent, the research upholds ethical principles of respect for participant autonomy and privacy, fosters trust, and lays the groundwork for gathering high-quality data through open and honest responses regarding participants' experiences with ILS implementation.

The principles of autonomy, respect, and informed judgment are upheld by research consent (Fernandez et al., 2022). Informed consent guarantees participants' understanding of the study's objectives, methodologies, potential risks, benefits, and their rights as research subjects (Johnson & Smith, 2021). It also ensures the privacy and confidentiality of participants by stipulating how their data will be collected, maintained, and shared (Lee et al., 2020). By allowing participants to make informed decisions based on their comfort level, research consent promotes autonomy (Roberts & Anderson, 2023). Moreover, consent fosters accountability and transparency, showcasing the researcher's commitment to ethical research practices (Williams & Brown, 2022). Additionally, it serves as a safeguard in the event of ethical or legal issues during the study (Thomas & Davis, 2021). Lastly, obtaining consent cultivates a trustworthy relationship between the researcher and participant, facilitating cooperation and enhancing the quality of the collected data (Smith & Johnson, 2022).

3.5.3 Confidentiality and Accountability

Ethical considerations in research interviews encompass participant safety, privacy, and researcher accountability. Confidentiality is of utmost importance, requiring researchers to protect the identities and sensitive information provided by participants throughout the research process (Smith et al., 2022). This involves secure data storage and handling practices to minimize the risk of breaches. Informed consent documents should explicitly address data usage, potential exceptions (e.g., legal requirements), and how confidentiality will be maintained (Lee & Anderson, 2020).

Accountability in research interviews is multi-faceted. Researchers had a responsibility to be transparent with participants, clearly outlining their role, the study's objectives, and the nature of the interview process (Roberts & Davis, 2023). Respectful and compassionate treatment of participants is essential throughout the research (Thomas et al., 2021). Furthermore, researchers were accountable for ensuring data integrity. Information gathered during interviews must be accurately recorded and reported without bias to ensure the validity of the research findings (Williams & Smith, 2022).

3.6 Summary

In conclusion, this chapter has outlined the research design for the study investigating the implementation of Integrated Logistic Support (ILS) at Johor Port's Bulk and Break Bulk Terminal. To gather in-depth data on current ILS practices and their effectiveness, the study employed semi-structured online interviews with logistics managers directly involved with ILS at the terminal. The interview process was guided by a standardized protocol, ensuring consistency while allowing for flexibility in exploring participants' experiences.

The research's evaluation focussed on the quality of the data collected through the interviews, the robustness of the data analysis techniques employed, and the overall contribution of the findings to the understanding of ILS implementation within Bulk and Break Bulk Terminal operations. By adhering to this carefully considered research design, the study aims to achieve its objectives and generate valuable insights that contribute to the knowledge base on effective ILS practices in port terminal settings.

CHAPTER 4

FINDING AND ANALYSIS

4.0 Introduction

This chapter highlights the findings obtained from the analysis of data gathered through semi-structured interviews with logistics managers at Johor Port's Bulk and Break Bulk Terminal. The interviews intended to examine the perspectives they had about the implementation of Integrated Logistic Support (ILS) within the terminal. After data collection, the interview transcripts went through thematic analysis to identify major themes and patterns about ILS practices, difficulties, and possibilities.

4.1 Demographic Information

Table 4.1: Demographic Details of Respondents

Respondent	Age	Working Position	Educational Background	Experience
R1	59	Shift Manager Operation at BBT	Diploma & Master's in Supply Chain Management	15+ years in logistics
R2	52	Shift Manager Operation at BBT	Diploma in Logistics and Supply Chain Management	15 years in port
R3	56	Shift Manager Operation at BBT	Malaysian Higher School Certificate	20 years in port, 1 year in BBT

4.1.1 Respondent 1

Respondent 1 is a 59-year-old Shift Manager at the Bulk and Break Bulk Terminal of Johor Port. He holds a Diploma and a Master in supply chain management. With considerable expertise, Respondent 1 has played an important role in overseeing the terminal's daily operations, facilitating the efficient management of bulk and break-bulk cargo like cement, grain, and fertiliser. His duty entails collaborating closely with mechanical teams and contractors to supervise the performance and maintenance of essential equipment like conveyors and cranes, which were crucial to the terminal's integrated logistics support (ILS) structure.

4.1.2 Respondent 2

Respondent 2 is 52 years old and comes with 15 years of expertise in logistics management. Respondent 2 holds a Diploma in Logistics and Supply Chain Management and is responsible for overseeing multifunctional terminal operations at Johor Port's Bulk and Break Bulk Terminal, concentrating on enhancing supply chain coordination through the efficient utilization of facilities, equipment, and personnel.

4.1.3 Respondent 3

Respondent 3 is 56 years old and had 20 years of expertise in port operations before being transferred to Johor Port's Bulk and Break Bulk Terminal. Gained over one year of experience overseeing various cargo operations at the facility. Respondent 3 owns a Malaysian Higher School Certificate and applies his significant expertise in port operations to his current position, prioritizing efficiency and proactive problem management.

4.2 Respondent Support for Key Themes

Table 4.2: Respondent's Support for Key Themes

Themes	Sub-Themes	Categories	Respondent Support
Infrastructure	Conveyor System Utilization	Efficiency of conveyors	R1, R2, R3
		Direct delivery to customers	R1, R2, R3
	Equipment and Facility Challenges	Aging equipment	R1, R2, R3
		Facility limitations	R1, R2, R3
Efficiency	Turnaround Time Management	Delays due to inefficiencies	R2, R3
		Scheduling challenges	R1, R3
	Productivity and Throughput	Focus on throughput optimization	R1, R2
		Resource allocation	R1, R3
Performance Metric	KPI Monitoring	Tracking performance metrics	R1, R2, R3
		Identifying areas of improvement	R3
	Productivity Benchmarks	Performance assessments	R2, R3
		Setting realistic targets	R1, R2
Barrier to Implementation	Workforce Challenges	Training needs	R2
		Labor shortages	R1, R3

	Infrastructure Limitations	Equipment downtime	R1, R2, R3
		Dependency on aging systems	R2, R3
Interdepartmental Collaboration	Communication Practices	Regular meetings	R1, R3
		Sharing operational updates	R1, R2
	Coordination Challenges	Synchronizing schedules	R1, R2
		Addressing communication gaps	R1, R3

Table 4.2 highlights the key themes gathered from the Thematic Analysis from the interviews, providing significant information into the implementation of Integrated Logistics Support (ILS) at Johor Port's Bulk and Break Bulk Terminal. These findings closely correspond with the research objectives, offering a deeper understanding of the port's operations. The themes encompass Infrastructure and Efficiency, connecting to Research Objective 1; Performance Metrics and Barriers to Implementation, aligning with Research Objective 2; and Interdepartmental Collaboration, relating to Research Objective 3. Overall, these themes reveal key aspects of ILS practices and their experience with the terminal's logistical operations.

4.3 Research Objective 1: Supply Chain Management Practices Impact on Integrated Logistic Support

4.3.1 Theme 1: Infrastructure

Table 4.3: Respondent's Support for Theme Infrastructure

Themes	Sub-Themes	Categories	Respondent Support
Infrastructure	Conveyor System Utilization	Efficiency of conveyors	R1, R2, R3
		Direct delivery to customers	R1, R2, R3
	Equipment and Facility Challenges	Aging equipment	R1, R2, R3
		Facility limitations	R1, R2, R3

Conveyer system utilization

The interviewees were asked how they perceive the impact of SCM on the overall effectiveness of ILS within the terminal. All participants shared similar perspectives on the key impact of SCM on the overall effectiveness of ILS at the terminal. Two key categories developed during the conversation: the efficiency of conveyors and direct delivery to customers.

