SCENARIO PLANNING IN OPTIMIZING LOGISTICS PROCESSES IN THE AUTOMOTIVE INDUSTRY

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Submitted in a partial fulfillment of the requirements for the degree of

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CERTIFICATE OF APPROVAL

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Topic : Scenario Planning in Optimizing Logistics Processes In The Automotive Industry

We hereby declare that this Thesis is from the student's own work, has been read and presented to IPMI Institute Board of Examiners, and has been accepted as part of the requirements needed to obtain a Master of Business Administration Degree and has been found to be satisfactory.

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NON-PLAGIARISM DECLARATION FORM

This Thesis is a presentation of our original research work. Wherever the contribution of others are involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgment of collaborative research and discussions.

Also this work is being submitted in partial fulfilment of the requirements for the Master of Business Administration degree and has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Jakarta, …… 2024

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Faruq Harifsyah

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In the name of God, Allah SWT, the Most Gracious, the Most Merciful, I begin with a heartfelt expression of gratitude.

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ABSTRACT

This research study explores the challenges the automotive industry faces in simplifying logistics processes amidst intense market competition and rapid changes. Adopting a qualitative approach, this study ensure the accuracy and reliability of the respondents of 90 from 103 people and interviewed individual of two people.

This main objective is to explore optimizing automotive logistics at PT XYZ using scenario planning (TAIDA), identifying inefficiencies, integrating IoT technologies, and proposing tailored strategies for future industry conditions to drive improvements.

Data analysis was conducted using the TAIDA models (Tracking, Analysis, Imaging, Deciding, and Acting) to guide the scenario planning process. This comprehensive approach allows for a better understanding and anticipation of future trends. The study highlights the importance of process uniformity for ensuring accuracy and reliability in logistics operations. Four scenarios, A is Incremental Improvement, B is Digital Integration, C is Transformational Change, and D is Strategic Partnership and Outsourcing, were identified, each offering strategic options tailored to the company's objectives. Scenario B: Digital Integration emerged as the most suitable, emphasizing the implementation of Internet of Things (IoT) technologies and digital tools for real time tracking and automation logistic process. These capabilities are crucial for optimizing logistics by improving forecasting accuracy, reducing downtime, and enhancing overall efficiency. However, the study focuses on a specific automotive segment (logistics department) and the generalizability of the results is limited. Despite this limitation, the study provides valuable insights and a clear pathway for automotive companies to optimize their logistics processes through strategic scenario planning and digital integration.

Keywords: *scenario planning, automotive industry, logistic process, strategy, automotive industry, TAIDA model.*

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CHAPTER 1
INTRODUCTION

1.1. Background

The Industrial Revolution 4.0, commonly known as Industry 4.0, is fundamentally transforming the business landscape by driving companies across various sectors to embrace digitalization in their operations. This transformation is particularly impactful in logistics, where efficiency, speed, and transparency are critical for success. As competition intensifies and customer expectations rise in the digital era, businesses are increasingly recognizing the urgent need to innovate and adopt advanced technologies to maintain their competitive edge. According to Forbes Insights research (2018) shows that 65% of senior transportation (focused executives believe logistics, supply chain and transportation processes are in the midst of a renaissance) an era of profound transformation. In Indonesia, the government's promotion of Industry 4.0, which includes technologies such as autonomous systems, Big Data, and cloud computing, aims to address the challenges faced by the traditional manufacturing sector. Industry 4.0 represents the integration of digital technologies into all aspects of business operations, leading to greater efficiency, transparency, and flexibility.

In response to these challenges, PT XYZ has embarked on a journey to optimize its logistics processes through digitalization. The company's primary objective is to develop a logistics process that is not only efficient but also responsive, resilient, and capable of meeting the demands of the modern market. To achieve this, PT XYZ has implemented several improvements across its operations, with a strong focus on integrating digital logistics into its systems.

Digital logistics refers to the use of digital technologies to streamline and enhance logistics activities. For PT XYZ, this integration has resulted in significant operational cost savings, increased data transparency, and improvements in speed, flexibility, and efficiency. These advancements mark

a fundamental shift in the company's logistics operations, positioning PT XYZ to remain competitive in the increasingly digital global market.

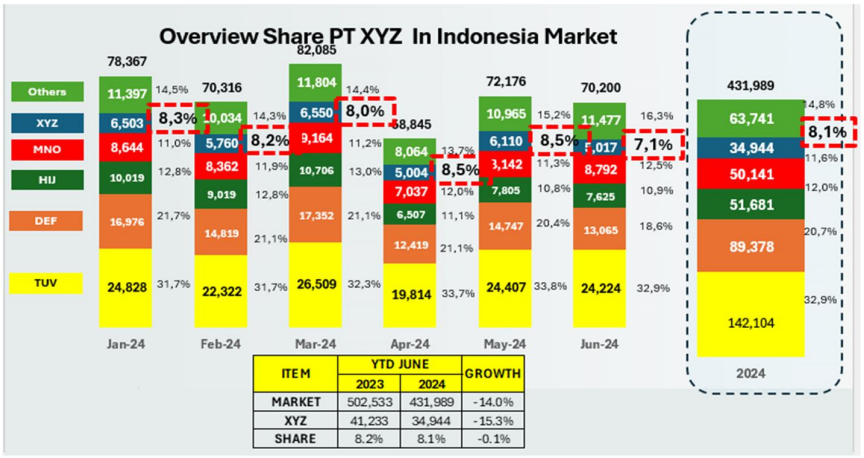
A key enabler of this transformation is the Internet of Things (IoT) technology. IoT plays a crucial role in optimizing logistics by creating a connected and intelligent ecosystem. This ecosystem enables real time tracking of goods, predictive maintenance of equipment, and data driven decision making. By leveraging IoT, PT XYZ is not only adopting new technologies but also fundamentally rethinking its logistics processes to enhance efficiency, responsiveness, and resilience in its supply chain.

However, the journey towards digitalization is not without its challenges. Companies must adopt new technologies while rethinking their strategies and processes. To navigate this complexity, scenario planning emerges as an effective approach. Scenario planning involves creating multiple future scenarios and developing strategies for each, allowing companies to prepare for uncertainties and make informed decisions. For PT XYZ, scenario planning provides a structured framework for exploring the potential impacts of digitalization on its logistics operations and identifying the most effective strategies to achieve its goals.

1.1.1. Company Background

PT XYZ is a global automotive manufacturer which is start business in Indonesia since 1970. PT XYZ expanded its business in Indonesia by producing commercial vehicles and passenger vehicles. The commercial vehicle has become PT XYZ's most successful four wheeled vehicle model in Indonesia, evolving through many generations. PT XYZ has grown to become one of Indonesia's leading automotive manufacturers with three operational factories in Bekasi regency.

PT XYZ is a prominent player in the automotive industry, supported by a comprehensive after sales service network, including spare parts, maintenance, and vehicle repairs, spread and integrated throughout Indonesia. The company exports motorcycles and cars to 72 countries worldwide and has a sales and after sales network as of December 2023.



Source: Data Penjualan Marketing 4W 2024

Figure 1.1. Market Performance Period January – June 2024

Based on the chart, PT XYZ's market performance in Indonesia from January to June 2024 shows fluctuations in monthly sales volume and market share. PT XYZ began the year with an 8.3% market share in January, selling 6,503 units out of a total market volume of 78,367 units. The company experienced growth in February, achieving a 10.1% market share with 8,304 units sold out of 70,316 total units. However, March saw a decline in both sales volume and market share, with 6,550 units sold and an 8.0% share out of 82,085 units.

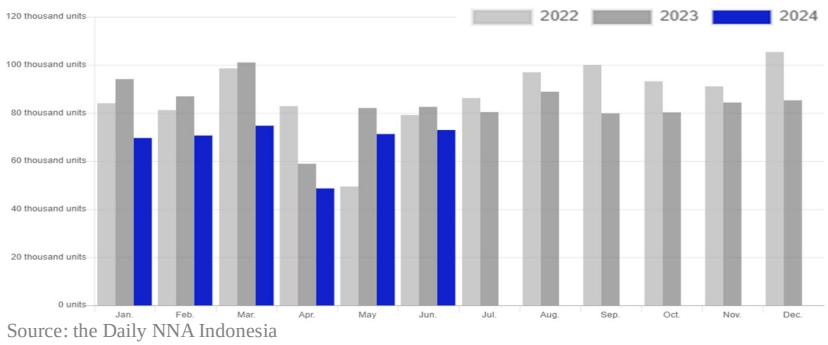
In April, sales volume increased to 8,845 units, though the market share remained stable at 8.0% within a market volume of 72,176 units. May brought a slight rise in market share to 8.5%, with 6,110 units sold out of 70,200 units. By June, the market share decreased again to 7.1%, with a sales volume of 8,511 units out of 70,200 units. These monthly variations highlight the competitive and dynamic nature of the Indonesian automotive market, reflecting PT XYZ's varying degrees of success.

The year to date comparison for June shows that in 2023, PT XYZ had a total market volume of 502,533 units, with 41,233 units sold and a market share of 8.2%. For the same period in 2024, the total market volume decreased to 431,989 units, with PT XYZ selling 34,944 units and capturing an 8.1% market share. This data highlights a significant decline in overall market volume by 14.0% and a drop in PT XYZ’s sales by 15.3%. The market share saw a slight

decrease of 0.1%, indicating that PT XYZ's market position remained relatively stable despite the overall market contraction.

In summary, PT XYZ has faced considerable challenges in maintaining its market share and sales volume amidst a shrinking market in the first half of 2024. Despite some months showing increased sales and market share, the general trend points to a decline, as evidenced by the year to date data. PT XYZ's market share decreased marginally by 0.1%, and its sales volume fell by 15.3%, exacerbated by a 14.0% contraction in the overall market. To counter these trends, PT XYZ must strategize effectively, focusing on enhancing marketing efforts, exploring new market segments, and improving product offerings to better meet customer demands.

To maintain market share and sales volume amidst a shrinking market, PT XYZ should prioritize optimizing its logistics processes to enhance cost competitiveness. Leveraging technology and automation, such as IoT devices, AI for real time tracking, and automated warehousing systems, can significantly improve efficiency and reduce operational costs. Additionally, strengthening supply chain collaboration by integrating systems with suppliers and distributors will ensure a seamless flow of information and better coordination, thereby minimizing disruptions.



Source: the Daily NNA Indonesia

Figure 1. 2. Indonesian vehicle sales From January to June 2024

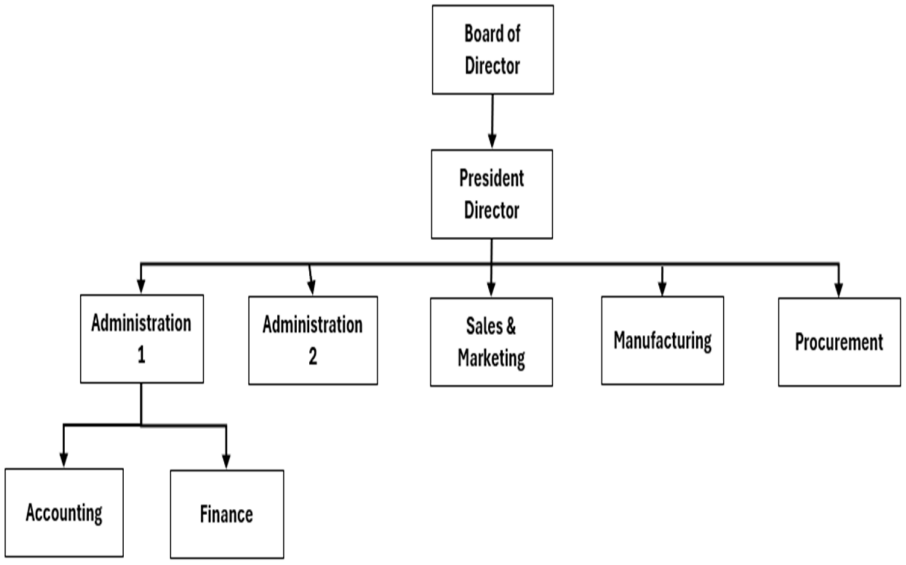
The Association of Indonesia Automotive Industries (GAIKINDO) and other sources reported that Indonesian vehicle sales from January to June 2024, sales decreased by 19.4% to 408,012 units. Especially on June 2024 were 72,936 units, down 11.8% compared to June 2023. PT XYZ was down 41.5% to 4,584 units, with a 6.3% market share.

GAIKINDO Secretary General noted that the slowdown in the national automotive industry has been noticeable since the Federal Reserve began raising its benchmark interest rate in the third quarter of 2023. Bank Indonesia has also increased its benchmark interest rate to the current level of 6.25%. Additionally, the 2024 General Election and the unstable purchasing power of some individuals have impacted national car sales this year.

However, GAIKINDO is optimistic about the recovery of the national automotive market in the near future. The 2024 Gaikindo Indonesia International Auto Show (GIIAS) is expected to boost national car sales, especially in the early second semester of 2024.

1.1.2. Organization Structure

Highlighting the organizational structure, the organizational chart illustrates the company's hierarchical structure, with the Board of Directors at the top, holding ultimate authority and overseeing governance and strategic direction. Reporting directly to the Board is the President Director, the highest executive responsible for overall management and day to day operations. Under the President Director are five main divisions: Administration 1, which includes the Accounting department managing financial records and reporting and the

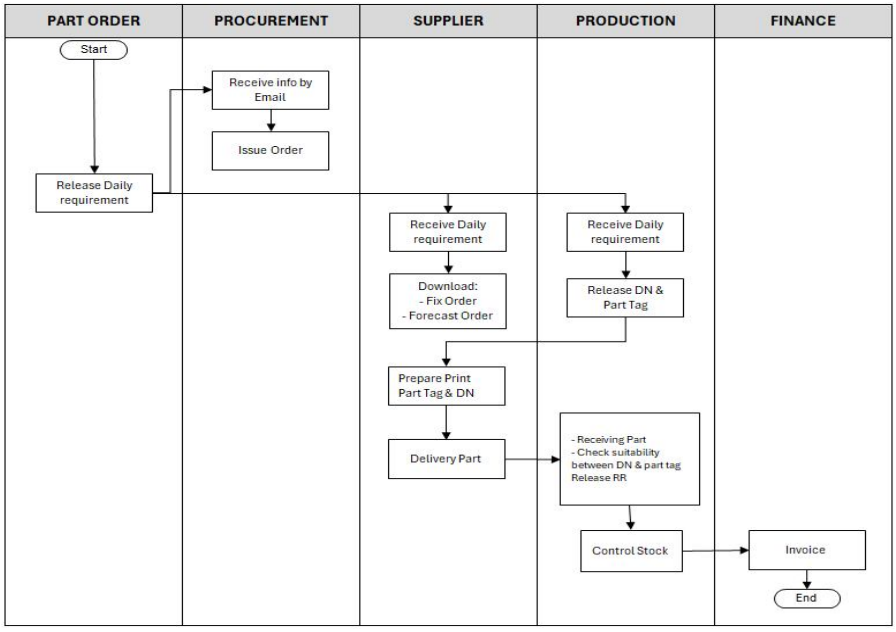


Source: STO of PT XYZ 2024

Figure 1. 3. Organization

Finance department handling budgeting, financial planning, and investment management. Sales & Marketing focusing on promoting and selling products or services, market research, and customer relationships. Administration 2 that resposible for HR, GA and Legal. Manufacturing, overseeing production processes to ensure efficiency and quality, and Procurement, managing the acquisition of goods and services, supplier relationships, purchasing, and inventory management. This structure ensures a clear division of responsibilities and efficient communication within the company.