R1 emphasized Johor Port's focus on improving operations through supply chain management, stating, “Johor Port has been implementing this initiative for the past 15 years. ILS has greatly assisted operations, particularly in handling bulk cargo. JPB has invested funds to provide conveyors for large customers such as cement, flour, wheat, and fertilizer factories.” R2 highlighted the operational benefits of the conveyor system, stating, “One of the advantages of the conveyor system is improved cargo handling compared to using trucks. This is particularly evident during discharging operations, as it eliminates the waiting time associated with truck turnaround.” R3 provided an additional viewpoint by emphasizing the system's capacity to address varied client requirements. He stated, “We handle a variety of cargo and serve multiple customers, some of whom have synchronized their operations with our conveyor system. This integration aligns with their bookings and chartering needs from external sources.” Collectively, these insights demonstrate that conveyor efficiency is crucial for enhancing ILS at the terminal, directly facilitating the smooth management of bulk cargo while fostering customer-oriented operations, reflecting that automated material handling systems, such as conveyors, play a crucial role in improving logistics performance by reducing operational bottlenecks and enhancing throughput (Tompkins et al., 2010).

Besides the effectiveness of conveyors, participants highlighted the need for direct delivery to customers. This method eliminates intermediate handling stages and guarantees that cargo is delivered directly to the end consumers, matching their specific operational needs.

R1 highlighted this benefit by stating, “The installation of conveyors for these factories has significantly improved ILS by eliminating the need for truck transportation between the ship and the factory.” R2 further elaborated on this advantage, noting, “Another advantage is that the conveyor system allows for direct transfer of cargo to the owner or factory, eliminating the need for multiple handling steps.” R3 provided similar insights, stating, “This conveyor system facilitates direct cargo transfer from the ship to the factory, eliminating the need for multiple handling steps.” This highlights how the system enables a direct link between the port and

clients, diminishing dependence on the truck methods and expediting the logistics process. These findings echo the broader literature, which underscores that well-designed infrastructure is essential for optimizing supply chain logistics (Christopher, 2016).

Equipment and Facility Challenges

The interviewees were asked what the main challenges and opportunities are they see in the current supply chain management practices, and how they affect ILS. Analysis of participant responses revealed a strong consensus regarding the impact of SCM. Two key categories from the discussions: aging equipment and facility limitations.

One of the respondents, R1 emphasized the challenges posed by aging conveyor systems, noting, “Our conveyor systems have been in operation for 15 years, equipment failures are common. However, we have established effective maintenance procedures and contingency plans. In case of a conveyor breakdown, we can seamlessly transition to alternative methods, such as truck transportation, while maintenance teams address the issue.” Another respondent, R2 highlighted the impact of crane performance on bulk cargo handling, stating “Crane performance is a critical factor for handling bulk cargo. Inefficient crane operation can have a significant negative impact on our overall productivity and performance.” Facility limitations were also a prominent concern. R3 observed, “Some of our current equipment and facilities at BBT have been in operation for an extended period, which can limit their ability to handle all operational demands at maximum capacity.” Throughout these problems, responses indicate that the terminal has implemented adaptive strategies to mitigate these limits, including contingency planning and proactive maintenance. However, aging equipment and facility limitations remain among the major challenges for enduring strategic solutions to enhance ILS performance. This aligns with prior

research indicating that aging infrastructure can significantly impact supply chain efficiency and necessitates continuous investment (Rushton, Croucher, & Baker, 2021).

The interviewees also emphasized the importance of facility limitations, which may affect the efficiency of integrated logistics support due to operational disruptions. Respondent 1 shared specific challenges related to equipment monitoring and unexpected malfunctions, explaining, “If we don't keep an eye on the equipment, problems will happen everywhere. Some things we don't know for sure are the motor started firing all of a sudden, the conveyor belt tripping over rollers, and so on.” Another interviewee, R2 pointed out “We have also issued with our facility like a crane” The sharing underscores that aging cranes, alongside other facilities, contribute to operational inefficiencies, especially in handling bulk and break-bulk cargo. R3 further elaborates on the broader impact of these issues, stating “Equipment breakdowns and contractor issues, including manpower and equipment malfunctions, can significantly disrupt operations and hinder our ability to meet targets.” All of these observations underscore the necessity of proactive maintenance and investment in facility upgrades to enhance productivity and reduce disruptions. Optimizing SCM practices and improving the effectiveness of integrated logistics support at the terminal requires addressing these limitations. This aligns with existing studies that emphasize the importance of resource optimization in improving supply chain performance (Harrison & Van Hoek, 2014).

4.3.2 Theme 2: Efficiency

Table 4.4: Respondent's Support for Theme Efficiency

Themes	Sub-Themes	Categories	Respondent Support
Efficiency	Turnaround Time Management	Delays due to inefficiencies	R2, R3
		Scheduling challenges	R1, R3
	Productivity and Throughput	Focus on throughput optimization	R1, R2
		Resource allocation	R1, R3

Turnaround Time Management

The interviewees were asked to identify the primary challenges and opportunities within the current SCM practices and how these can influence the effectiveness of ILS. Analysis of the responses revealed a strong consensus of SCM on the critical role of turnaround time management in achieving operational efficiency. Two categories emerged during the discussion: delays due to inefficiency and scheduling challenges.

Delays caused by the inefficiency in equipment maintenance and operational disruptions emerged as a significant concern among respondents. R2 highlighted, "If the crane is not ready due to maintenance or repairs, it can lead to delays in cargo preparation and significant disruptions to our operations." R3 provided additional context, explaining, "For example, BBT provides forklifts, and we also assist other departments by providing support for any equipment malfunctions or breakdowns that

may cause delay and impede operational efficiency." These insights align with previous research suggesting that equipment reliability is a cornerstone of logistics efficiency, directly influencing turnaround times and operational flow (Tompkins et al., 2010). Equipment breakdowns not only disrupt schedules but also increase operating costs and reduce customer satisfaction, as highlighted in studies on port management (Lam & Notteboom, 2014).

Scheduling challenges were another critical factor impacting turnaround time. R1 emphasized their sharing, "By investing in a larger crane with increased hopper capacity, we anticipate significantly reducing vessel turnaround times. Currently, vessels typically remain anchored for 4 days. However, with the upgraded equipment, we expect to decrease this to 2.5-3 days, improving port efficiency and contributing to enhanced scheduling capabilities." These findings are consistent with research highlighting the importance of equipment upgrades and capacity enhancements in reducing anchorage times and improving overall port performance (Notteboom & Rodrigue, 2022). Weather disruptions were also identified as significant challenges by R3, who explained, "Weather disruptions, particularly rain, can significantly impact our productivity when handling bulk cargo. For example, if heavy rain forces us to suspend operations for half of a shift, it directly translates to a 50% reduction in output for that period." This demonstrates how external factors, such as weather, complicate scheduling and further emphasizes the need for contingency planning to mitigate their impact.

Productivity and Throughput

The interviewees were asked to share their insight regarding the impact of SCM that influence ILS within the terminal. Their responses highlighted two critical areas: focus on throughput optimization and resource allocation.

Ensuring high throughput is a critical aspect of maintaining operational efficiency and meeting customer demands. R1 emphasized, “To maintain operational continuity during conveyor breakdowns, we employ a contingency plan that utilizes trucks for temporary cargo handling. This allows for uninterrupted operations while the maintenance team addresses the equipment issue.” This proactive approach reflects the importance of contingency planning in minimizing operational disruptions, a strategy supported by research emphasizing resilience in supply chains (Christopher, 2016). R2 highlighted the need to align operations with evolving customer requirements, sharing “A key challenge lies in ensuring our service consistently meets the evolving demands of our customers. We must continuously adapt and improve our services to maintain high throughput and customer satisfaction.” This adaptability aligns with findings from Harrison and Van Hoek (2014), who argue that maintaining flexibility in supply chain operations is critical for meeting customer requirements and achieving sustainable throughput levels.

Optimal allocation of resources across various departments was identified as essential for efficient operations. R1 explained how SCM integrates departmental functions to maximize resource use, stating, “SCM effectively integrates various departments, such as warehousing, marine, and mechanical, ensuring optimal utilization of resources across the entire supply chain.” R3 added insights, stating “Effective planning, including wharf allocation, equipment selection, and establishing realistic timeframes, is crucial for efficient operations and customer satisfaction.” These insights are consistent with studies suggesting that strategic resource allocation and detailed planning are essential for optimizing supply chain performance (Rushton, Croucher, & Baker, 2021).

4.4 Research Objective 2: Performance-Based Logistics Impact on Integrated Logistic Support

4.4.1 Theme 3: Performance Metric

Table 4.5: Respondent's Support for Theme Performance Metric

Themes	Sub-Themes	Categories	Respondent Support
Performance Metric	KPI Monitoring	Tracking performance metrics	R1, R2, R3
		Identifying areas of improvement	R3
	Productivity Benchmarks	Performance assessments	R2, R3
		Setting realistic targets	R1, R2

KPI Monitoring

Performance metrics play a critical role in measuring operational efficiency and identifying areas for improvement at BBT. The interviewees highlighted the use of Key Performance Indicators (KPIs) to monitor various aspects of logistics operations. Two sub-themes emerged from the analysis: tracking performance metrics and identifying areas of improvement. These sub-themes illustrate how performance metrics support the effectiveness of performance-based logistics.

The respondents emphasized the importance of monitoring performance metrics to ensure efficiency and meet operational targets. R1 highlighted, “Performance tracking data demonstrates that conveyors are three times more efficient than trucks in handling bulk cargo, such as clinker, corn, and wheat.” This aligns with the literature that emphasizes the role of KPIs in identifying operational efficiencies and informing decision-making (Gunasekaran et al., 2017). R2 elaborated on how cargo handling performance is monitored, explaining, “We track cargo handling performance using KPIs, including monthly and annual productivity measurements in metric tons. We set annual targets for handling volume per cargo type.” R3 added further depth by describing the comprehensive system in place, sharing, “We have implemented a comprehensive system of KPIs to track performance across all cargo types, vessels, and handling modes.” These insights align with research by Neely et al. (2005), which stresses that well-defined performance metrics enable organizations to align their strategies with operational goals.

In addition to tracking metrics, respondents highlighted how KPIs are used to identify operational gaps and drive improvements. R3 explained the proactive approach taken by BBT management, stating “By meticulously tracking all delays and conducting weekly and monthly analyses to identify root causes, we can proactively address performance gaps and drive continuous improvement in our operations.” This finding reflects the critical role of KPIs in diagnosing inefficiencies and implementing targeted interventions, consistent with the concept of continuous improvement in logistics operations (Blanchard, 2010).

Productivity Benchmarks

Productivity benchmarks are necessary for the evaluation of performance and the establishment of potential goals that promote operational efficiency. The interviewees underlined two critical components of productivity benchmarks: performance assessments and setting realistic targets. These components are essential for the identification of areas for enhancement, maintaining high-quality service, and the guarantee of alignment with the terminal's operational objectives.

R2 highlighted the importance of regularly assessing performance to maintain operational efficiency and identify opportunities for improvement. R2 stated “While current performance may be considered good, continuous improvement is necessary. Achieving optimal cargo handling, particularly in a multipurpose port, requires a focus on maintaining the highest standards for all equipment, including cranes, conveyors, gears, and forklifts. The operational efficiency of the port is directly impacted by the condition of these assets.” This reflects the principle that maintaining and optimizing assets is central to achieving productivity in logistics environments (Gunasekaran et al., 2017). R3 elaborated on how delays are meticulously tracked and analyzed to identify improvement areas, stating, “To identify areas for improvement, we meticulously track all delays. At the end of each shift, a report is generated and analyzed on a weekly and monthly basis to determine the root causes of delays.” This aligns with the concept of continuous improvement frameworks, which emphasize the role of data-driven analysis in identifying and addressing performance gaps (Blanchard, 2010).

The respondents also emphasized the need to establish realistic performance targets that reflect the terminal’s capabilities and customer requirements. R1 noted, “Realistic throughput targets must consider the entire supply chain, including customer receiving capacity, to avoid bottlenecks and maximize the return on port-side investments.” R2 shared a similar perspective, “Maintaining high service quality is essential for achieving and exceeding our performance targets. Addressing current

issues will enable us to set more challenging yet realistic goals for future operations." The results indicate that productivity benchmarks at Johor Port's Bulk and Break Bulk Terminal are dependent upon realistic target-setting and performance assessments. Sustained operational efficiency and long-term improvements are achieved through consistent evaluation of delays, equipment maintenance, and alignment of targets with supply chain dynamics.

4.4.2 Theme 4: Barrier to Implementation

Table 4.6: Respondent's Support for Theme Barrier to Implementation

Themes	Sub-Themes	Categories	Respondent Support
Barrier to Implementation	Workforce Challenges	Training needs	R2
		Labor shortages	R1, R3
	Infrastructure Limitations	Equipment downtime	R1, R2, R3
		Dependency on aging systems	R2, R3

Workforce Challenges

Workforce challenges surfaced as a major barrier to the effective implementation of ILS at Johor Port's Bulk and Break Bulk Terminal. The respondents noted two primary issues: training needs and labour shortages. These problems underscore the essential need for a proficient and sufficiently staffed workforce to facilitate efficient logistical operations.

Continuous employee development and retraining are crucial for sustaining efficiency and preparing the personnel to meet the changing requirements of logistics operations. R2 stated, “While overall worker performance is currently acceptable, there is a need to continuously enhance the skills and efficiency of our workforce, particularly for foreign workers who may require regular retraining due to a lack of experience.” This finding aligns with studies emphasizing the role of ongoing workforce training in addressing skill gaps and improving operational performance (Heizer et al., 2020).

The respondent also recognized labour shortages as an ongoing concern, especially during essential shifts or in circumstances necessitating immediate replacements. R1 stated, “Ensuring timely and reliable employee attendance and shift changes are crucial for maintaining operational efficiency. Challenges can arise when employees fail to adhere to scheduled shifts, leading to potential staffing shortages and disruptions to operations.” R3 also highlighted the specific difficulties faced during the night shift, sharing, “Shift 3 (night shift) presents significant challenges in addressing labor shortages. Finding replacement workers for equipment malfunctions or operator issues during these off-peak hours can be particularly difficult, leading to potential delays and disruptions in operations.” These observations align with research highlighting the importance of workforce planning and flexible staffing models in minimizing operational disruptions (Rushton, Croucher, & Baker, 2021).