1.1.3. Logistic Process



Source: SOP Logistics of PT XYZ

Figure 1.4. Logistic Flow at PT XYZ

The logistics flow at PT XYZ shows a clear and organized process for handling local part orders. It starts with the release of daily requirements, which begins the part ordering process. The procurement team receives this information by email and then sends out orders to suppliers. The suppliers receive these daily requirements, download the fixed and forecasted orders, and prepare the necessary part tags and Delivery Notes (DN). Once everything is ready, the suppliers deliver the parts to the production department. In production, the parts are checked to make sure the delivery notes match the part tags, ensuring

the delivery is correct. After this verification, the production team manages and organizes the stock. The process ends with the Finance Department creating invoices based on the parts that have been delivered.

In the concept context of controlling shipments and recognizing debts, PT XYZ employs an E-Ticket system. This system is designed to ensure that data regarding the shipment of goods is accurately recorded and tracked.

The E-Ticket system works by having data scanned and entered into the system when the vendor delivers goods, which is then verified by the company's security. This process aims to provide a real time and accurate reflection of goods received, thus aiding in proper inventory and debt recognition by the Finance and Accounting Departments.

However, the system at PT XYZ is not without its challenges. Periodic issues with unrecorded E-Ticket data have been noted, leading to delays in debt and inventory recognition. This situation can have several repercussions. For one, it can lead to discrepancies in audit findings, as unrecorded data might not match the physical inventory or financial records. Additionally, it can cause issues in financial reporting, where the financial statements may not accurately reflect the company's liabilities and assets. These inaccuracies can further lead to potential fraud during the shipment process, as gaps in the system might be exploited.

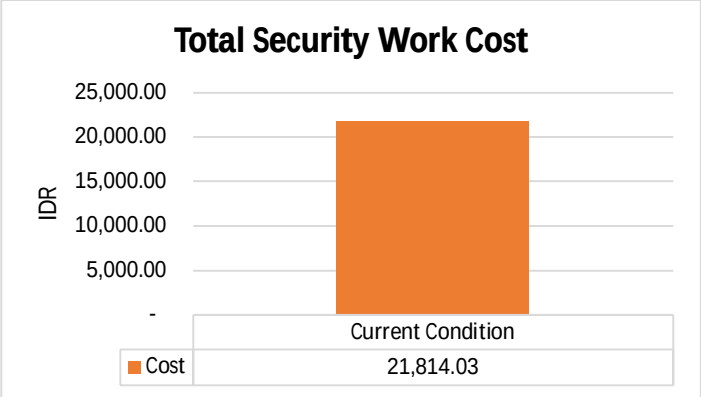
1.2. Research Problem

Inaacuracies in the logistics processes at PT XYZ are contributing to increased operational costs and are adversely affecting service levels and overall market responsiveness. This situation underscores the urgent need to optimize logistics operations to ensure that the company remains competitive in an increasingly dynamic industry landscape. During the first quarter of 2023, several critical issues were identified that emphasize the necessity for improvements.

The delays in generating goods receipt reports, coupled with challenges in managing stock control and debt recognition, are creating significant bottlenecks within the logistics chain. These delays are not only slowing down operations but also leading to inefficiencies that ripple through the entire supply chain, impacting the company's ability to meet market demands

promptly. Initially, there were 7,017 e-tickets that had not been scanned into the system.

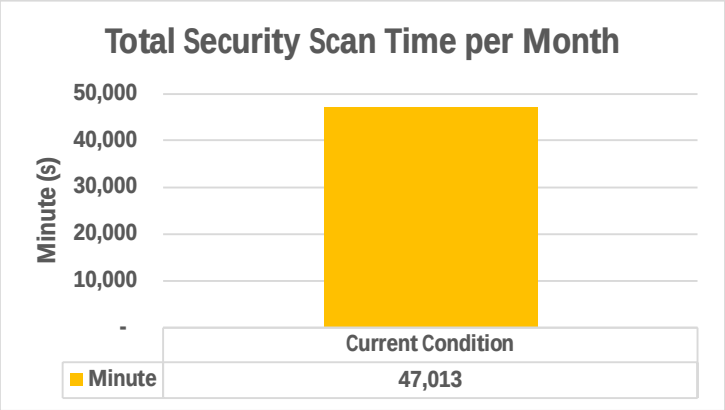
Productivity is another major concern, as time consuming processes, such as the scanning of e-tickets and managing these tasks by security personnel, are draining resources and contributing to higher operational costs. Productivity is another major concern, as time consuming processes, such as the scanning of e-tickets and the management of these tasks by security personnel, are draining resources and driving up operational costs. On average, 37,610 e-tickets are processed per month, with a corresponding working time of 40,744 hours and paper usage matching the e-ticket count.



Source: Internal Data of PT XYZ

Figure 1.5. Total Security Work Costs per Month

The chart presents the monthly security costs were recorded at 21,814.03 thousand Rupiah. This high expenditure suggests that prior to the intervention, the company was incurring substantial costs in its security operations.



Source: Internal Data of PT XYZ

Figure 1.6. Total Security Scan Time per Month

The chart shows the time security personnel spend on scanning E-Tickets. The time spent was 47,013 minutes per month. This high figure indicates that the process was consuming a substantial amount of security personnel's time, potentially limiting their ability to perform other important tasks.

The inefficiencies in these processes highlight the need for a more streamlined approach that can reduce the time and effort required for routine tasks, thereby improving overall efficiency. Additionally, the cost of paper used for e-tickets is becoming a significant expense, further straining the company's financial resources.

These logistical inefficiencies point to a broader need for PT XYZ to adopt more advanced and integrated technologies that can automate routine tasks, reduce reliance on manual processes, and lower operational costs. The current state of operations, if left unaddressed, may continue to hamper the company's ability to compete effectively in the market.

The researcher's objective is to provide actionable insights and recommendations that will enable PT XYZ to adapt and thrive in this evolving industry environment. By focusing on enhancing operational efficiency, reducing costs, and improving service levels, the company can overcome these logistical challenges and secure its position in a complex and competitive market. Implementing these improvements is crucial for ensuring the long-term sustainability and success of PT XYZ, allowing the company to maintain its competitive edge and continue delivering value in a rapidly changing industry.

1.3. Scope and Limitation

There are several limitations that must be considered in the interpretation of this research. This research only focused on:

- Certain employees who related in logistics operation at PT XYZ.
- Due to insufficient time, the research was only limited to the scenario planning stage.
- Interview with Logistic professional (member of GAIKINDO) and Accounting Department Head.

- The respondents will be given a questionnaire regarding competitive awareness and best practices, effectiveness and impact of technology in logistics, knowledge and awareness of challenges, regulatory compliance and adaptability.

1.4. Research Questions

Each step of the scenario program should encompass the following elements:

1. What are the current challenges faced by automotive manufacturers in managing their logistic process amidst the integration of new technologies?
2. How can the TAIDA model be applied to optimize logistic processes in the automotive industry?
3. What impact does it have on operational efficiency and cost effectiveness?
4. What are the potential scenario planning to be utilized for optimizing the logistic process and how can these scenarios be aligned with strategic business objectives to minimize potential loss and maximize efficiency?

1.5. Research Objectives

Based on the background stated above, this thesis focuses on scenario planning by involving multiple levels of the organization and encouraging open dialogue to create a detailed strategy for optimizing logistics at PT XYZ. The research employs a descriptive research design with a quantitative approach. The research objectives are as follows:

1. To quantitatively explore the current logistics processes within the automotive industry, identifying key inefficiencies and challenges, particularly in the integration of IoT technologies.
2. To use the TAIDA model to determine how attention, interest, desire, and action can be effectively used to drive significant logistical improvements.
3. To utilize appropriate scenario planning that optimizes logistics processes under future industry conditions and evaluate the impact of various strategic interventions on logistics.
4. To propose tailored recommendations that align with the strategic goals of automotive companies.

1.6. Previous Research

Focusing on the related methods of scenario planning and TAIDA. This review encompasses various scholarly works that have explored and applied these methodologies in different contexts. It serves as a synthesis of existing research, offering insights into the theoretical foundations, practical applications, and key findings associated with scenario planning and the TAIDA model.

Table 1.1. Previous Research

Title	Authors	Journal	Years	Conclusion of Research
Impact of Digitization in Logistics	Yasanur Kayikci	Education Sciences	2018	Digitization will drive the future industrial revolution by promoting smart production & the interconnection of industries. The benefits of the digitization of logistics process and examines the sustainability impact of digitization in logistics.
IoT and Big Data in Logistics	Malek et al	Education Sciences	2017	These technologies facilitate real-time monitoring and data processing, which are essential for efficient logistics operations.
Industry 4.0 Technologies in Sustainable Logistics	Xu et al.	Education Sciences	2012 – 2020	the transformative potential of these technologies in optimizing logistics processes. Industry 4.0, which includes automation, data analytics, and smart systems, can significantly enhance the efficiency and responsiveness of logistics operations. The study provides insights into how these technologies can be leveraged to develop future-proof logistics strategies.
Impact Of Digitalization On Logistics, Warehouses, And Nationwide Supply Chains	Kalle Orelma and Elias Seppä	Education Sciences	2024	A growing number of companies have identified digitalization as one of the most important ways to improve the sustainability, performance, and competitiveness of their supply

Title	Authors	Journal	Years	Conclusion of Research
Improving Decision Making With Scenario Planning	Thomas J. Cherm ack	Education Sciences	2003	This article has advocated for scenario planning in the context of decision making processes with an aim of reducing failure. By preventing or reducing the impact of four core causes of unexpected decision failure, scenarios and scenario planning might further prevent folly and contribute to more effective decision making capabilities.
Supply Chain Managemene: Logistic Catches	Oliver, R.K., & Weber, M.D.	Education Sciences	1982	The Key Principles of SCM include transparency, collaboration, and integration of processes across the supply chain. all parties involved in the supply chain work together effectively, leading to improved efficiency, reduced costs, and enhanced service levels.

1.7 Scope and Limitation of the Research

This research focuses on PT XYZ and involves certain internal employees who related with operation and will complete a questionnaire about the current logistics processes and their future expectations. The study includes employees of all ages, genders, and job positions, except for the Board of Commissioners, Directors, and sharia supervisory Board, across various units, departments, and divisions.

Audience will be provided with a questionnaire regarding competitive awareness and best practices,the effectiveness and impact of technology in logistics and knowledge and awareness of challenges and regulatory compliance and adaptability

Due to time and other limitations, the research is limited to a few selected departments considered representative. It is assumed that all respondents have answered the questionnaire truthfully.

1.8. Thesis Structure

This papers consist of five chapters including:

Chapter I – Introduction This chapter outlines the prerequisites for an investigation. It also consists of several parts, such as background, research problem, research objectives, research questions, previous research, and thesis structure.

Chapter II – Literature Review

This chapter focused on the theoretical review to guide the investigation. It provides theory, definition of variables, and research framework. Literature review is a collection of journals, articles, reports, books, and other sources of information to support research.

Chapter III – Methodology

This chapter explains the methods for completing the investigation. It consists of methodology, data source, population and sample, data analysis, reliability and validity.

Chapter IV – Finding, Analysis, and Discussion

This chapter describes the details of data result, analysis, and discussion. How each measurement scale was evaluated and integrated with the interview result, and next can create scenario planning.

Chapter V – Conclusion and recommendation

The complete analysis from the beginning to the end of this research is summarized in this chapter. In the end, research recommendations for future research have been presented as well. have been presented as well.

CHAPTER II
LITERATURE REVIEW

2.1. Scenario Planning

Porter stated that scenarios are consistent insights about what will happen in the future. The scenario is a story about what might happen. Scenarios seek to stimulate creative thinking that helps people break away from established patterns of viewing situations and plan their actions. Scenarios are generally useful for expressing and conveying a person's desires, plans and views on change as well as helping people decide how to adapt to change and achieve their vision of the future. Scenarios are an important part of adaptive management because they help people to make decisions now about changes that may occur in the future (Aminullah, 2015).

Definition of a scenario	*Source*
Description of a complex future situation, whose incidence cannot be predicted definitely and the representation of a development that could lead from the present to this situation	Gausemeier et al. (1996)
A scenario can be defined as a description of a possible set of events that might reasonably take place. The main purpose of developing scenarios is to stimulate thinking about possible occurrences, assumptions relating these occurrences, possible opportunities and risks, and courses of action	Jarke et al. (1998)
Scenarios are descriptions of possible futures that reflect different perspectives on the past, the present and the future	van Notten and Rotmans (2001)
Scenarios are a disciplined method for imagining possible futures that companies have applied to a great range of issues. Each scenario tells a story of how various elements might interact under certain conditions. They explore the joint impact of various uncertainties, which stand side by side as equals	Schoemaker (1995)
Scenarios produce forecasts of future business environments and identify conditions leading to major changes in these environments	Huss and Honton (1987)

Source: Definition of Scenario Wulf, Meissner, & Stubner, 2010

Figure 2.1 Definitions of Scenarios in Innovation Processes

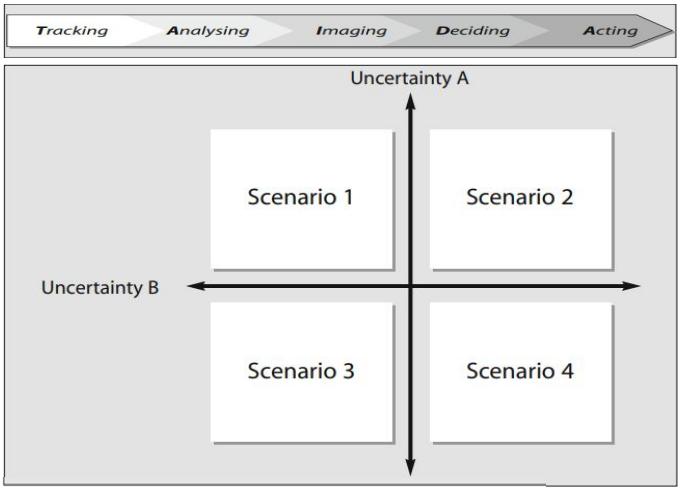
Scenario planning or scenario thinking (Wulf, Meissner, & Stubner, 2010) is a strategic planning tool used to make flexible short-term or long-term plans in uncertain market conditions. To create scenario planning, we should highlight the conflict that exists between the planning and process of strategy, as well as the conditions to overcome the conflict. Different from forecasting, scenario assumes that the future is impossible to predict but may outline the driving forces and uncertainties that must be overcome. Scenario planning can be used for a variety of purposes, such as making assumptions about potential future

circumstances, recognizing the uncertainty, broadening perspectives, and resolving conflicts.