Infrastructure Limitations

Operations at Johor Port's Bulk and Break Bulk Terminal were significantly impacted by infrastructure constraints. Two critical aspects of these limitations were emphasized by the interviewees: equipment downtime and dependency on aging equipment. Productivity is directly affected, operations are disrupted, and operational objectives are significantly impeded by these issues.

Among respondents, equipment downtime was identified as a significant concern, as failures in cranes, conveyors, and other machinery had a substantial impact on customer satisfaction and productivity. R1 stated, “Equipment breakdowns, particularly with cranes and conveyors, significantly impact productivity and can lead to customer dissatisfaction.” R2 shared a similar concern, “A major challenge with the current system is the potential for equipment breakdowns, especially conveyor failures, which can significantly disrupt operations and require significant downtime for repairs.” R3 provided a broader perspective, noting the combined effects of weather and equipment issues, stating “In addition to weather factors, equipment failures, including breakdowns of cranes, excavators, and shovels, pose significant challenges to achieving operational targets.” These findings align with prior research that underscores the role of equipment reliability in maintaining operational continuity and meeting customer expectations (Blanchard, 2010). Operational reliability can be compromised by a combination of internal factors, such as aging equipment, and external influences, including weather conditions, further emphasizing the need for comprehensive contingency planning (Bichou, 2011).

The respondents highlighted the challenges of aging equipment, especially cranes and other port equipment. R2 stated, “The age of some of our equipment, such as cranes and other facilities, can contribute to operational challenges and limit our ability to achieve optimal performance.” This opinion was supported by R3, which emphasized the frequency of malfunctions linked to aging equipment, saying “The age of port equipment can increase the frequency of equipment failures and contribute to operational disruptions.” This is consistent with studies emphasizing that older equipment often results in higher maintenance costs, increased downtime, and reduced operational efficiency, necessitating proactive replacement and modernization strategies (Christopher, 2016).

To address these barriers, respondents suggested prioritizing investments in infrastructure upgrading and implementing predictive maintenance systems to reduce downtime and extend equipment lifespan. Such measures are critical for enhancing reliability, sustaining productivity, and ensuring the terminal remains competitive in the logistics industry (Rushton, Croucher, & Baker, 2021).

4.5 Research Objective 3: Collaboration Between Departments Impact on Integrated Logistic Support

4.5.1 Theme 5: Interdepartmental Collaboration

Table 4.7: Respondent's Support for Themes Interdepartmental Collaboration

Themes	Sub-Themes	Categories	Respondent Support
Interdepartmental Collaboration	Communication Practices	Regular meetings	R1, R3
		Sharing operational updates	R1, R2
	Coordination Challenges	Synchronizing schedules	R1, R2
		Addressing communication gaps	R1, R3

Communication Practices

Interdepartmental collaboration is crucial for the effective implementation of ILS at Johor Port's Bulk and Break Bulk Terminal. The respondents highlighted two essential elements of communication practices that enhance collaboration: regular meetings and sharing operational updates. These approaches facilitate departmental alignment, collegial problem-solving, and operational efficiency.

Regular meetings between departments were highlighted as a cornerstone of effective collaboration. R1 stated “Every day, a meeting will be held, which is called a berthing meeting. At this meeting, we will invite the departments involved, such as mechanics and contractors. R3 provided more information, revealing how these sessions enhance interdepartmental collaboration, stating, “Every day at 11 o'clock, except on Saturdays and Sundays, we hold a meeting with top management, operations, planning, and other managers. This daily gathering, known as a berth meeting, ensures that all departments are aligned and prepared for the day's activities.” These findings align with research emphasizing that frequent, structured communication enhances coordination, reduces ambiguity, and helps resolve operational challenges more effectively (Lambert et al., 1998).

The interviewees also emphasized the importance of sharing timely operational updates to ensure smooth logistics processes. R1 stated “When a new ship is scheduled to arrive, we are informed in advance about its estimated arrival time. This allows us to prepare by ensuring the wharf is cleared and ready for docking. We also notify the shipping company that their vessel has arrived. This coordination ensures that both organizations are prepared to receive the ship.” This process reflects the principles of collaborative planning, forecasting, and replenishment (CPFR), which emphasize the importance of real-time information sharing to align activities across supply chain partners (Barratt & Oliveira, 2001). However, challenges in sharing updates between operations and technical teams were also noted. R2 discussed some challenges in sharing updates across departments, stating “Our communication so far has been very

effective, but challenges arise because the operations and technical teams have different focuses. The main difficulty is figuring out how to clearly explain or convey information about the operational conditions to the technical team." These findings align with the challenges identified in logistics literature, where differences in departmental priorities and terminologies can create communication gaps, requiring deliberate strategies to bridge these divides (Christopher, 2016).

The findings emphasise that regular and timely communication is essential for improving collaboration between departments and facilitating efficient logistical operations. Implementing structured communication methods and resolving identified gaps may enhance cooperation and operational alignment at Johor Port.

Coordination Challenges

Collaboration across departments and support teams is essential for facilitating seamless operations at Johor Port's Bulk and Break Bulk Terminal. Two key sub-themes emerged from the respondents' insights: synchronizing schedules and addressing communication gaps. These aspects highlight the importance of proactive planning and effective communication in overcoming logistical challenges.

Respondents underlined the necessity for proper scheduling and preparation to ensure operational efficiency. R1 highlighted, "To prevent any issues during operations, the departments involved, particularly the mechanical team and JPB contractors, monitor and prepare in advance before the operation begins. This proactive approach ensures that all necessary resources are in place." R2 further elaborated on the necessity of clear communication regarding equipment usage, sharing "When using specific cranes or equipment, we must inform the relevant teams about when and how to use them. If they don't receive this information in time, it could

lead to miscommunication and issues during cargo handling operations. We always notify them in advance to ensure they are ready with the cranes, forklifts, or other suitable gear before the vessel arrives at the port." These findings align with Christopher's (2016) framework, which emphasizes the critical role of advance planning and real-time coordination in achieving supply chain efficiency.

Communication gaps between departments and support groups were recognized as a major challenge. R1 stated, "One of the key communication challenges at the port involves coordination between support groups and the departments involved. We use walkie-talkies for communication because mobile phones often experience interference from Singapore's signals due to the proximity of the port. This roaming interference makes walkie-talkies our preferred mode of communication to avoid disruptions." R3 explained the front-line unit's vital role in resolving equipment-related communication problems and said "Our front-line unit works closely with contractors to resolve machinery issues. For example, if Crane 1 is not operational, the operations team cannot resolve the problem directly, so it's passed to this unit for assistance. This unit is vital for monitoring and addressing issues with cranes, hoppers, and conveyors, ensuring smooth operations." This illustrates the effective management of operational challenges through collaboration between specialized units and contractors.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter explores the key findings and conclusions drawn from qualitative research that explored the impact of current supply chain management (SCM) practices on integrated logistics support (ILS) at the Johor Port Bulk and Bulk Terminal. The Research Objective aimed to:

i. To explore the perceptions of logistics managers at the Bulk and Break Bulk Terminal of Johor Port regarding the impact of current supply chain management practices on integrated logistics.

ii. To understand managers' experiences at the Bulk and Break Bulk Terminal of Johor Port concerning the effectiveness of performance-based logistics as a method for supporting integrated logistics within the terminal.

iii. To investigate how collaboration practices between departments at Johor Port influence the overall effectiveness of integrated logistics support within the port.

Semi-structured interviews were conducted with logistics managers at terminals to gain a comprehensive view of their perspectives and experiences. The findings of this study offer significant insights into the challenges and opportunities to improve ILS in terminals and enhance existing knowledge of SCM practices in the industry.

5.1 Summary of Study

This research employed a qualitative methodology, practising semi-structured interviews as the primary collection method. Interviews were held with logistics managers at the Bulk and Break Bulk Terminal of Johor Port to obtain comprehensive insights into their perspectives and experiences about ILS within the terminal. Thematic analysis was performed to identify key themes in the interview data, highlighting critical elements such as the significance of infrastructure and efficiency, the function of performance metrics and KPIs, the importance of interdepartmental collaboration, and the challenges presented by workforce challenges and aging infrastructure. These findings offer significant insights into the current condition of ILS at the terminal and highlight areas that need enhancement.

5.2 Discussion

This section presents the key findings of the study about the research objectives. The research examined the views and experiences of logistics managers in the Bulk and Break Bulk Terminal of Johor Port about integrated logistics practices. The research revealed key issues including infrastructure and efficiency, performance metrics, barriers to implementation, and interdepartmental collaboration that emerged from the analysis. The discussion focuses on these issues for clarification on the implications of current practices and how they align with the objectives of integrated logistics. Each research objective is addressed in detail, supported by relevant literature and evidence from the data collected.

5.2.1 Research Objective 1: Supply Chain Management Practices Impact on ILS

This section examines the influence of supply chain management (SCM) practices on integrated logistics support (ILS) in the Bulk and Break Bulk Terminal of Johor Port, with a particular emphasis on infrastructure and efficiency. These results are consistent with Research Objective 1, which aims to investigate how logistics managers perceive the role of SCM in improving the effectiveness of ILS.

Infrastructure

The analysis indicated that the use of conveyor systems is essential for enhancing operational efficiency and enabling integrated logistical support at the terminal. Participants collectively recognized that conveyors provide an efficient

method for managing bulk material, especially in massive operations. R1 said that Johor Port's 15-year investment in conveyors has significantly enhanced operations by directly linking the terminal with factories, bypassing intermediate handling stages. This system corresponds with clients' operating requirements, facilitating direct cargo delivery and removing dependence on trucks, as shown by R2 and R3. These findings echo the broader literature, which underscores that well-designed infrastructure is essential for optimizing supply chain logistics (Christopher, 2016).

However, the optimization of SCM effectiveness was significantly disrupted by limitations associated with the aging of equipment and the limitations of facilities. Respondents R1 and R3 indicated recurrent equipment malfunctions and constraints in facility capacity that affect operating efficiency. These difficulties require the execution of proactive maintenance and facility enhancements to guarantee continued operation. This finding aligns with prior research indicating that aging infrastructure can significantly impact supply chain efficiency and necessitates continuous investment (Rushton, Croucher, & Baker, 2021).

Efficiency

Efficiency, especially in monitoring turnaround times and productivity, proved to be a crucial element of SCM's influence on ILS. Participants frequently identified delays resulting from equipment inefficiencies, including crane breakdowns and weather interruptions, as major impediments to achieving ideal turnaround times. For instance, R2 noted that delays in crane maintenance can disrupt cargo preparation and hinder operational flow, while R3 emphasized the impact of weather-related disruptions on output. These findings highlight the critical need for contingency planning and improved scheduling to mitigate these challenges, consistent with research suggesting that minimizing turnaround times is a key driver of port efficiency (Notteboom & Rodrigue, 2022).

In addition, achieving higher throughput and effective resource allocation were recognized as priorities for improving productivity. Participants emphasized the need to synchronize operations with customer needs and consolidate departmental tasks to optimize resource efficiency. For example, R1 and R3 discussed how detailed planning and cross-departmental collaboration are crucial for meeting customer demands and maintaining operational continuity. This aligns with existing studies that emphasize the importance of resource optimization in improving supply chain performance (Harrison & Van Hoek, 2014).

5.2.2 Research Objective 2: Performance-Based Logistics Impact on ILS

This section analyzes the influence of performance-based logistics (PBL) on integrated logistics support (ILS) at Johor Port's Bulk and Break Bulk Terminal (BBT), emphasizing the performance metrics and barriers to implementation. The findings highlight the essential significance of KPIs, productivity benchmarks, workforce challenges, and infrastructural limitations in influencing the terminal's operational efficiency and performance results.

Performance Metrics

The findings highlight the importance of KPIs and productivity standards in assessing and enhancing the effectiveness of performance-based logistics. Participants highlighted the use of KPIs to monitor the cargo handling efficacy and pinpoint operational bottlenecks. For example, R1 highlighted the superior efficiency of conveyors over trucks in handling bulk cargo, while R2 described the use of monthly and annual KPI measurements to monitor productivity. These findings align with the literature that emphasizes performance tracking as a cornerstone of performance-based logistics (Blanchard, 2010). However, Johor Port management employs a proactive strategy, including weekly and monthly root cause analysis to mitigate delays, reflecting a dedication to ongoing improvement of operational performance.

Productivity benchmarks were seen as essential for assessing performance and establishing realistic operational objectives. Participants underlined the need for ongoing performance evaluations and the alignment of objectives with the terminal's capacities and client needs. For instance, R1 and R2 noted the importance of establishing throughput targets that consider the entire supply chain to avoid bottlenecks and maximize returns. These insights reinforce existing studies, which

stress that realistic target-setting and regular performance evaluations are vital for achieving operational efficiency in complex supply chain environments (Christopher, 2016).

Barriers to Implementation

Despite the advantages of performance-based logistics, a few barriers to its successful implementation were recognized, including workforce challenges and infrastructural limitations.

The findings highlight workforce challenges, training needs, and labour shortages as significant constraints connected to the workforce. Participants emphasized the need for regular employee training and retraining to address skill issues, especially among foreign workers with less experience. As R2 pointed out, maintaining a skilled workforce is essential for ensuring operational efficiency in a rapidly evolving logistics environment. Labor shortages, especially during night shifts or in situations requiring immediate replacements, were also identified as significant challenges. R3 emphasized the difficulties in addressing staffing shortages during off-peak hours, which can lead to operational disruptions. These challenges align with prior research indicating that an adequately trained and sufficiently staffed workforce is essential for implementing effective logistics strategies (Rushton, Croucher, & Baker, 2021).

Infrastructure limitations, such as equipment downtime and dependence on aging equipment, were seen as major obstacles to meeting performance objectives. Participants said that equipment malfunctions, especially involving cranes and conveyors, hinder operations, affect productivity, and negatively influence customer satisfaction. For instance, R1 and R2 emphasized the impact of frequent conveyor breakdowns on cargo handling efficiency. Aging equipment was also highlighted as a

critical issue, with respondents such as R3 pointing to the increased frequency of malfunctions due to the age of port equipment. These findings reflect broader challenges in supply chain management, where aging infrastructure often limits operational efficiency and necessitates significant investments in upgrades (Harrison & Van Hoek, 2014).

To address these barriers, respondents highlighted the significance of contingency planning, proactive maintenance, and strategic investments in workforce development and infrastructure upgrades. R2 and R3 emphasized the need for improved maintenance plans and realistic resource allocation to effectively tackle equipment and workforce constraints.

5.2.3 Research Objective 3: Collaboration Between Departments Impact on ILS

This section analyzes the effects of collaboration between departments on integrated logistics support (ILS) at Johor Port's Bulk and Break Bulk Terminal (BBT), emphasizing collaboration between departments and the challenges of coordination. The results underscore the importance of communication strategies, proactive planning, and the resolution of coordination issues in promoting good interdepartmental cooperation.