Methods that can be used in creating scenario planning is the TAIDA method. It can be used to predict the motivation and engagement factors for the development and the best strategy that should be implemented to the company. Before carrying out scenario planning with TAIDA, the most important first step is to determine the objectives of the scenario planning process. Lindgren & Bandhold (2009) provide four objectives of scenario planning, namely risk awareness/need for renewal, new thinking/paradigm shift, business development/concept development and strategy development/organizational development.

The next step is to define the main question. The main question in the scenario planning process is what action to develop employee motivation and engagement should be implemented. In general, TAIDA includes (Lindgren & Bandhold, 2009):

a. Tracking. The first step in the TAIDA process is tracking. The main goal of this step is to track and explain the changes in threats and opportunities that have the greatest impact regarding the serious questions that arise.
b. Analysis. The next step after tracking is to analyze consequences and generate scenarios.
c. Imaging. After gathering reasonable and logical insights about future circumstances, identify the possibilities and generate visions of what is desired.
d. Deciding. In this phase of the process, development areas and strategies are identified to weigh up the information, overcome threats, identify choices and strategies while achieving the vision and goals.
e. Acting. Internal plans alone rarely produce results. Acting is about set up short-term goals, take the first steps and follow up the actions.

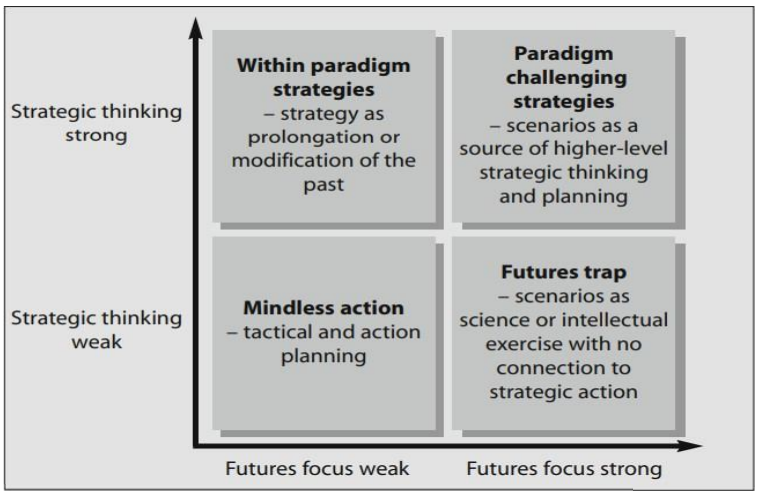


Source:Scenario Planning: Lindgren & Bandhold, 2009

Figure 2.2 Scenario Matrix

Scenario planning is an effective strategic planning tool for medium to long term planning in unpredictable circumstances. It helps us to develop strategies, set back up plans for the unexpected and keep a lookout in the right direction and on the right issues. Thinking in scenarios helps us understand the logic of developments, clarify driving forces, key factors, key players and our own capacity for influence (Lindgren & Bandhold, 2009).

Scenarios are indeed powerful instruments for several reasons that illustrated in figure below (Jashapara, 2011):

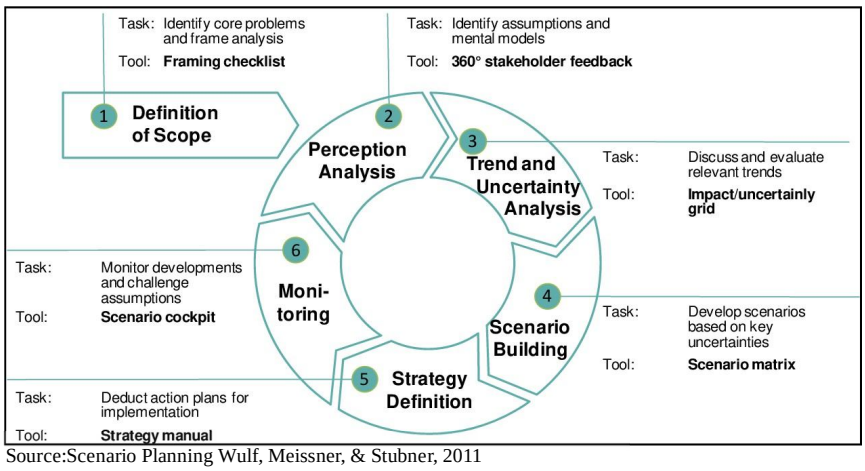


Source:Scenario Planning: Jashapara, 2011

Figure 2.3 Development of paradigm-challenging strategies

- Brain compatible format. Scenario thinking matches the way the brain functions. Easily memorable and can visualize.
- Opening up of divergent thinking. A set of scenarios should represent qualitatively different futures. Capability to think the unthinkable, and thus improve ability to foresee unusual events.
- Complexity reducing format. Through scenarios, complex business or general environments can be reduced to a manageable amount of uncertainty. They facilitate complexity reduction without over-simplifications.
- Communicative format. Scenarios are easy to communicate and to discuss. A shared set of scenarios within an organization provides a common language and world view that simplifies decision making.

Below is the scenario planning diagram:



Source:Scenario Planning Wulf, Meissner, & Stubner, 2011

Figure 2.4 Overview of the scenario-based approach to strategic planning

The main goal of scenario planning is to develop different possible views of the future and to analyze their possible consequences for companies. Thus, scenario planning helps managers to challenge their assumptions and to be better prepared for possible future developments. The explanation of the diagram is below (Wulf, Meissner, & Stubner, 2010):

1. Step 1: Definition of Scope

The overall frame of the scenario-based strategic planning project is defined. Developed the framing checklist, a tool that specifies the goal, the people involved and other key characteristics of the process. The checklist consists of

answers to five simple questions, which need to be agreed on before the start of the planning process. The checklist ensures that everyone is involved, especially the corporate and business unit management and strategic planners, are aligned towards the same goals for the strategic planning process

Goal of Scenario Project Definition of the question to be solved: Focus of the scenario analysis	
Strategic Level of analysis Shall the scenario planning process be conducted for the macro, industry, corporate or business level?	**Definition of Stakeholder** Which key stakeholder shall be involved in the 360 Stakeholder Feedback?
Participants How closely is the top management involved in the process? Which members of the respective departments participate in the workshop?	**Time Horizon** What time horison is the planning process cateres to (1, 2, 5 years no longer)?

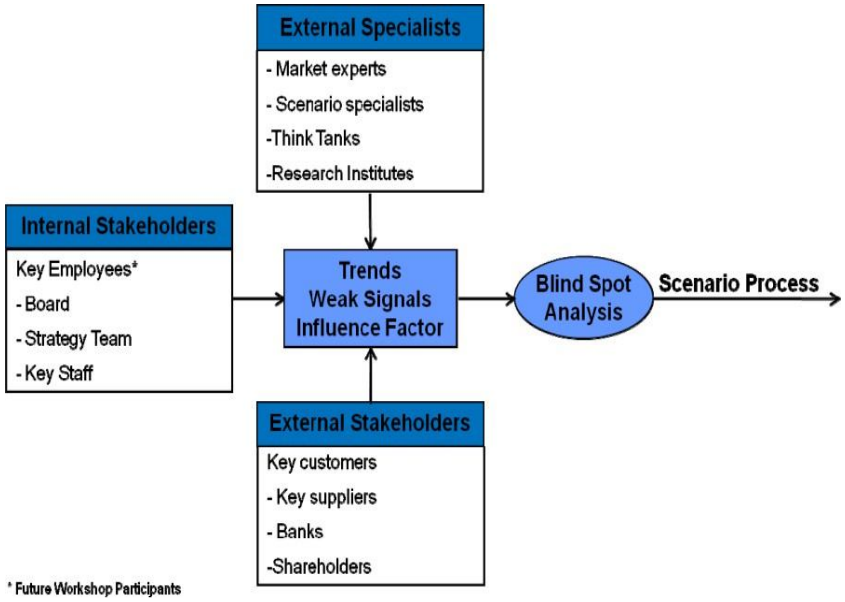
Source:Scenario Planning Wulf, Meissner, & Stubner, 2011

Figure 2.5 Framing Checklist

This framing checklist to help the company plan for the future, liaised with the top management to define the goal of the planning project as the development. The top management team participated in the scenario building phase and the perception analysis, in which they provided the internal view of the company.

2. Step 2: Perception Analysis

   The perception (assumptions and mental models) of the participants involved in the planning process are identified and challenged. The goals are to establish a comprehensive list of factors that can potentially influence the future of the company, to evaluate these factors according to their potential performance impact and their degree of uncertainty, and to benchmark perspectives of different stakeholder groups concerning these influencing factors. It means to make top management more receptive to external developments by helping them to identify the blind spots, which are developments that they knowingly or unknowingly oversee, and weak signals, which are first indicators of future changes in the corporate. Can be used with 360° stakeholder feedback (survey).

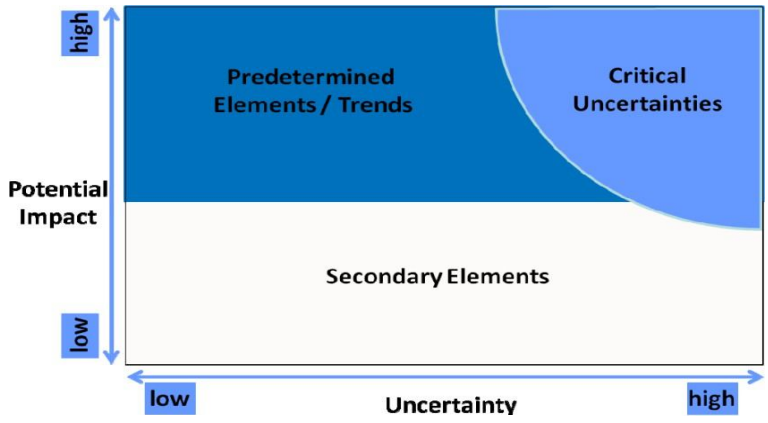


Source:Scenario Planning Wulf, Meissner, & Stubner, 2011

Figure 2.6. 360° Stakeholder Feedback

3. Step 3: Trend and Uncertainty Analysis

   The third process step addresses the question: What are the important trends and critical uncertainties that can potentially have an impact on the future of a company? It can potentially have an influence on the future development of an organization identified using 360° stakeholder feedback, identified factors are located according to their potential performance impact and their degree of uncertainty for the future. Impact/uncertainty grid serves as a tool to facilitate this step.

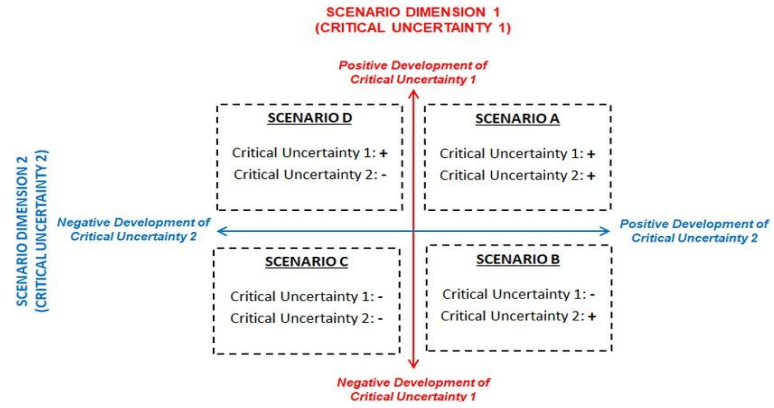


Source:Scenario Planning Wulf, Meissner, & Stubner, 2011

Figure 2.7. Impact Uncertainty Grid

4. Step 4: Scenario Building

The scenario based approach to strategic planning is the development and description of specific scenarios for a company or industry. The tool used for this step is a scenario matrix.



Source:Scenario Planning Wulf, Meissner, & Stubner, 2011

Figure 2.8. Scenario Dimension

First, an influence diagram is developed for each scenario; this is a cause effect chart that determines the path towards each of the four scenarios. Both trends and critical uncertainties identified in the previous step serve as the causes and effects in this diagram. Then a storyline for each scenario is developed using the influence diagram. Finally, the scenarios are described in full detail.

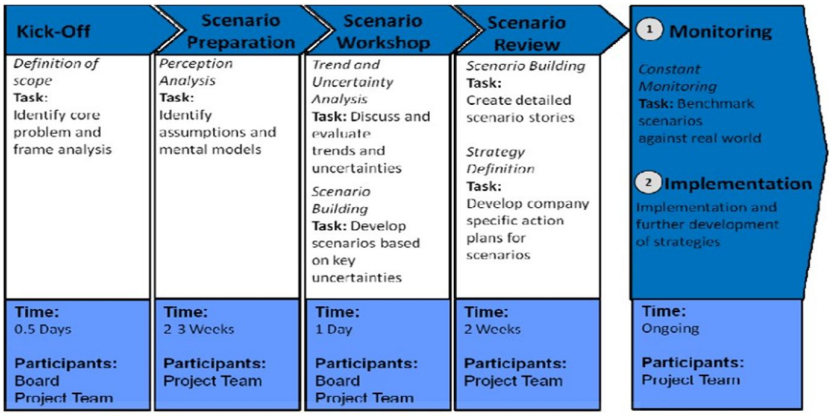
5. Step 5: Strategy Definition

In the strategy definition phase, existing strategies are tested against the multiple scenarios that were created and developing new strategies can be applied in one or several scenarios. the strategy discussion is structured around four important elements: (1) developments in the macro environment, (2) the potential behavior, (3) the intended positioning and competitive strategies of the company, and (4) the design of the value chain and action plans. These elements have to be determined for each scenario. In the second step, the four elements for each scenario are the second determine which strategy elements are shared by all scenarios. The shorter the planning cycles, the more elements are common to all scenarios. The basis for a core strategy that the company can

implement immediately since it is independent of future developments. In the final step, the core strategy and complementary strategy options, including milestones for execution of these options, are described in detail and compared to the existing strategy. The outcome of the strategy definition phase is a robust strategy that is applicable in all possible future states. By increasing the number of strategy alternatives available to the company, the strategy manual enables executives to react more quickly to challenges.