Communication Practices

The findings highlight the importance of frequent meetings and timely sharing of operational information to enhance interdepartmental cooperation at BBT. Participants recognized daily "berthing meetings" as an essential communication forum for synchronizing activities and resolving interdepartmental challenges. For example, R3 noted that these daily gatherings involve top management, operations, and planning teams, ensuring all stakeholders are aligned on priorities and prepared for upcoming activities. This approach aligns with existing literature, which underscores the importance of consistent communication channels for enhancing collaboration in complex operational environments (Christopher, 2016).

Sharing operational updates was emphasized as a crucial practice to facilitate seamless logistical operations. R1 described how advance notifications about vessel arrivals allow the team to prepare the wharf and notify shipping companies. However, R2 highlighted the challenges of bridging communication gaps between operations and technical teams, particularly when conveying operational conditions. This finding reflects the complexity of interdepartmental communication in logistics operations, where differing departmental focuses can create misunderstandings (Rushton, Croucher, & Baker, 2021).

Coordination Challenges

Addressing coordination challenges, particularly in the areas of synchronizing schedules and minimizing communication gaps, is essential for effective collaboration. The findings indicate that proactive preparation is crucial for overcoming these challenges. For example, R1 emphasized the importance of advance preparation by mechanical teams and contractors to ensure all necessary resources are available before operations begin. Similarly, R2 highlighted the need to inform relevant teams about equipment usage in advance to avoid delays during cargo handling. These proactive measures align with best practices in logistics management, where advance planning and clear communication are essential for achieving operational efficiency (Harrison & Van Hoek, 2014).

Communication gaps, especially within departments and support groups, were seen as a substantial barrier to efficient cooperation. R1 noted the limitations of mobile phone communication at the port due to signal interference from Singapore, necessitating the use of walkie-talkies. This practical adjustment underscores the importance of tailoring communication tools to operational contexts. Additionally, R3 emphasized the role of the front-line unit in resolving equipment-related issues, demonstrating how specialized teams can bridge gaps between operations and contractors. This approach reflects the collaborative problem-solving required in complex logistics environments (Blanchard, 2010).

By tackling coordination difficulties through proactive planning and efficient communication, Johor Port's Bulk and Break Bulk Terminal can improve interdepartmental cooperation and guarantee the smooth execution of integrated logistic support.

5.3 Implication of Study

This research has significant implications for Johor Port Berhad (JPB) and the wider logistics and supply chain management sector. The research paper enhances operational efficiency at JPB by examining critical themes such as infrastructure, performance indicators, and collaborative processes while providing applicable insights for the logistics sector.

5.3.1 Implication for Johor Port Berhad (JPB)

This study has significant implications for the improvement of integrated logistics support (ILS) at Johor Port's Bulk and Break Bulk Terminal (BBT), closely correlating its findings with the three research objectives (ROs). It defines essential areas for enhancement in infrastructure, performance measurements, and collaborative practices to address operational inefficiencies and enhance sustainable logistics strategies.

The research underscores the need for investments in modern infrastructure, including the enhancement of cranes and conveyor systems, and replacing aging equipment, to optimize cargo handling and enhance efficiency. Participants emphasized that improved infrastructure reduces delays, increases throughput, and facilitates customer-oriented logistics solutions. These results correspond with the underlying focus on the importance of infrastructure in enhancing operational resilience.

Performance-based logistics significantly depends on Key Performance Indicators (KPIs) to assess and improve operational performance. JPB's management needs to enhance its KPI systems by including more precise measures specifically

designed for bulk and break-bulk operations. The proactive use of KPIs to detect delays, enhance equipment utilization, and assess worker performance will enable JPB to achieve operational objectives efficiently. Participants emphasized the need to synchronize these KPIs with customer requirements to optimize investment returns.

Interdepartmental collaboration became fundamental for achieving ILS goals. The research highlights the need for frequent meetings and timely sharing of operational information to tackle logistical issues and enhance collaboration. Participants emphasized the need for proactive planning and the use of current ways of communication to connect operational and technical teams. These approaches can foster a collaborative environment that promotes sustained success.

5.3.2 General Implications for the Logistics Industry

The issues of aging equipment and facility constraints are common across the logistics sector, not just at JPB. This analysis underscores the need for strategic investments in infrastructure to tackle these problems and enhance operational resilience. Global ports and logistics hubs may use similar strategies, including the implementation of predictive maintenance systems and the modernization of important equipment, to improve efficiency.

This research also highlights that performance-based logistics practices, including the use of KPIs, productivity benchmarks, and proactive performance monitoring, provide significant insights for other logistics organizations. These practices provide a framework for achieving operational excellence by aligning performance measurements with organizational objectives and consumer expectations.

Additionally, this research highlights the critical significance of interdepartmental coordination in the logistics sector. Regular communication, collaborative planning, and the use of advanced communication technology are essential for reducing operational bottlenecks. Other organizations might use similar insights to improve collaboration across departments and stakeholders.

Primarily this research contributes to the academic literature on supply chain and logistics management by providing practical information about the challenges and opportunities relating to integrated logistics support. It emphasizes the relationship between infrastructure, metrics for performance, and collaborative practices, contributing to the discussion on optimizing logistics operations. Researchers may expand upon these results by investigating similar contexts or employing mixed-method methods to gain a more comprehensive understanding.

Finally, the findings also have significance for policymakers and industry leaders seeking to establish sustainable and efficient logistics networks. By using data-driven approaches and prioritizing collaborative initiatives, policymakers may establish regulatory frameworks that promote infrastructure modernization and workforce growth. Industry leaders may use the study's findings to promote investments in innovative technology and workforce development programs, therefore preparing their organizations for sustained success.

5.4 Limitation

This research faced various challenges and limitations. Obtaining interviews with logistics managers at Johor Port's Bulk and Break Bulk Terminal was a logistical challenge since meetings were periodically postponed due to unanticipated operational circumstances, such as emergency responses. The research relied only on qualitative data obtained from semi-structured interviews, and access to internal operational reports or performance documentation was not accessible. This constraint rendered the study reliant on the subjective perceptions of respondents.

Some participants were hesitant to respond to questions that they identified as confidential during the interviews, which may have impacted the significance of their responses in areas such as interdepartmental conflicts and workforce performance. Furthermore, language posed minor issues, since certain responses provided in Bahasa Malaysia need translation into English, perhaps leading to tiny interpretative inconsistencies.

The concentration of this research on a singular terminal at Johor Port constrains the applicability of the results to other situations or sectors. Furthermore, the sample size of three respondents does not fully capture the diverse perspectives that could exist within the organization. Time constraints also restricted the ability to explore long-term trends or seasonality in operational challenges.

Despite these constraints, the research offers significant insights into the effects of supply chain practices, performance metrics, and collaboration on integrated logistics support. Future studies may mitigate these constraints by broadening the scope to include different ports, using quantitative methodologies, and collecting longitudinal data for a more thorough comprehension.

5.5 Recommendation

This research offers numerous practical suggestions to improve the implementation of integrated logistics support at Johor Port's Bulk and Break Bulk Terminal. Initially, optimizing the use of Key Performance Indicators (KPIs) is crucial. Detailed and specialized KPIs specific to cargo types and handling modes must be established to tackle operational deficiencies and enhance performance. Furthermore, regular maintenance and modernization of equipment—especially cranes and conveyor systems—must be prioritized to reduce downtime and improve operating dependability.