6. Step 6: Monitoring

The scenarios created are constantly benchmarked against real-world developments, thus indicating which strategy option needs to be executed. The monitoring step is conducted by the planning team. The results are then visualized and periodically presented to decision-makers. Which strategic options need to be executed at what time, depending on the state of the environment. The process described above can be conducted in five consecutive steps complemented by a strategy implementation stage as follows:



Source:Scenario Planning Wulf, Meissner, & Stubner, 2011

Figure 2.9 Scenario-Based Strategic Planning Process

Scenario can be used to express and convey someone desires, intentions, and opinions on change. It can also be used to help people decide how to adapt to change and achieve their future vision. Scenarios are an important part of adaptive management because it can facilitate decision-making on potential future changes.

2.2. Logistics

The Council of Logistics Management in Ballou (1992) defines logistics as the process of planning, implementing, and controlling the efficient, cost effective flow and storage of raw materials, semi finished materials, finished goods and related information from the point of origin to the point of consumption. Raw materials, semi finished materials, finished goods and related information from the point of origin to the point of consumption with the aim of fulfilling needs. with the aim of meeting needs.

Logistics is defined as part of the supply chain process (supply chain) which functions to plan, implement, control effectively, efficiently the process of procurement, management, storage of goods, services and information starting from the procurement process effectively, efficiently the process of procurement, management, storage of goods, services and information starting from the point of origin to the point of consumption with the aim of meeting the needs of customers point of origin to the point of consumption with the aim of meeting the needs of consumers Siagian (2005).

Logistic is the management of the flow of goods, information, and resources from the point of origin to the point of consumption. It involves the integration of information, transportation, inventory, warehousing, material handling, packaging, and security. Optimizing logistics refers to enhancing the efficiency and effectiveness of these processes to achieve better performance and cost-effectiveness. Key aspects include:

1. Transportation Optimization**:** This involves selecting the most efficient transportation modes, routes, and schedules to reduce costs and delivery times while ensuring reliability. Techniques include route optimization algorithms, transportation management systems (TMS), and real-time tracking.
2. Inventory Optimization: Inventory Optimization**:** This focuses on maintaining optimal inventory levels to meet demand without overstocking or stockouts. Methods include just-in-time (JIT) inventory, safety stock analysis, and demand forecasting.

3. Warehouse Optimization**:** This involves improving warehouse operations, such as storage, picking, packing, and shipping, to maximize space utilization and minimize handling times. Technologies include warehouse management systems (WMS), automated storage and retrieval systems (AS/RS), and barcode/RFID systems.
4. Supply Chain Optimization: This encompasses the entire supply chain, from suppliers to customers, aiming to streamline processes, reduce costs, and improve collaboration. Approaches include supply chain analytics, integrated supply chain management (SCM) systems, and collaborative planning, forecasting, and replenishment (CPFR).
5. Route Optimization**:** Companies like UPS and FedEx use advanced algorithms to determine the most efficient delivery routes, considering factors such as traffic, weather, and delivery windows. This reduces fuel consumption, travel time, and operational costs.
6. Inventory Management**:** Retailers like Walmart and Amazon use sophisticated inventory management systems to predict demand accurately and optimize stock levels across their distribution centers. This reduces holding costs and ensures product availability.
7. Warehouse Automation: Amazon's fulfillment centers utilize robots for picking and packing orders, significantly increasing throughput and accuracy while reducing labor costs.
8. Supply Chain Integration: Companies like Procter & Gamble and Dell use integrated supply chain management systems to coordinate activities with suppliers and distributors, improving responsiveness and reducing lead times.

Benefits of Optimizing Logistics:

1. Cost Reduction: By minimizing transportation, inventory, and operational costs, companies can achieve significant savings.
2. Improved Efficiency: Streamlined processes and better resource utilization lead to faster and more reliable logistics operations.
3. Enhanced Customer Satisfaction: Efficient logistics ensure timely and accurate deliveries, leading to higher customer satisfaction and loyalty.

4. Competitive Advantage: Companies that optimize their logistics can respond more quickly to market changes and customer needs, gaining a competitive edge.

2.2.1. IoT and Its Uses in the Logistics Business

The involvement of IoT in our operations to enhance tracking of key trends related to technology, market dynamics, and competitive pressures. Before digitalization, it can make them work more efficiently because all data has been recorded in digital format, increased data security, and end to end tracking (able to track the position of goods). Quoted from Idcloudhost (2016), Internet of Thing (IoT) is a concept where an object has the ability to transfer data over a network without requiring human to human or human to computer interaction. It requires technology that is capable of processing large amounts of data. According to Malek et al. (2017), Internet of Thing (IoT) and Big Data Analysis technologies have proven to be to be the most promising way to process large amounts of data in real time. The ability of to extract processed raw data and visualize it in real time will bring fundamental improvements in the field of data management.

The implementation of IoT requires new technology concepts that are mainly related to data management and data analytics. Therefore, technology capable of processing large amounts of data is required. According to Malek et al. (2017) Internet of Thing (IoT) technology and Big Data Analysis proved to be the most promising way to process large amounts of data in real time. The ability of to extract processed raw data and visualize it in real time will bring fundamental improvements in the field of data management. From the literature analysis, trends and potential IoT opportunities available in the field of logistics or continuous inventory management are explored. Various journals are paying special attention to this topic and publishing more articles in this research direction. Systems and platforms that implement new technologies are the focus of this research. As each company needs its own specific solution to transform to a greater high tech level, this topic is expected to be further discussed in the future.

2.2.2. Challenges of Using Technology in Logistics

The challenge for companies is how to best use technology to increase efficiency and reduce costs.According to PWC, every aspect of a logistics company's work is changing because of technology. Success will depend on “digital fitness”. Leaders will be those who know how to utilize a variety of new technologies, from data analytics to automation and platform solutions. Those who don't risk becoming outdated. Nevertheless, creating a clear digital strategy linked to company strategy will be crucial given how many technologies compete for management attention and funding.

2.2.3. Outsource Logistics

Logistics outsourcing is when a company hires a third party provider to manage various parts of their supply chain operations. Third Party Logistics (3PL)’s could be the right choice for you if you want to outsource logistics. These providers, also known as 3PLs, can handle warehousing, inventory management, fulfillment services, shipping and freight forwarding, and even reverse logistics. Outsourcing can streamline day to day operations, allowing staff to focus on core business functions and customer satisfaction. In turn, the business can flourish. Supply chain resilience is still a work in progress, and these critical business functions can significantly impact company success or failure. Peter Drucker, considered by many as the father of management consulting, put it best when he said “Do what you do best, outsource the rest”. Outsourcing logistics is not a decision to take lightly. Supply chain resilience is still a work in progress, and these critical business functions can significantly impact your success or failure. Outsourcing too much or to the wrong 3PL can actually increase your costs and decrease your efficiency.

2.3. Supply Chain Management

Supply Chain Management (SCM) is a method or approach to managing the flow of products, information, and money in an integrated manner that involves all parties, from upstream to downstream, consisting of suppliers, factories, distribution actors, and logistics service providers. A key principle in SCM is

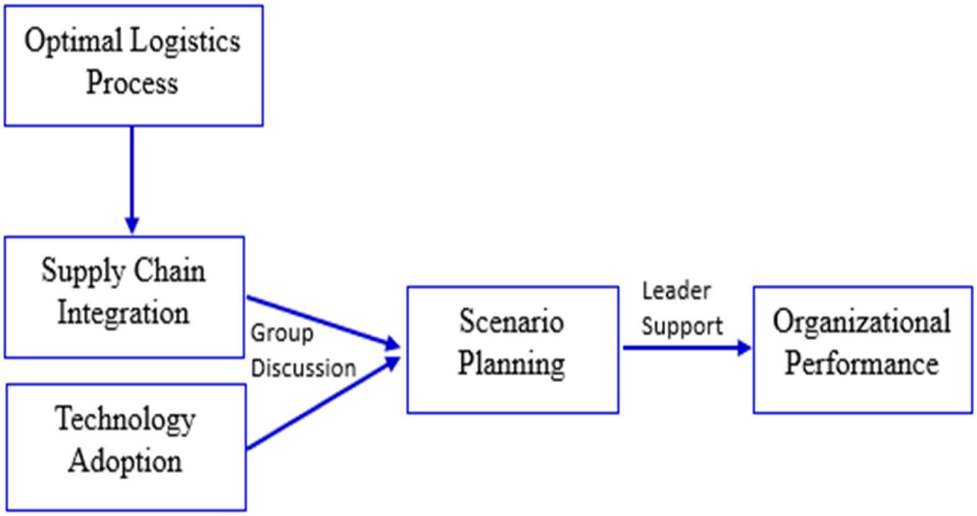
the transparency of information and collaboration, both among functions within the company and with external parties throughout the supply chain. Activities in Supply Chain Management include product development, procurement of materials and components, production planning and inventory control, production, distribution/transportation, and product returns handling.

Supply Chain Management according to Oliver and Weber (cf. Oliver & Weber, 1982, Lambert et al. 1998), if the supply chain is the physical network, i.e. the companies involved in supplying raw materials, producing goods, or delivering them to end users, SCM is the method, tool or management approach. According to the Council Supply Chain Management Professional (CSCMP), Supply Chain Management encompasses the planning and menagement of all activities. Importantly, it also includes coordination and collaboration with channel party service providers, and customer. In essence Supply Chain Management integrates supply and demand management within and accross companies.

Mentzer et al. 2001 defines Supply Chain Management as: the systemic, strategic coordination of the traditional business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long term performance of the individual companies and the supply chain as a whole.

2.4. Conceptual Framework

Scenario planning can encourage creativity, innovation, and organizational learning (Hawkins & Chermack, 2014). Conceptual framework provides a theoretical foundation for the research and helps to define the key concepts, factor influencing logistic, scenarios, and the impact of different scenarios and how they, in turn, affect organizational performance.



Source: Hawkins & Chermack, 2014

Figure 2.10. Conceptual Framework

CHAPTER III
METHODOLOGY

3.1. Methodology

The research methodology focused on scenarios that function to determine the most optimal logistics process. This study employs a descriptive research design with a qualitative approach. Given its focus on uncovering potential scenarios, the research utilizes the TAIDA method (Lindgren & Bandhold, 2006). This type of research does not prioritize the population size or the sampling. Thus, when the collected data is already comprehensive and can explain the studied phenomenon, there is no need to seek additional sampling. In qualitative methodology, the emphasis is placed on the quality or depth of the issues discussed, rather than the quantity or volume of data. (Kriyantono, 2006). Qualitative methods will allow for a comprehensive exploration of their experiences, perspectives, and behaviors.

3.2. Data Source

The primary data for this research is obtained through the distribution of questionnaires completed by respondents and interviews with experts. Secondary data is gathered by reviewing and collecting materials from literature reviews, research studies, books, and reports.

The research is divided into two phases to collect the necessary data from the company and its employees. Quantitative surveys (Liljeström, 2019) are conducted with employees to gather responses to closed ended questions regarding optimazing logistic. The questionnaire employs a Likert scale in the form of an interval scale to measure respondents' trends, opinions, and perceptions. In this study, the Likert scale consists of five levels: 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree), allowing for the calculation of probabilities and numerical patterns, which can provide a robust, evidence-based approach to scenario planning. Questionnaires are distributed to respondents to ascertain their opinions on optimazing logistic.

A qualitative semi structured interview is utilized to delve into the reasoning behind respondents' answers and to gather more detailed responses. Additionally, direct observation of the research subjects is systematically recorded, offering a comprehensive understanding of the topic. The semi structured interview format allows for flexibility, enabling the interviewer to omit or add questions as needed during the conversation (Liljeström, 2019). The goal of the interview is to gain a detailed understanding of the company's current strategies and identify areas for improvement.

The data collected from the interviews is categorized into two themes: one based on the theoretical framework and the other on emerging models identified in the data. The research findings are presented using graphs, tables, and charts (Liljeström, 2019), providing empirical evidence and quantitative insights that complement the qualitative aspects of the study.

Understanding the Neutral Scale Option: the neutral scale option, represented by the number 3 on a 5 point Likert scale, indicates neither agreement nor disagreement with the statement being evaluated. This middle point allows respondents to express a lack of strong feeling or commitment towards the statement.

Implications for Data Analysis: neutral responses can introduce ambiguity, as they might represent genuine indifference, lack of knowledge, or indecisiveness. Understanding why respondents choose the neutral option is crucial for accurate interpretation. Additionally, high frequencies of neutral responses can skew the results towards the center, potentially masking the true sentiment distribution across the spectrum. This can be particularly challenging when looking for strong patterns or trends.

Significance in Scenario Planning: neutral responses can highlight areas where respondents are uncertain or lack sufficient information. This is valuable in scenario planning as it identifies aspects that require further investigation or clarification. Understanding where stakeholders are neutral can help in identifying balanced perspectives and formulating scenarios that consider a wide range of possibilities. Neutral responses can also signal areas of potential risk or volatility, where opinions might swing significantly with new

information or changes in the environment. These areas can be critical points of focus in developing robust scenarios.

A qualitative interview provide the possibility to understand the reasoning behind answers, as well as getting the answers in more detail. To gain a more comprehensive understanding of the topic in question, the researcher made direct observations of the research object and recorded it systematically. Semi structured interviews provide flow in the interview because they offer the possibility to eliminate or add additional questions that may arise during the interview (Liljeström, 2019). The purpose of the interview is to find out in detail what strategies the company currently uses and what things it wants to improve. Data will be collected systematically. Overall, graphs, tables, and charts help present data (Liljeström, 2019) that provide empirical evidence and quantitative insights that support the qualitative aspects of research.

3.3. Research Subject

The population in this research were PT XYZ employees and used non-probability with purposive sampling (focus on staff to manager job level). The employee survey was conducted on the whole population while interviewing only with management representatives. The interview was thematic and semi structured, meaning that the interview was divided into two themes (present and future) and had key questions that were covered. In order to give the interview direction and a sense of purpose and work as a guideline to get the most comprehensive answers from the interviewee (Liljeström, 2019).

3.4. Data Analysis

Utilizing the TAIDA framework, this study comprehensively analyzes and optimizes logistics processes within the automotive industry. The **Tracking** phase involves collecting quantitative data, such as survey results, to understand the current state of logistics. **Analyzing** this data identifies trends and inefficiencies. In the **Imaging** phase, potential future scenarios are envisioned based on the analysis. Qualitative insights are incorporated during **Deciding**, through interviews with key stakeholders like the Accounting

Department Head and GAIKINDO members, offering a deeper understanding of factors affecting logistics. Finally, **Acting** on these combined insights enables the implementation of informed strategies and best practices to enhance logistics efficiency. This integrated approach ensures a thorough and adaptive optimization process.

CHAPTER IV
FINDINGS, ANALYSIS & DISCUSSION

4.1. Introduction

The data analysis from the questionnaire, interview results, interpretation, and discussion of the research findings, will be covered in this chapter. Before calculating the answers to the questionnaires that were collected from the respondents, the questionnaire questions were grouped based on 1. Competitive Awareness and Best Practices, 2. Effectiveness and Impact of Technology in Logistics, 3. Knowledge and Awareness of Challenges, and 4. Regulatory Compliance and Adaptability metrics. Furthermore, after grouping the questionnaire questions based on motivational factors, below are data on respondents and the frequency distribution of respondents' answers to 1. Competitive Awareness and Best Practices, 2. Effectiveness and Impact of Technology in Logistics, 3. Knowledge and Awareness of Challenges, and 4. Regulatory Compliance and Adaptability.