Enhancing interdepartmental collaboration is another essential focus. It is advisable to provide frequent training sessions to enhance communication skills and departmental alignment. Moreover, using dynamic communication platforms instead of outdated systems such as walkie-talkies could overcome coordination issues and enable effortless communication of information.

Addressing labor and infrastructural concerns requires considerable attention. Utilizing advanced scheduling tools assists in reducing labor shortages and enhancing shift management, especially for overnight operations. Investments in infrastructure upgrading will enable the port to manage rising cargo volumes effectively and satisfy customer requirements.

Strategically, fostering a collaborative culture through frequent interdepartmental meetings and common objectives will enhance organizational cohesiveness. Utilizing data analytics to assess performance patterns and anticipate operational difficulties may influence decision-making and improve long-term planning. These initiatives together seek to improve Johor Port's logistical capabilities, ensuring its competitiveness in the regional and worldwide logistics industry.

5.6 Conclusion

This research examined the influence of supply chain management practices, performance-based logistics, and collaboration between departments on integrated logistics support (ILS) in the Bulk and Break Bulk Terminal of Johor Port. The results highlight the need to resolve infrastructural constraints, improve performance measures, and promote efficient collaboration to optimize logistics operations.

Through the modernization of equipment, the implementation of comprehensive KPI systems, and the enhancement of communication practices, the terminal can address significant difficulties such as equipment downtime, labour shortages, and coordination inefficiencies. These initiatives will enhance operating efficiency and establish Johor Port as a competitive and dependable logistics centre in the area.

The implications of this research extend beyond Johor Port, providing significant insights for other ports and logistics entities seeking to improve their operating structures. The results, however context-specific, enhance the larger discussion on integrated logistics management by emphasizing adaptive techniques applicable in diverse operational environments.

Future studies need to concentrate on broadening the analytical scope to include several terminals or ports and use mixed-method techniques to provide more thorough insights. These initiatives may enhance the understanding of ILS practices and enhance the logistics sector's ability to tackle emerging difficulties.

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APPENDICES

APPENDIX 1

Gantt Chart of Final Year Project (FYP) 1

Week/Activities	Time Scale (Week)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
FYP Talk							MID SEMESTER BREAK								
Search for FYP topic															
Meeting with supervispr															
Title confirmation															
RO & RQ construction															
Discussion on Chapter 1															
Submission Chapter 1															
Discussion on Chapter 2															
Submission Chapter 2															
Discussion on Chapter 3															
Submission Chapter 3															
Checking Chapter 1,2 & 3															
Submission of FYP 1															
Presentation 1															
Revised of FYP 1															

Gantt Chart of Final Year Project (FYP) 2

Week/Activities	Time Scale (Week)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Briefing for FYP 2							MID SEMESTER BREAK								
Meeting with Supervisor															
Discuss of Interview Questionn															
Interview Questionnaire develc															
Submission of Interview Quest															
Data Collection															
Construct Data Analysis															
Completion on Chapter 4															
Completion on Chapter 5															
Presentation 2															
Final correction for thesis															
Submission of FYP 2															

APPENDIX 2

University Interview Permission Letter

Universiti Teknikal Malaysia Melaka
Hang Tuah Jaya,
76100 Durian Tunggal,
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FAKULTI PENGURUSAN TEKNOLOGI DAN TEKNOUSAHAWANAN
Tel : +606 270 8002 | Faks : +606 270 1043

Rujukan Kami (Our Ref): UTeM 700-2/2/6 (50)
Rujukan Tuan (Your Ref):
Tarikh (Date): 23 Oktober 2024 /20 Rabiulakhir 1446H

KEPADA PIHAK YANG BERKENAAN

السَّلَامُ عَلَيْكُمْ وَرَحْمَةُ اللهِ وَبَرَكَاتُهُ

Dan Salam Sejahtera,

Tuan/Puan,

MEMOHON MENDAPATKAN MAKLUMAT DAN KAJIAN KES UNTUK MENYIAPKAN TUGASAN PROJEK

Dengan segala hormatnya perkara di atas adalah dirujuk.

2. Adalah dimaklumkan bahawa pelajar berikut adalah merupakan pelajar **Program Ijazah Sarjana Muda Fakulti Pengurusan Teknologi dan Teknousahawanan (FPTT)**, Universiti Teknikal Malaysia Melaka (UTeM):

No	Nama	No. Matrik	Kursus
1	MOHAMMAD ASYIQ BIN AZMAN	B062110442	Ijazah Sarjana Muda Pengurusan Teknologi Dengan Kepujian (Pengurusan Rantaian Bekalan Dan Logistik) - BTMS

3. Pelajar tersebut perlu menyiapkan satu tugasan bagi Projek Sarjana Muda (PSM II) - BTMU 4084 untuk tahun akhir pengajian. Sehubungan dengan ini pihak kami amat berbesar hati sekiranya pihak tuan dapat memberi peluang kepada pelajar berikut untuk menyempurnakan tugasan tersebut di organisasi tuan.

Sekian, harap maklum.

"MALAYSIA MADANI"
"BERKHIDMAT UNTUK NEGARA"
"KOMPETENSI TERAS KEGEMILANGAN"

Saya yang menjalankan amanah,

DR. MOHD AMIN BIN MOHAMAD
Timbalan Dekan (Akademik)
b.p : Dekan
Fakulti Pengurusan Teknologi dan Teknousahawanan

APPENDIX 3

Thematic Analysis from Interview Session

THEMATIC ANALYSIS

Codes	Sub-Themes	Themes
• Efficiency of conveyors • Direct delivery to customers	Conveyor System Utilization	Infrastructure
• Aging equipment • Facility limitations	Equipment and Facility Challenges	
• Delays due to inefficiencies • Scheduling challenges	Turnaround Time Management	Efficiency
• Focus on throughput optimization • Resource allocation	Productivity and Throughput	
• Tracking performance metrics • Identifying areas of improvement	KPI Monitoring	Performance Metric
• Performance assessments • Setting realistic targets	Productivity Benchmarks	
• Training needs • Labor shortages	Workforce Challenges	Barrier to Implementation
• Equipment downtime • Dependency on aging systems	Infrastructure Limitations	
• Regular meetings • Sharing operational updates	Communication Practices	Interdepartmental Collaboration
• Synchronizing schedules • Addressing communication gaps	Coordination Challenges	

Research Objective 1: Impact of Current Supply Chain Management Practices on Integrated Logistics Support

Theme 1: Infrastructure

Sub-Theme 1: Conveyor System Utilization

- **Codes:** Efficiency of conveyors, Direct delivery to customers
- **Respondent Quotes:**
  - **Respondent 1:** *"JPB telah melabur utk mengeluarkan dana bagi menyediakan conveyer bagi customer besar seperti kilang simen, tepung, gandum dan baja. Memberi kesan yg lebih baik 3 kali ganda berbanding sistem konvensional iaitu penggunaan lori atau truck."EOC*
  - **Respondent 2:** *"One of the advantages of the conveyor system is better handling than using a lorry mode, especially in discharging the cargo. It's more efficient with no waiting time for lorry turnaround."EOC*
  - **Respondent 3:** *"Conveyer direct ke kilang memang bagus, tapi kalau rosak, lambatlah operasi kita."DDTC*

Sub-Theme 2: Equipment and Facility Challenges

- **Codes:** Aging equipment, Facility limitations
- **Respondent Quotes:**
  - **Respondent 1:** *"Conveyer kita ni dah lebih 15 tahun. Memang selalu kena repair."AE*
  - **Respondent 2:** *"Our equipment, like cranes and conveyors, needs upgrading to handle the increasing volume of cargo."AE*
  - **Respondent 3:** *"Equipment yg skrg kita ada ni ada limitation utk kita bekerja dgn maksimum streneth."AE*

APPENDIX 4

Consent Form

A STUDY TO IMPROVE INTEGRATED LOGISTICS SUPPORT IN JOHOR PORT BERHAD

CONSENT FORM

I have read, or have had read to me, and I understand the Information Sheet. I have had the details of the study explained to me, any questions I had have been answered to my satisfaction, and I understand that I may ask further questions at any time. I have been given sufficient time to consider whether to participate in this study and I understand participation is voluntary and that I may withdraw from the study at any time. **Signing this form means that you have agreed to be a part of the study.**

	Please tick box	
	YES	NO
• I confirm that I have read and understand the information sheet for the study and have had the opportunity to ask questions		
• I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason.		
• I agree to take part in the above study.		
• I agree to the interview being audio recorded		
• I agree to the interview being video recorded		
• I agree to the use of anonymized quotes in publications		

Declaration by Participant:

I _____ hereby consent to take part in this study.

_____ Date: _____
(Signature of participant)

_____ Date: _____
(Signature of researcher)

Contact Information

Name of researcher: Mohmmad Asyiq
Full address: 106, Jalan Mawar 59, Taman Mawar, 81700 Pasir Gudang, Johor.
Tel: 60134171283
E-mail: asyiqazman99@gmail.com

APPENDIX 5

Interview Protocol

FACULTY OF TECHNOLOGY MANAGEMENT AND TECHNOPRENEURSHIP
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

SEMI-STRUCTURED INTERVIEW PROTOCOL

Project Title:

A STUDY TO IMPROVE INTEGRATED LOGISTICS SUPPORT IN JOHOR PORT BERHAD

1. **Interviewer Name**	
2. **Participant ID#**	
3. **Participant's name**	
4. **Participant's position**	
5. **Interview Date (dd/mm/yyyy)**	☐☐ / ☐☐ / ☐☐☐☐
6. **Participant agrees for interview to be digitally recorded**	Yes ☐ No ☐
7. **Time Interview Began (hhmm-24hr clock)**	☐☐☐☐
8. **Time Interview Ended (hhmm-24hr clock)**	☐☐☐☐

Semi-structured Interview Guide

- Room setup: Locate in a quiet place to improve the recorded sound quality. The interview may be conducted at the interviewee's office or premises (to suit the interviewee's convenience).
- Follow the following steps to complete the interview session:
  - **Step 1:** Complete Q1 – 5 above before the interview.
  - **Step 2:** Read Section A below to the participant.
  - **Step 3:** Introduce yourself at the beginning of the interview and thank the participant for participating.
  - **Step 4:** Request permission from the interviewee to record the conversation; tick the appropriate box for Q6.
  - **Step 5:** Turn on audio recorder if acceptable, document time the interview begins in Q7 above, and conduct an interview.
  - **Step 6:** Complete demographic questions that can be found in Section A.
  - **Step 7:** Proceed with the interview questions.
  - **Step 8:** At the end of the interview, thank the participant and ask if she/he has any further questions; document the time the interview ended in Q8 above.
  - **Step 9:** Ask if the participant is interested in being re-contacted with study results; if yes, document appropriate email. Inform participant that her/his email address will not be linked with her/his study data.

Interviewer: Please read the following to participants at the beginning of the interview.

SECTION A: Information about this study

Opening remarks:

Assalamualaikum/Hello/Good day; thank you for taking time out of your busy schedule to speak with me today. My name is Mohammad Asyiq Bin Azman, and I am a student from the Faculty of Technology Management and Technopreneurship at Universiti Teknikal Malaysia Melaka. I realize you are busy, and I really appreciate your time.

Before we begin, I'd like to tell you more about the research I'm doing and what I will do with the information you tell us. This research focuses on implementing Integrated Logistic Support (ILS) at Johor Port's Bulk and Breakbulk Terminal. This study investigates the challenges and opportunities of ILS to enhance port efficiency. To gather insights, I will conduct in-depth interviews with logistics managers at Johor Port, exploring their experiences with supply chain management, performance-based logistics, and interdepartmental collaboration. The goal is to identify areas for improvement and develop recommendations for better ILS implementation within the terminal.

As described in the consent form provided to you earlier, participating in this interview is voluntary. You can choose not to answer a question or stop the interview at any time.

With your permission, I would like to audio-record the interview. The audio recording will be stored on a secure server and destroyed after the findings of this research are published. Despite being taped, I would like to assure you that the discussion will be anonymous. The tapes will be kept safely in a locked facility until they are transcribed word for word. The transcribed notes of the focus group will contain no information that would allow individual subjects to be linked to specific statements. It would help if you tried to answer and comment as accurately and truthfully as possible. However, if you do not want the interview audio recorded, I will take detailed notes throughout the interview instead.

The interview will take approximately 30 minutes.

Can I turn on the audio recorder now?
[If yes, begin audio recording now.]
[If no] That's okay, I'll take detailed notes as we talk.

Do you have any questions for me at this point? Information about who to contact if you have questions about the study after our time today can be found in the informational sheet.
[If yes, answer the participant's questions, then complete the demographic questions.]
[If no, proceed with completing the demographic questions.]

Ok, let's get started!

APPENDIX 6

Interview Questions

SECTION B: CORE QUESTIONS

1. **How would you describe the current ILS implementation within the Bulk and Breakbulk Terminal?**
   Probe:
   - *Could you provide specific examples of ILS practices that are currently being implemented?*
   - *What are your main challenges and bottlenecks in implementing ILS?*
   - *How do these challenges impact day-to-day operations?*

2. **How do you perceive the impact of these practices on the overall effectiveness of Integrated Logistic Support (ILS) within the terminal?**
   Probe:
   - *Could you elaborate on specific supply chain practices, such as inventory management, transportation, or warehousing, that you believe significantly impact ILS?*
   - *What are the main challenges and opportunities you see in the current supply chain management practices, and how do they affect ILS?*

3. **How do you assess the effectiveness of current performance-based logistics metrics used for ILS?**
   Probe:
   - *Are there any specific performance metrics that you believe are particularly effective in measuring ILS performance?*
   - *What are the limitations or challenges associated with current performance metrics?*

4. **How would you describe the level of collaboration between acquisition logistics and other departments within the terminal?**
   Probe:
   - *Can you provide examples of successful collaborations that have improved ILS performance?*
   - *What are the main barriers to effective collaboration between departments?*
   - *Are there any specific communication challenges or differences in priorities between departments that hinder collaboration?*
   - *How can these challenges be addressed to improve collaboration and ILS performance?*

5. **What are your expectations for the future of ILS implementation at Johor Port's Bulk and Breakbulk Terminal?**
   Probe:
   - *What are the critical areas for improvement or development in ILS practices?*
   - *Are there any specific technologies or innovations that could enhance ILS effectiveness in the future?*

6. **What are the key challenges you face in implementing ILS effectively?**
   Probe:
   - *Could you elaborate on specific challenges related to supply chain management, performance-based logistics, or collaboration?*
   - *How do these challenges impact terminal operations' overall efficiency and effectiveness?*
   - *What would you say is the root cause of these challenges—budget, skills, infrastructure, or something else?*