The research was distributed in July 2024 to 103 respondents. Thus, the results of the questionnaire answers from respondents who are considered valid to be used as analysis material are as many as 90 people. The survey was done online using Google form, the data was collected using Microsoft Excel for demographic. Researcher also conducted interviews to collect data as supporting information in this research. The analysis, interpretation and discussion are carried out referring to the literature review and concept from earlier chapters and the result from interview expert logistic and focus group discussions with the management in PT XYZ.

4.2. Research Result

Interviews were conducted with experts, where some of the questions asked were as follows:

4.2.1. Expert Interview Result

Q1. What are the current challenges faced by automotive manufacturers in managing their logistic process amidst the integration of new technologies?

According to the interview with member of GAIKINDO, Mr. Shodiq Wicaksono, automotive manufacturers face numerous challenges in managing their logistics processes amidst the integration of new technologies. Such as:

1. High Implementation Costs: Significant financial investment is required for implementing new technologies such as IoT, RFID, GPS, and AGVs.
2. System Integration: Some processes in internal and vendors often have their own systems that need to be integrated with the manufacturer's logistics and production systems.
3. Infrastructure Limitations**:** Some logistics companies may lack the necessary infrastructure, such as GPS services or advanced warehousing solutions.

Overall Strategy:

- Gradually enhance existing systems to ensure they are interconnected and work seamlessly together.
- Focus on reducing human intervention and errors by transforming manual processes into digital ones.
- Plan and implement advanced technologies such as RFID, GPS, and AGVs to streamline logistics operations and improve efficiency.

  By addressing the current conditions with these improvements, PT XYZ can optimize its logistics processes, reduce costs, and enhance service levels, positioning itself as a leader in the industry.

Q2. How can the TAIDA model be applied to optimize logistic processes in the automotive industry?

TAIDA can be applied step by step as follows:

Tracking : Monitor current trends and technological advancements in the logistics sector. Gather data on logistics performance, customer demands, and supply chain disruptions.

Analyzing : Evaluate the collected data to identify inefficiencies and potential areas for improvement. Use analytical tools to forecast future trends and challenges.

Imaging : Develop various future scenarios based on the analysis. Consider different technological implementations and their potential impacts on logistics processes.

Deciding : Choose the most feasible scenarios that align with the company's strategic objectives by considering balance between operational eficiency and cost effectiveness. Develop actionable plans to implement the chosen scenarios.

Acting : Execute the chosen plans, continuously monitor their performance, and make adjustments as needed. Ensure that the logistics processes are agile and can adapt to changes quickly.

Q3. What impact does it have on operational efficiency and cost effectiveness?

According Mr. Herry H as Accounting Department Head, in terms of operational efficiency: The TAIDA model helps in identifying and eliminating inefficiencies in the logistics process, leading to faster and more reliable operations. By optimizing logistics process, firstly, improving the reliability of financial reporting plays a critical role in operational efficiency by ensuring that financial data is accurate and timely. Reliable financial information reduces the time and resources spent on correcting errors and reworking plans, enabling more streamlined decision making processes. It allows for better planning and allocation of resources, ensuring that operations run smoothly and efficiently. From a cost effectiveness perspective, accurate financial reporting helps identify opportunities for cost savings and minimizes financial risks. It enables company to avoid costly errors and make informed decisions that enhance overall financial health. This reliability also fosters trust among stakeholders, which can lead to better financial terms and investment opportunities.

Secondly, improving both internal and external efficiency means optimizing processes within the company as well as enhancing interactions with external stakeholders such as suppliers and customers. By focusing on internal efficiency, company can streamline operations, reduce bottlenecks, and enhance productivity. Improved external efficiency ensures smoother

interactions with partners and stakeholders, leading to quicker response times and better service delivery. This holistic approach to efficiency enhances operational fluidity and responsiveness. In terms of cost effectiveness, these efficiency improvements reduce operational costs by eliminating waste and enhancing productivity. Efficient processes with external parties can lead to better negotiation terms, reduced lead times, and lower costs for goods and services, thereby enhancing overall cost effectiveness. This dual focus on internal and external efficiency ensures that the organization is not only running smoothly but also positioned competitively in the market.

Q4. What are the potential scenario planning to be utilized for optimizing the logistic process and how can these scenarios be aligned with strategic business objectives to minimize potential loss and maximize efficiency?

Potential Scenario Planning for PT XYZ:

Integration of Digital Logistics and IoT Technologies

Objective: Achieve real time visibility and predictive capabilities in logistics.

Implementation:

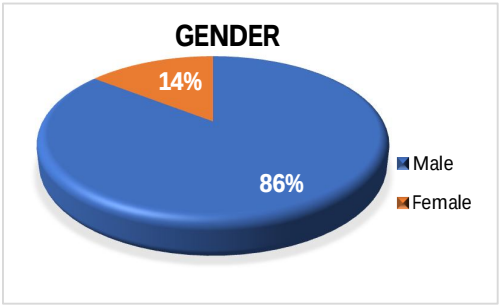
1. Implement IoT Devices and Digital Systems:
   - Install IoT Sensors: Deploy IoT sensors at critical points in the logistics process to collect real time data on inventory, shipments, and transportation.
   - Upgrade Digital Systems: Implement or upgrade digital logistics platforms to facilitate data integration and real time monitoring.
   - Connectivity: Ensure robust connectivity and communication between IoT devices and central logistics systems to enable seamless data flow.

2. Integrate AI for Enhanced Decision Making:
   - AI Integration**:** Incorporate AI algorithms into the logistics platform to analyze real time data and provide actionable insights.
   - Decision Support Tools: Develop AI driven decision support tools to assist in inventory management, route optimization, demand forecasting, and resource allocation.

- Machine Learning Models: Implement machine learning models to continually improve the accuracy of predictions and recommendations based on historical and real time data.

4.2.2. Respondent Profile

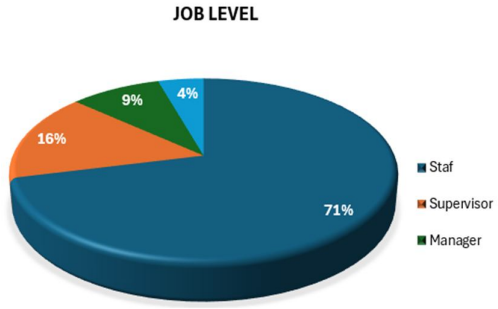
The online survey gathered sociodemographic data from 90 out from 103 respondents, including information on gender, age, directorate, working period, and job level. The main characteristics of the sample are examined using descriptive analysis and distribution frequency, as illustrated in the following figures.



Source: Employee survey PT XYZ

Figure 4.1. Result based on Gender

Figure above shows the distribution of gender, were equal by Female 14% and the rest are Male 86%.

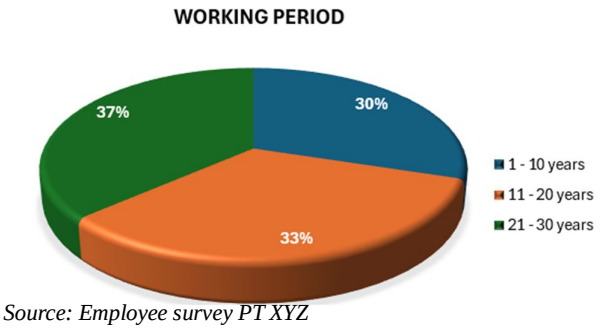


Source: Employee survey PT XYZ

Figure 4.2. Result based on Job Level

The chart underscores a workforce structure where the majority are in staff positions, a significant majority, representing 71% of the respondents, are categorized under the Staff level. This indicates that most of the individuals

surveyed hold entry level or non supervisory positions within the organization. Following this, 16% of the respondents are in supervisor roles, suggesting that a smaller yet notable portion of the workforce holds responsibilities that involve overseeing other employees. Lastly, the chart shows that 9% of respondents occupy managerial positions, indicating that a minority of the workforce is in higher level management roles.



Source: Employee survey PT XYZ

Figure 4.3 Result based on Working Period

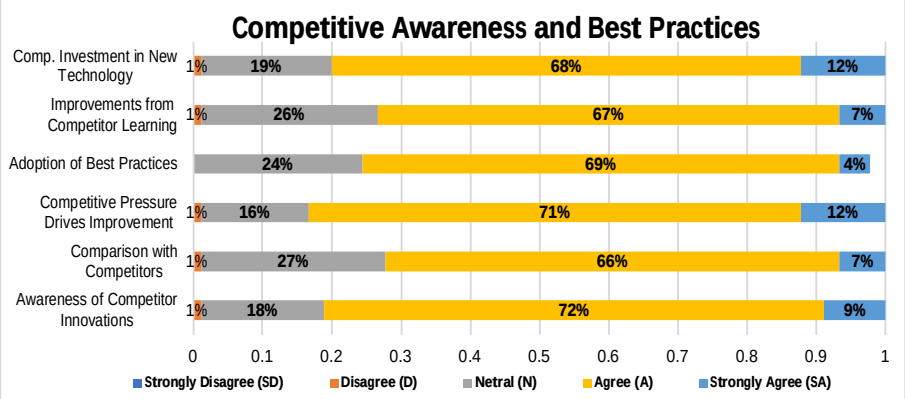
The pie chart titled "Working Period" illustrates the distribution of respondents based on their years of service within the organization. The chart is divided into three categories: 1-10 years, 11-20 years, and 21-30 years. According to the chart, 30% of the respondents have been working in the organization for 1 to 10 years, indicating a substantial portion of the workforce is relatively new or mid-career. A slightly larger group, representing 33% of the respondents, has been with the organization for 11 to 20 years, suggesting that a significant number of employees have considerable experience and longevity with the company.

The largest segment, comprising 37% of respondents, has been employed for 21 to 30 years, demonstrating that a notable portion of the workforce has long term experience and has likely contributed to the organization's growth and development over an extended period. Overall, the chart highlights a workforce with a significant representation of employees who have varying lengths of tenure, with a particular concentration in the 21 to 30 years category, suggesting a stable and experienced employee base.

4.3. Descriptive Analysis

The survey was conducted through a Google form. All questions were measured on a Likert scale (1: Strongly Disagree (SD), 2: Disagree (D), 3: Neutral (N), 4: Agree (A), 5: Strongly Agree (SA). The survey was conducted on the entire population and the total response rate of the survey was 75%. All questions were divided into 4 sections. All questions have been answered comprehensively to know understand the current state of digital transformation in logistics and market dynamics in PT XYZ.

4.3.1.Competitive Awareness and Best Practices



Source: Employee survey PT XYZ

Figure 4.4. Competitive Awareness and Best Practices

The survey results on competitive awareness and best practices at PT XYZ reveal significant insights into the company's strategic positioning and operational effectiveness.

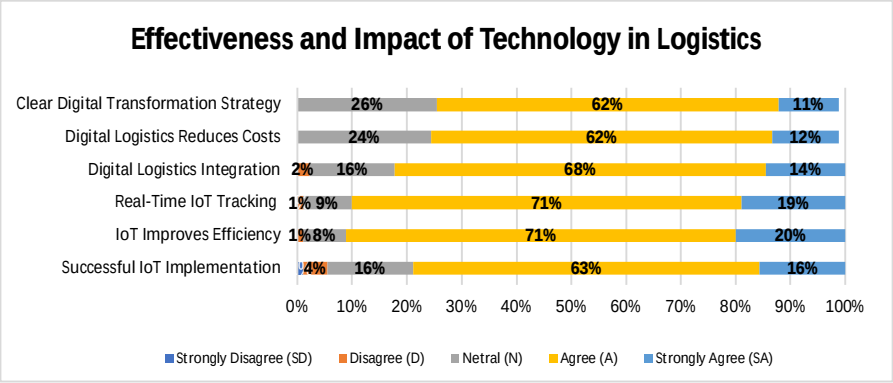
1. Firstly, the majority of respondents (68%) agree and 12% strongly agree that there is substantial investment in new technology, indicating a positive perception of the company’s commitment to technological advancement. However, 19% remain neutral, suggesting a portion of employees may not be fully aware of or convinced by these investments.
2. Regarding improvements from competitor learning, 67% of respondents agree and 7% strongly agree that PT XYZ benefits from learning from its competitors. With 26% remaining neutral, it implies that while most employees see the value in this approach, there is still a considerable group

that may need further engagement or information on how competitor learning is implemented and its benefits.

3. The adoption of best practices is viewed positively by 69% of respondents who agree and 4% who strongly agree. However, 24% remain neutral, indicating that the communication or implementation of best practices may need to be enhanced to ensure wider acknowledgment and acceptance among employees.
4. Competitive pressure as a driver for improvement is acknowledged by 71% of respondents who agree and 12% who strongly agree. With 16% remaining neutral, this suggests a generally strong recognition of the benefits of competitive pressure, though some employees might not fully see its impact or need more information on how it drives improvements within the company.
5. The practice of comparing with competitors is agreed upon by 66% of respondents, with 7% strongly agreeing. However, 27% remain neutral, highlighting a significant portion of employees who might not be fully engaged in or aware of benchmarking activities. This could indicate a need for better communication or involvement in competitive analysis processes.
6. Awareness of competitor innovations is high, with 72% of respondents agreeing and 9% strongly agreeing. Yet, 18% remain neutral, which suggests that while there is strong awareness overall, there is still room to enhance communication regarding competitor activities and innovations to ensure all employees are well informed.

In summary, the survey results demonstrate a strong overall awareness and positive perception of competitive practices and best practices at PT XYZ. While the majority of employees recognize the company's efforts in investing in new technology, learning from competitors, adopting best practices, and leveraging competitive pressure, the neutral responses point to areas for further engagement and communication. Addressing these gaps can enhance the company's competitive edge and ensure that all employees are aligned with and supportive of the company's strategic initiatives.

4.3.2. Effectiveness and Impact of Technology in Logistics



Source: Employee survey PT XYZ

Figure 4.5. Effectiveness and Impact of Technology in Logistics

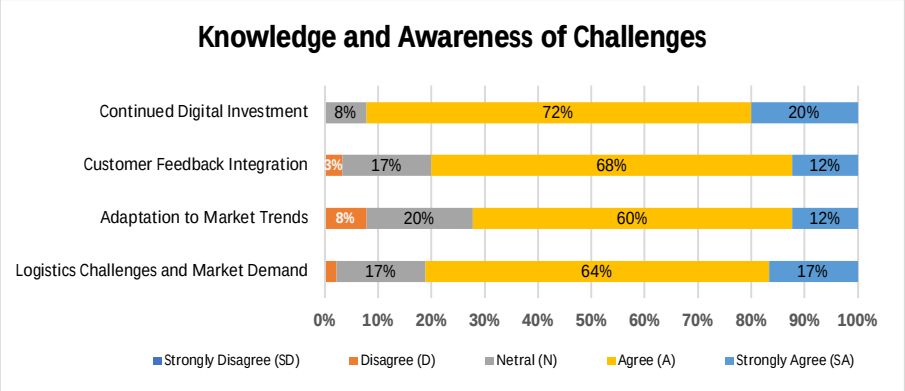
1. The survey results on the effectiveness and impact of technology in logistics at PT XYZ reveal several key insights. Firstly, a significant majority of respondents (62%) agree and 11% strongly agree that there is a clear digital transformation strategy in place. However, 26% remain neutral, indicating that while the strategy is well received, there is still a portion of the workforce that may not be fully aware of or engaged with it.
2. When it comes to the cost reducing benefits of digital logistics, 62% of respondents agree and 12% strongly agree that digital logistics reduces costs, with 24% remaining neutral. This suggests a positive perception of the cost benefits of digital logistics, though there is room for further communication or education on its advantages to address the neutral responses.
3. Digital logistics integration is also viewed positively, with 68% of respondents agreeing and 14% strongly agreeing. However, 16% remain neutral and a small percentage (2%) disagree, indicating that while integration efforts are largely successful, there may be some challenges or areas needing improvement to achieve full alignment.
4. The implementation of real time IoT tracking is highly regarded, with 71% agreeing and 19% strongly agreeing on its effectiveness. Only 9% remain neutral, and no significant disagreement is observed, suggesting that real

time IoT tracking is widely recognized as a valuable tool for enhancing logistics operations.

5. IoT's impact on improving efficiency is similarly well received, with 71% agreeing and 20% strongly agreeing. A minimal 8% remain neutral, indicating strong overall support and recognition of IoT's benefits in driving efficiency within the logistics process. Lastly, the successful implementation of IoT is acknowledged by 63% of respondents who agree and 16% who strongly agree. However, 16% remain neutral and a small portion (4%) disagree, highlighting that while IoT implementation is largely seen as successful, there may be isolated issues or areas where further refinement is needed.

In summary, the survey results indicate a generally positive perception of the effectiveness and impact of technology in PT XYZ's logistics process. While the majority of respondents recognize the benefits of digital transformation, digital logistics, and IoT in reducing costs and improving efficiency, the neutral and minor disagreement responses suggest that there is still work to be done in fully engaging all employees and addressing any remaining challenges in technology implementation.

4.3.3. Knowledge and Awareness of Challenges



Source: Employee survey PT XYZ

Figure 4.6. Knowledge and Awareness of Challenges

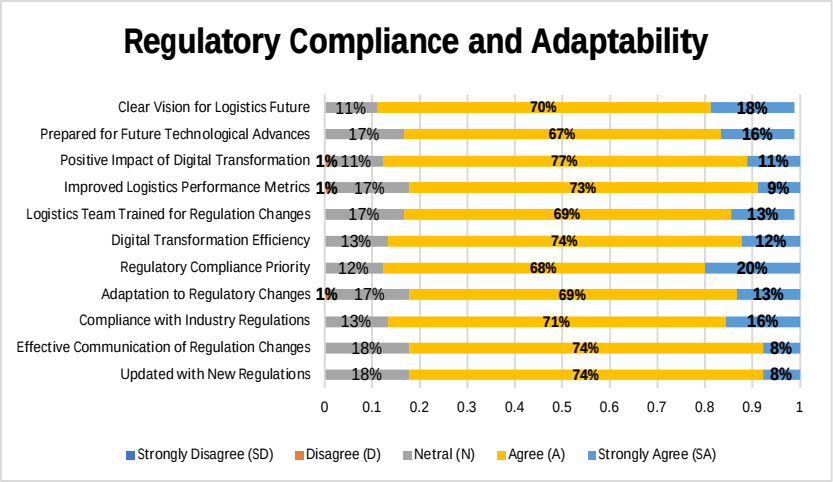
1. The survey results on knowledge and awareness of challenges at PT XYZ provide important insights into the employees' perspectives on key issues.

The majority of respondents (72%) agree and 20% strongly agree on the importance of continued digital investment. However, 8% remain neutral, indicating that while there is a strong consensus on the need for ongoing digital investment, there is a small segment of the workforce that may not be fully convinced or aware of its critical importance.

2. In terms of customer feedback integration, 68% of respondents agree and 12% strongly agree that this is effectively managed. However, 17% remain neutral and 3% disagree, suggesting that while most employees recognize the value of integrating customer feedback, there is still a notable portion that either lacks awareness or sees room for improvement in how feedback is incorporated into operations.
3. Adaptation to market trends is another area where the responses show a positive trend, with 60% agreeing and 12% strongly agreeing that the company is responsive to market changes. Nonetheless, 20% remain neutral and 8% disagree, highlighting that a significant minority of employees may feel the company could be more agile or proactive in adapting to market trends.
4. Regarding logistics challenges and market demand, 64% of respondents agree and 17% strongly agree that these challenges are well understood and addressed within the company. However, 17% remain neutral and 2% disagree, indicating that while there is a general agreement on the awareness of logistics challenges and market demand, further efforts might be necessary to fully align all employees on these critical issues.

In summary, the survey results indicate a strong overall awareness and recognition of the importance of continued digital investment, customer feedback integration, adaptation to market trends, and understanding logistics challenges and market demand at PT XYZ. Despite this, the neutral and minor disagreement responses suggest there are opportunities to further engage and educate employees on these topics, ensuring a more cohesive and informed workforce that is fully aligned with the company’s strategic objectives.

4.3.4. Regulatory Compliance and Adaptability



Source: Employee survey PT XYZ

Figure 4.7. Regulatory Compliance and Adaptability

The survey results on regulatory compliance and adaptability at PT XYZ provide valuable insights into the company's current standing and areas for improvement.

1. A significant majority of respondents (70%) agree and 18% strongly agree that there is a clear vision for the future of logistics, with only 11% remaining neutral. This indicates a strong consensus on the direction of the company's logistics strategy.
2. Regarding preparedness for future technological advances, 67% agree and 16% strongly agree, while 17% remain neutral. This suggests that while most employees feel the company is prepared, there is still a portion that may need further information or reassurance about future technological advancements.
3. The positive impact of digital transformation is widely acknowledged, with 77% agreeing and 11% strongly agreeing. Only a small percentage (11%) remain neutral, indicating that the benefits of digital transformation are well recognized across the company.
4. Improved logistics performance metrics are also viewed favorably, with 73% agreeing and 9% strongly agreeing. However, 17% remain neutral, suggesting that there may be opportunities to further communicate or enhance the visibility of performance improvements.

5. Training the logistics team for regulatory changes is seen positively by 69% of respondents who agree and 13% who strongly agree, though 17% remain neutral. This indicates a need for ongoing training and communication to ensure all employees feel adequately prepared for regulatory changes.
6. Digital transformation efficiency is recognized by 74% of respondents who agree and 12% who strongly agree, with 13% remaining neutral. This highlights general satisfaction with the efficiency gains from digital transformation efforts, though some employees may require further engagement.
7. Regulatory compliance is considered a priority by 68% of respondents who agree and 20% who strongly agree. However, 12% remain neutral, indicating that while compliance is prioritized, there may be a need to reinforce its importance to all employees.
8. Adaptation to regulatory changes is seen positively by 69% of respondents who agree and 13% who strongly agree, with 17% remaining neutral. This suggests that while adaptation is generally well managed, there is room for improvement in ensuring all employees are fully engaged with these changes.
9. Compliance with industry regulations is acknowledged by 71% of respondents who agree and 18% who strongly agree, though 13% remain neutral. This indicates strong compliance efforts, with a small segment of employees needing further clarity or communication.
10. Effective communication of regulation changes is recognized by 74% of respondents who agree and 8% who strongly agree, with 18% remaining neutral. This highlights effective communication practices, though continued efforts are needed to ensure all employees are informed.
11. Finally, being updated with new regulations is viewed positively by 74% of respondents who agree and 8% who strongly agree, with 18% remaining neutral. This indicates that most employees feel well-informed about regulatory updates, but there is still a portion that could benefit from more timely or detailed information.

In summary, the survey results demonstrate strong overall awareness and positive perceptions regarding regulatory compliance and adaptability at PT XYZ. While the majority of employees recognize the company's efforts in these areas, there are opportunities to further engage and inform those who remain neutral to ensure a fully aligned and informed workforce.

4.4. Discussion

The findings reveal a strong awareness and positive perception of PT XYZ's competitive practices and the adoption of best practices in logistics. Most employees recognized the company's investments in new technology and the advantages of learning from competitors. However, some gaps in communication and engagement were identified, with a notable portion of employees remaining neutral on several topics, suggesting areas where awareness and understanding could be improved.

In terms of the effectiveness and impact of technology in logistics, the results indicate a generally favorable view among employees. The majority acknowledged the benefits of digital transformation and IoT integration in reducing costs and enhancing efficiency. Nevertheless, the presence of neutral and minor disagreement responses points to a need for further efforts to fully engage employees and address any remaining challenges associated with technology implementation.

The survey also highlighted strong awareness and positive perceptions regarding regulatory compliance and adaptability within PT XYZ. Most respondents agreed that the company has a clear vision for its logistics strategy and is well-prepared for future technological advancements. However, some employees remained neutral on aspects of regulatory compliance, indicating a need for ongoing training and communication to ensure all employees are fully informed and aligned with the company's compliance efforts. Overall, while the research findings present a positive outlook on PT XYZ's logistics strategies and operations, further engagement and communication will be essential to enhance employee support for the company's strategic objectives and maintain a competitive edge in the industry.

4.5. Scenario Planning

1) Tracking

The tracking phase reveals that high neutrality is a pervasive issue, indicating uncertainty or lack of clear strategies across several critical areas. Companies need to prioritize clear digital transformation strategies, effective communication, and proactive measures in technology adoption and regulatory compliance. Improving training programs, integrating customer feedback, and better adapting to market trends are essential steps for enhancing operational efficiency and maintaining a competitive edge in the logistics landscape. Addressing these areas can help companies better navigate future challenges and capitalize on opportunities.

The survey results provide a detailed overview of current company conditions across several critical areas: Competitive Awareness and Best Practices, Effectiveness and Impact of Technology in Logistics, Knowledge and Awareness of Challenges, and Regulatory Compliance and Adaptability. The high level of neutral responses indicates several common themes: uncertainty, lack of clear communication, and insufficient strategic direction.

1. Competitive Awareness and Best Practices.
   - High Neutrality: There is significant uncertainty or lack of clear communication and strategy within companies regarding investment in new technology, improvements from competitor learning, and adoption of best practices.
   - Investment and Learning: With 68% of respondents neutral about new technology investments and learning from competitors, companies may not be fully leveraging these opportunities for growth and improvement.
   - Best Practices and Competitive Pressure: The adoption of best practices (68% neutral) and the role of competitive pressure in driving improvement (70% neutral) show a need for more proactive measures and strategic implementation to stay competitive.
2. Effectiveness and Impact of Technology in Logistics.
   - Digital Transformation Strategy: A significant 66% of respondents are neutral about having a clear digital transformation strategy, with 23%

disagreeing, indicating a lack of direction and effective planning in digital initiatives.

- Cost Reduction and Integration: The neutrality about digital logistics reducing costs (61%) and integrating digital logistics (70%) reflects skepticism about the financial and operational benefits of these technologies.
- IoT Benefits: High neutrality in real time IoT tracking (69%) and IoT efficiency improvements (74%) suggests cautious optimism but underscores the need for more tangible results and better communication of benefits.

3. Knowledge and Awareness of Challenges.
   - Digital Investment and Customer Feedback: The high neutrality regarding continued digital investment (73%) and customer feedback integration (71%) points to a lack of focus and emphasis on these critical areas.
   - Adaptation to Market Trends: While 64% agree on the importance of adapting to market trends, 22% remain neutral, indicating that implementation of these adaptations could be more robust.
   - Logistics Challenges: The 68% neutral response regarding logistics challenges and market demand suggests that companies might underestimate these factors, impacting their readiness and response strategies.
4. Regulatory Compliance and Adaptability.
   - Vision and Preparedness: The neutrality about having a clear vision for logistics' future (71%) and being prepared for technological advances (70%) indicates a need for better strategic planning and communication.
   - Digital Transformation and Performance Metrics: High neutrality about the positive impact of digital transformation (76%) and improved logistics performance metrics (74%) suggests outcomes of these initiatives are unclear or unimproved.
   - Training and Compliance: The high neutrality about logistics team training for regulation changes (69%) and compliance with industry

regulations (71%) indicates insufficient focus on training and adherence to standards.

- Communication and Updates: The effective communication of regulation changes (73% neutral) and staying updated with new regulations (78% neutral) highlight significant areas needing improvement.

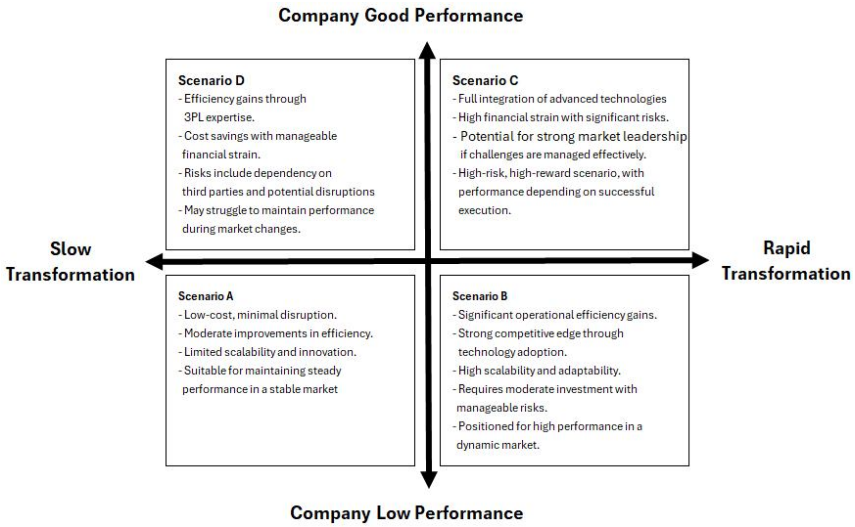
Overall, the research reveals a pervasive issue of high neutrality among respondents, indicating uncertainty or a lack of clear strategies across several critical areas within PT XYZ. The findings emphasize the need for companies to prioritize clear digital transformation strategies, effective communication, and proactive measures in technology adoption and regulatory compliance.

Survey results highlight significant neutrality in areas such as **Competitive Awareness and Best Practices**, with many respondents uncertain about new technology investments, competitor learning, and the adoption of best practices. In the **Effectiveness and Impact of Technology in Logistics**, there is a notable lack of direction and effective planning in digital initiatives, reflected in the high neutrality regarding digital transformation strategies, cost reduction, and IoT benefits.

Regarding **Knowledge and Awareness of Challenges**, the neutrality surrounding digital investment and customer feedback integration suggests a lack of focus on these crucial aspects. Additionally, while some agree on the importance of adapting to market trends, neutrality in this area indicates that implementation could be more robust. Finally, in **Regulatory Compliance and Adaptability**, high neutrality indicates insufficient strategic planning, training, and communication regarding regulatory changes and the future vision for logistics. Addressing these areas is essential for companies to enhance operational efficiency, stay competitive, and navigate future challenges effectively.

2) Analysis

After done with tracking, the next step is analysis. This stage aims to analyze the consequences that can arise due to the existence of challenges and opportunities.



Source: Survey result of PT XYZ

Figure 4.8. Scenario Matrix

Based on the scenario matrix above, we can consider the potential outcomes of different levels of transformation speed and company performance to drive positive organizational performance.

1. Scenario A: Incremental Improvement

   Description: Minor upgrades to existing systems and processes, focusing on low-cost solutions.

   The Incremental Improvement scenario involves minor upgrades to existing systems and processes, focusing on low-cost solutions. The strengths of this approach include minimal investment required, reducing financial strain, lower risk of operational disruptions and data breaches, easier acceptance by employees, and compliance with existing regulations. However, its weaknesses lie in limited improvements in efficiency and customer satisfaction, with only slight enhancements and limited scalability. Opportunities in this scenario include moderate cost savings and service improvements, slight improvements in asset utilization through basic IoT solutions, a slight increase in customer loyalty, and a minor competitive edge. The threats include the potential for current systems to become obsolete and missed opportunities for significant improvements.

Impact: The Incremental Improvement scenario requires minimal investment, significantly reducing financial strain and allowing better allocation of the operational budget to other critical areas, enhancing overall financial health. Operationally, this approach lowers the risk of disruptions and data breaches, ensuring smoother day to day operations and maintaining business continuity. It also facilitates easier acceptance by employees, reducing training time and resistance to implementation. Regulatory compliance is maintained, avoiding potential legal issues and fines, which preserves the company's reputation and operational legality. However, while some efficiency improvements are achieved, they are not substantial enough to significantly impact overall productivity. Slight enhancements in systems and processes may not dramatically improve customer satisfaction, potentially leading to stagnation in customer experience. In conclusion, while the Incremental Improvement scenario provides immediate financial and operational benefits with minimal investment and risk, its limited scalability and impact on customer satisfaction underscore the need for balanced, strategic planning to ensure long term competitiveness and future readiness.

Strategic implications

Financial Management:

- Budget Allocation: Prioritize budget for minor upgrades that offer the highest ROI. Ensure strict financial controls to maintain minimal investment.
- Cost Benefit Analysis: Conduct regular cost benefit analyses to ensure the minor improvements are financially justified and aligned with organizational goals.

Operational Efficiency:

- Lean Management Practices: Implement lean management practices to identify and eliminate waste, thus improving efficiency within the existing system constraints.
- Process Optimization: Focus on optimizing existing processes through incremental changes such as refining workflows and reducing bottlenecks.

Technology Integration:

- Basic IoT Solutions: Integrate basic IoT solutions to enhance asset utilization without incurring high costs. For example, use IoT sensors for real-time monitoring of critical assets.
- Software Upgrades: Implement software upgrades that enhance functionality without requiring significant hardware changes.

Risk Management:

- Risk Mitigation Plans: Develop risk mitigation plans to address potential operational disruptions and data breaches associated with the minor upgrades.
- Future Proofing: While the focus is on minor upgrades, maintain a forward looking approach by periodically reviewing the scalability and future proofing of current system.

2. Scenario B: Digital Integration

   Description: Implementing IoT and other digital technologies for real time tracking and predictive maintenance.

   The Digital Integration scenario involves implementing IoT and other digital technologies for real time tracking and predictive maintenance. This approach offers significant strengths such as substantial improvements in operational efficiency, extensive implementation of real time tracking and predictive maintenance, noticeable service improvements leading to higher customer loyalty, a strong edge over competitors, and high scalability and adaptability. Weaknesses include moderate investment required with manageable financial strain, moderate risk of integration challenges and operational disruptions, increased risk of cyber threats, and some employee resistance. The opportunities include substantial cost savings and service enhancements, greatly improved asset utilization, and a strengthened market position. Threats involve a higher compliance burden with new systems and potential financial strain if not managed properly.

   Impact: This approach offers significant strengths, including substantial improvements in operational efficiency, extensive implementation of real-

time tracking and predictive maintenance, and noticeable service improvements leading to higher customer loyalty. Additionally, it provides a strong edge over competitors and ensures high scalability and adaptability, making the system future proof and responsive to changing market conditions. However, there are notable weaknesses to consider. The moderate investment required, while manageable, could impose a financial strain, particularly if not meticulously planned and executed. The integration of these advanced technologies also presents moderate risks of operational disruptions and integration challenges, potentially affecting day to day operations during the transition period. Furthermore, the increased risk of cyber threats necessitates robust cybersecurity measures to protect sensitive data and system integrity. Employee resistance to new technologies might also pose a challenge, requiring effective change management strategies to ensure smooth adoption.

Strategic implications

Investment Management:

- Financial Planning: Develop a comprehensive financial plan to ensure moderate investment is allocated efficiently. Prioritize spending on high impact areas of digital integration.
- Cost Management: Implement cost-control measures to prevent financial strain, including phased implementation to spread out costs over time.

Operational Efficiency:

- IoT and Predictive Maintenance: Fully integrate IoT devices and predictive maintenance systems to enhance real-time tracking, reduce downtime, and improve overall operational efficiency.
- Process Automation: Automate repetitive tasks to streamline operations and free up resources for more strategic activities.

Integration Process:

- Pilot Programs: Start with pilot programs to test and refine the integration of new technologies before a full scale rollout. This helps identify and address potential issues early.

- Vendor Partnerships: Partner with experienced technology vendors who can provide expertise and support during the integration process.

Compliance and Risk Management:

- Regulatory Compliance: Stay updated on regulatory changes and ensure that all new systems comply with the latest standards. Allocate resources for compliance audits and necessary adjustments.
- Risk Assessment: Conduct regular risk assessments to identify and mitigate potential operational disruptions and financial risks associated with the integration process.

3. Scenario C: Transformational Change

   Description: Comprehensive overhaul of logistics processes, integrating advanced technologies and partnerships with 3PL providers.

   The Transformational Change scenario entails a comprehensive overhaul of logistics processes, integrating advanced technologies and partnerships with 3PL providers. This scenario's strengths are maximum improvements in operational efficiency, full implementation of advanced technologies, dramatic service improvements leading to the highest customer loyalty, a major edge over competitors, and maximum scalability and adaptability. However, it requires significant investment, leading to high financial strain, high risk of integration challenges and operational disruptions, very high risk of cyber threats, and high employee resistance. Opportunities include the greatest cost savings and service excellence, optimal asset utilization, and a leading market position. Threats are associated with a high compliance burden and financial strain if funding and ROI are not managed well.

   Impact: This approach promises maximum operational efficiency, significant service improvements, heightened customer loyalty, and a strong competitive edge due to high scalability and adaptability. However, it requires substantial investment, poses financial strain, and faces high risks of integration challenges, cyber threats, and employee resistance. Opportunities include significant cost savings, optimal asset utilization, and a leading market position, while threats involve a high compliance burden and potential

financial strain if funding and ROI are not managed effectively. To maximize benefits and mitigate risks, strategic applications should include robust financial planning, comprehensive integration strategies, enhanced cybersecurity measures, extensive employee training and engagement, and diligent regulatory compliance. This balanced approach aims to achieve significant improvements in efficiency and market positioning while managing associated challenges.

Strategic implementation:

Investment and Financial Management:

- Strategic Investment Planning: Develop a detailed financial plan to allocate the significant investment required efficiently. Prioritize high-impact areas to ensure the greatest return on investment (ROI).
- Funding Strategies: Explore diverse funding sources, including venture capital, strategic partnerships, and government grants, to support the substantial financial investment.

Operational Efficiency and Advanced Technologies:

- Technology Roadmap: Create a comprehensive technology roadmap that outlines the implementation phases of advanced technologies. This helps manage the integration process and ensure alignment with organizational goals.
- Process Reengineering: Conduct thorough process reengineering to align logistics processes with new technologies. This includes redesigning workflows, optimizing supply chains, and integrating with 3PL providers.

Cybersecurity:

- Enhanced Cybersecurity Measures: Implement robust cybersecurity measures to protect against the very high risk of cyber threats. This includes advanced encryption, multi factor authentication, and regular security audits.
- Cyber Incident Response Plan: Develop and regularly update a cyber incident response plan to quickly address and mitigate potential cyber threats.

Change Management and Employee Engagement:

- Comprehensive Training Programs: Develop extensive training programs to equip employees with the skills and knowledge needed to adapt to new technologies and processes.
- Change Champions: Identify and empower change champions within the organization who can advocate for the transformation and help address employee resistance.

4. Scenario D: Strategic Partnership and Outsourcing

   Description: Partnering with third party logistics (3PL) providers and outsourcing logistics functions.

   The Strategic Partnership and Outsourcing scenario involves partnering with third party logistics (3PL) providers and outsourcing logistics functions. This approach's strengths include significant efficiency gains through 3PL expertise, improved service levels and customer satisfaction, high scalability and flexibility, and manageable financial strain through partnerships. Its weaknesses are moderate investment in partnership setups, potential disruptions during transition, higher risk of data breaches due to third-party involvement, and some impact on employee morale and productivity. Opportunities include substantial cost savings, improved asset utilization through collaboration with 3PL providers, and maintenance of a competitive position. Threats involve shared compliance burden with 3PL providers and dependence on third-party providers for maintaining service standards.

   Impact: This approach provides high scalability and flexibility with manageable financial strain due to the partnership model. However, it requires moderate investment in setting up partnerships and may cause potential disruptions during the transition phase. The involvement of third-party providers raises the risk of data breaches and may impact employee morale and productivity. The opportunities presented by this scenario include substantial cost savings, improved asset utilization through collaboration with 3PL providers, and the maintenance of a competitive market position. Nevertheless, threats include a shared compliance burden

with 3PL providers and dependence on these third parties for maintaining service standards, which could compromise the company's control over its logistics operations.

Strategic implication:

Partnership Management:

- Careful Partner Selection: Conduct thorough due diligence to select reputable and reliable 3PL providers with a proven track record.
- Clear SLAs: Establish clear Service Level Agreements (SLAs) with defined performance metrics to ensure high service standards are maintained.

Transition Planning:

- Phased Transition: Implement a phased transition plan to gradually shift logistics functions to 3PL providers, minimizing potential disruptions.
- Contingency Plans: Develop contingency plans to address any issues that arise during the transition period.

Data Security:

- Robust Data Protection: Implement robust data protection measures, including encryption and access controls, to mitigate the higher risk of data breaches.
- Vendor Security Audits: Regularly audit 3PL providers' security practices to ensure compliance with data protection standards.

Financial Management:

- Cost Benefit Analysis: Conduct detailed cost benefit analyses to ensure the investment in partnership setups is justified and aligned with financial goals.
- Budgeting: Allocate budget for initial setup costs and monitor ongoing expenses to ensure financial strain remains manageable.

Operational Efficiency:

- Leverage 3PL Expertise: Utilize the expertise of 3PL providers to streamline logistics processes and achieve significant efficiency gains.

- Collaborative Planning: Engage in collaborative planning with 3PL providers to optimize asset utilization and improve overall logistics performance.

Compliance and Risk Management:

- Shared Compliance Responsibility: Clearly define the compliance responsibilities of both the organization and 3PL providers to ensure all regulatory requirements are met.
- Regular Compliance Checks: Conduct regular compliance checks and audits to ensure adherence to regulatory standards.

Maintaining Competitive Position:

- Continuous Improvement: Encourage continuous improvement initiatives with 3PL providers to maintain high service levels and a competitive edge.

Each scenario presents unique strengths, weaknesses, opportunities, and threats. Decision makers should carefully consider these factors to choose the optimal approach for enhancing logistics processes. Incremental improvements offer low cost, low risk enhancements, while digital integration and transformational change provide significant efficiency gains but require higher investments and risk management. Strategic partnerships offer a balance between cost savings and operational flexibility, contingent on effective collaboration with 3PL providers.

3) Imaging

On the next step, imaging involves envisioning how the company can shape a desired future by drawing from the four scenarios previously outlined. By developing a visionary statement that encapsulates the ideal future outcomes based on these scenarios, the organization can establish a clear direction and source of inspiration. The company's vision is to cultivate a dynamic and resilient organizational culture, where high levels of motivation and engagement fuel exceptional performance and innovation. This will position the company as a leader in the reinsurance industry. Together, we will turn challenges into opportunities, ensuring that our company not only thrives but also leaves a lasting impact on the industry

In Scenario A, PT XYZ will achieve a streamlined logistics process with minor but impactful upgrades, ensuring cost effective operations and enhanced service levels. By leveraging existing resources and optimizing current processes, we will create a stable and efficient logistics system that meets our immediate needs and sets the foundation for future advancements. Our commitment to gradual improvements will maintain operational continuity and foster a culture of continuous enhancement.

In Scenario B, PT XYZ envisions a future where digital integration transforms our logistics operations into a model of efficiency and innovation. By fully embracing IoT technologies and digital logistics solutions, we will achieve real-time visibility, predictive maintenance, and significant cost savings. Our logistics processes will be highly responsive, data driven, and aligned with market demands, setting a new standard in the industry.

In Scenario C, PT XYZ will undergo a comprehensive transformation of our logistics operations, embracing cutting edge technologies and innovative practices to become a leader in the automotive industry. This transformational change will result in maximum efficiency, unparalleled service levels, and a resilient logistics system capable of adapting to any market condition. Our bold approach will redefine industry standards and position us at the forefront of logistics excellence.

In Scenario D, PT XYZ will leverage strategic partnerships and outsourcing to optimize our logistics operations. By collaborating with top tier 3PL providers, we will enhance our operational capabilities, achieve greater scalability, and focus on our core competencies. This strategic approach will enable us to deliver superior service, reduce costs, and quickly adapt to market changes, ensuring long-term sustainability and success.

Envisioning PT XYZ's logistics future through four scenarios (Incremental Improvement, Digital Integration, Transformational Change, and Strategic

Partnership and Outsourcing) provides a robust roadmap for adaptation and success. Each scenario offers distinct pathways to achieving desired outcomes, from cost efficiency and operational stability to enhanced customer satisfaction and competitive advantage. Incremental Improvement focuses on minor yet impactful upgrades for stability and gradual enhancement. Digital Integration leverages IoT and digital solutions for real time tracking and significant efficiency gains. Transformational Change embraces cutting edge technologies for maximum efficiency and industry leadership. Strategic Partnership and Outsourcing optimize operations through 3PL collaborations for scalability and cost reduction. By strategically navigating these scenarios, PT XYZ can enhance its logistics processes, ensuring long term operational excellence, customer satisfaction, and a strong market position.

4) Deciding

Deciding is the phase where all insights from the scenarios come together to form a coherent strategy that addresses the complexities and rapid changes in the environment. This phase involves evaluating the feasibility, impact, and alignment of each scenario with PT XYZ's strategic goals, ultimately selecting the most suitable strategy for implementation.

Overall Situation Analysis

PT XYZ is navigating a complex and rapidly evolving environment characterized by technological advancements, market dynamics, competitive pressures, and regulatory changes. In alignment with PT XYZ's vision of building a reliable business chain through mutual partnerships and digitalization, the goal is to enhance logistics processes to improve efficiency, reduce costs, and increase service level. Each of the four scenarios offers unique approaches and outcomes, and the decision making process must consider the pros and cons of each.

Evaluating the Scenarios

Researcher evaluates the scenario as follows:

Table 4.1. Evaluating the Scenario

Scenario	Pros	Cons
A: Incremental Improvement	- Low-cost implementation with minimal financial strain. - Easy to manage with existing resources. - Low resistance to change among employees.	- Limited impact on overall efficiency and competitiveness. - Slow pace of improvement may not keep up with market changes.
B: Digital Integration	- Significant improvements in efficiency and cost savings. - Enhanced real-time tracking and predictive maintenance. - Strong competitive advantage through technology adoption.	- Moderate financial investment required. - Potential integration challenges and data security risks. - Moderate resistance to change among employees.
C: Transformational Change	- Maximum improvements in efficiency and service levels. - Strongest competitive position with industry-leading practices. - High scalability and adaptability to market changes.	- High financial investment and implementation complexity. - Significant risk of operational disruptions and data security issues. - High resistance to change, requiring extensive change management.
D: Strategic Partnership and Outsourcing	- Significant efficiency gains through 3PL expertise. - High scalability and flexibility. - Reduced operational costs and focus on core competencies.	- Moderate financial investment and dependency on 3PL providers. - Potential data security and compliance risks with third parties. - Moderate resistance to change among employees.

Source: Survey result of PT XYZ

After analyzing the four scenarios Incremental Improvement, Digital Integration, Transformational Change, and Strategic Partnership and Outsourcing, it's clear that each offers unique advantages and addresses specific challenges. Each scenario (Incremental Improvement, Digital Integration, Transformational Change, and Strategic Partnership and Outsourcing) offers unique benefits and challenges. Scenario A is a low risk option with limited impact, Scenario C is highly transformative but comes with significant risks, and Scenario D emphasizes operational flexibility at the cost of increased dependency on external partners.

The most suitable strategy is Scenario B: Digital Integration. It offers a balanced approach by promoting internal development, reducing dependency on external partners, and enhancing operational efficiency through technological advancement. This scenario aligns with PT XYZ's goals of maintaining control over logistics operations and data security while achieving significant efficiency improvements and cost savings. Thus, Digital Integration emerges as the most robust framework for ensuring PT XYZ's long term success and competitive advantage in a rapidly evolving environment. This makes it more advantageous compared to Strategic Partnership and Outsourcing, which relies heavily on external partnerships and may face significant risks due to dependency on third-party providers.

5) Acting

The final stage in scenario planning, as described by Lindgren and Bandhold (2009), is the Acting stage. This stage involves the establishment of short-term goals, initiating the first steps, and diligently following up on actions taken. It focuses on the practical implementation of development strategies aimed at optimizing logistics processes, which are expected to significantly impact organizational performance. Implementation Timeline for PT XYZ (2024-2026) as below:

Table 4.2. Implementation Timeline

Year	Schedule	Activities	Detail Activities
2024	Q3	**Survey and Review Current Process**	- Survey: Conduct a comprehensive survey of current logistics processes, technologies in use, and stakeholder requirements.
			- Review Current Process: Analyze existing logistics workflows, identify bottlenecks, and assess current performance metrics.
	Q4	**Define Scope**	Clearly outline the scope of each scenario, including objectives, expected outcomes, and specific areas for improvement.
2025	Q1	**Vendor Selection**	Identify and evaluate potential vendors. Conduct vendor assessments and select the best fit for each scenario.
	Q2	**Fit and Gap**	**Fit and gap between system and business requirements**
	Q3 - Q4	**Realization**	- Custom Development - Configuration of the finished application
			1. Preparation - Develop detailed implementation plans for each scenario.
			- Engage stakeholders (suppliers, customers, employees) to ensure alignment and support.
			- Finalize contracts with selected vendors.
			2. Preparation - Set up necessary software, hardware, application, etc.
			- Configure software and hardware solutions.
			- Prepare pilot sites (warehouses, distribution centers) for initial testing
			- Begin pilot testing for each scenario in selected sites.
			- Collect data and feedback from initial implementation.
			- Make necessary adjustments based on pilot results.
			- Expand implementation to additional sites based on pilot success.
			- Continue monitoring performance and gather comprehensive data.
			- Ensure continuous stakeholder engagement and support.
			- Complete full implementation in all relevant sites.
			- Finalize integration with existing systems and processes.
			- Conduct extensive data analysis to measure impact and performance improvements.
			Full Implementation - Ensure all systems are fully operational and optimized.
			- Address any remaining issues or challenges.
			- Prepare detailed reports on the outcomes and benefits of the implementation.
2026	Q1	**Training and Development**	- Develop comprehensive training programs for employees on new technologies and processes.
			- Conduct training sessions and workshops.
			- Ensure all employees are proficient in managing and operating new systems.
	Q2	**Next Phase Development**	- Foster a culture of continuous improvement and innovation.
			- Encourage feedback and suggestions from employees for further enhancements.
			- Plan for keep up with technological advancements.
			- Run for next phase for other Department to standardize process.

Source: Survey result of PT XYZ

CHAPTER V
CONCLUSION & RECOMMENDATIONS

5.1. Conclusion

This thesis explored and optimized the logistics processes at PT XYZ, focusing on identifying inefficiencies, integrating IoT technologies, and applying scenario planning. The research aimed to explore current logistics processes, utilize the TAIDA model for logistical improvements, optimize logistics under future industry conditions through scenario planning, and propose tailored recommendations aligned with PT XYZ's strategic goals.

The first objective was to assess PT XYZ's current logistics processes, identifying inefficiencies and challenges, particularly in the integration of IoT technologies. Based on comprehensive survey of PT XYZ employees revealed critical insights. While there was a strong overall awareness of the company's technological advancements and competitive practices, a significant portion of employees remained neutral on key issues, indicating a gap in communication and engagement. This neutrality suggests that while the benefits of digital technologies are recognized, further efforts are needed to ensure complete employee buy-in and understanding of these advancements.

The second objective involved applying the TAIDA model (Tracking, Analysis, Imaging, Deciding, and Acting) to drive significant logistical improvements. The TAIDA model provides a structured approach that PT XYZ can use to optimize its logistics processes in the automotive industry. The model begins with **Tracking**, where PT XYZ identified significant issues related to uncertainty and lack of clear strategies, particularly in digital transformation, communication, and regulatory compliance. Recognizing these challenges is crucial for enhancing competitive awareness and operational efficiency. In the **Analysis** phase, PT XYZ evaluated four potential scenarios for logistics optimization: Incremental Improvement, Digital Integration, Transformational Change, and Strategic Partnership and Outsourcing. Each scenario offers distinct benefits and challenges, ranging from low-cost, low-risk incremental improvements to highly efficient but complex transformational changes. This analysis helped PT XYZ understand the potential

impacts of each approach on their operations and strategic alignment. In the **Imaging** phase, PT XYZ envisioned the future outcomes of each scenario. Incremental Improvement was seen as a path to stability with low cost upgrades, while Digital Integration promised substantial efficiency gains through IoT and digital solutions. Transformational Change aimed for maximum efficiency and industry leadership by embracing advanced technologies, and Strategic Partnership and Outsourcing focused on scalability and cost reductions through 3PL partnerships. This phase allowed PT XYZ to conceptualize how each scenario could shape its future. **Deciding** involved selecting the most suitable strategy, and PT XYZ chose Digital Integration. This scenario was deemed the best fit as it balances the need for technological advancement with internal development, enhancing operational efficiency while maintaining control over logistics operations and data security. Digital Integration aligns with PT XYZ's strategic goals and positions the company for long term success in a rapidly changing environment. Finally, the **Acting** phase outlines a comprehensive implementation plan for Digital Integration, spread across multiple phases from 2024 to 2026. This plan includes surveying and reviewing current processes, defining the scope, selecting vendors, aligning systems with business needs, and conducting extensive pilot testing. The plan ensures systematic execution, followed by full scale implementation, employee training, and continuous improvement, thus leading PT XYZ toward achieving long term operational excellence and a competitive edge in the automotive industry.

The impact on operational efficiency and cost effectiveness at PT XYZ has been significant due to the scenario planning aimed at optimizing logistics processes under future industry conditions. Operational efficiency has been notably enhanced by reducing the average number of E-Tickets scanned per month and cutting down the time required for security scanning by 80%. This reduction allows staff to focus on more critical tasks, streamlining processes, and saving valuable time and resources, ultimately leading to more efficient overall operations. From a cost-effectiveness perspective, the decrease in the number of scanned tickets and the associated reduction in scanning time has resulted in lower labor and operational costs. Furthermore, the reduction in paper usage not only supports sustainability initiatives but also contributes to additional cost savings. These improvements

reflect a more efficient use of resources, leading to a substantial decrease in overall operational costs for PT XYZ.

The potential scenario planning for optimizing the logistics process at PT XYZ involves implementing Scenario B: Digital Integration. This scenario includes strategies such as real time tracking through IoT sensors, predictive maintenance to reduce downtime, advanced data analytics for informed decision making, robust cybersecurity measures, comprehensive employee training, seamless system integration, and careful vendor management. These strategies align with PT XYZ's strategic business objectives by enhancing operational efficiency, protecting against potential risks, and ensuring smooth adoption of new technologies. By focusing on these areas, PT XYZ can minimize potential losses, streamline operations, and maximize overall efficiency, ensuring the logistics process supports long-term business goals. By focusing on Scenario B: Digital Integration, the study provides a clear roadmap for PT XYZ to enhance its operational efficiency, customer satisfaction, and competitive positioning. The findings offer actionable insights that not only improve logistics at PT XYZ but also emphasize the critical role of strategic technology integration in boosting overall organizational performance.

5.2. Implication of This Research

5.2.1. Theoretical Implication

This research on scenario planning in optimizing logistics processes in the automotive industry aligns with the theory of scenario planning by Wulf, Meissner, and Stubner. It highlights how scenario planning enhances strategic flexibility, improves decision-making under uncertainty, facilitates organizational learning, and aligns long-term goals with operational strategies. The study demonstrates how PT XYZ can build resilience and support innovation through scenario based preparation, particularly by adopting digital integration technologies like IoT and AI. By doing so, the company can improve operational efficiency, reduce costs, and maintain a competitive edge, reinforcing the theoretical view that scenario planning is a powerful tool for navigating complex, uncertain environments

5.2.2. Managerial Impilication

Management at PT XYZ can significantly enhance organizational performance and maintain a competitive edge by implementing strategies from scenario planning focused on digital integration. Key actions include deploying IoT for real-time tracking and automation, investing in advanced data analytics and AI to improve decision-making, as well as automating manual logistics processes to enhance efficiency. Comprehensive employee training programs will ensure smooth adoption of new technologies, while enhanced cybersecurity measures will protect the integrity of operations. Strategic vendor selection and collaborative partnerships will further strengthen the logistics network. Continuous monitoring and adaptive strategies will enable the company to stay responsive to market changes. By aligning these initiatives with long term strategic goals, PT XYZ can achieve sustainable success in the rapidly evolving automotive industry.

5.3. Recommendation of This Research

Future research should aim to address these limitations and explore new avenues to deepen our understanding of these critical factors in optimizing logistic process

Future research could consider the following recommendations:

1. Investigate the long term effects of digital integration on logistics processes, including sustainability, cost savings, and overall operational efficiency.
2. Compare the effectiveness of logistics optimization strategies across different industries, such as retail, healthcare, and hospitality.
3. Study the psychological and social aspects of employee adaptation to new technologies and processes in logistics.

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APPENDIX

Answer with score 1 to 5

1: Strongly Disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly Agree

No	Questions	Score				
		1	2	3	4	5
Competitive Awareness and Best Practices						
1	Awareness of Competitor Innovations					
2	Comparison with Competitors					
3	Competitive Pressure Drives Improvement					
4	Adoption of Best Practices					
5	Improvements from Competitor Learning					
6	Comp. Investment in New Technology					

No	Questions	Score				
		1	2	3	4	5
Effectiveness and Impact of Technology in Logistics						
1	Successful IoT Implementation					
2	IoT Improves Efficiency					
3	Real-Time IoT Tracking					
4	Digital Logistics Integration					
5	Digital Logistics Reduces Costs					
6	Clear Digital Transformation Strategy					

No	Questions	Score				
		1	2	3	4	5
Knowledge and Awareness of Challenges						
1	Logistics Challenges and Market Demand					
2	Adaptation to Market Trends					
3	Customer Feedback Integration					
4	Continued Digital Investment					

No	Questions	Score				
		1	2	3	4	5
Regulatory Compliance and Adaptability						
1	Updated with New Regulations					
2	Effective Communication of Regulation Changes					
3	Compliance with Industry Regulations					
4	Adaptation to Regulatory Changes					
5	Regulatory Compliance Priority					
6	Digital Transformation Efficiency					
7	Logistics Team Trained for Regulation Changes					
8	Improved Logistics Performance Metrics					
9	Positive Impact of Digital Transformation					
10	Prepared for Future Technological Advances					
11	Clear Vision for Logistics Future					

Answer with score 1 to 5

1: Strongly Disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly Agree

1 The company has successfully implemented IoT (Internet of Things) technology in its logistics processes.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

2 IoT (Internet of Things) technology has improved the efficiency of logistics operations in this company.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

3 Real-time tracking through IoT (Internet of Things) has significantly enhanced logistics performance.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

4 The integration of digital logistics solutions is clearly visible in the company's operations.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

5 Digital logistics has successfully reduced operational costs.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

6 There is a clear strategy for further digital transformation in logistics within the company.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

7 The company faces logistics challenges that align with market demand.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

8 The logistics processes in the company quickly adapt to new market trends.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

9 Customer feedback is effectively integrated into logistics improvements.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

10 The company is aware of competitor logistics innovations.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

11 The company actively compares its logistics processes with those of competitors.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

12 Competitive pressure drives continuous improvement in logistics within this company.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

13 The company adopts best practices from industry leaders in logistics.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

14 Learning from competitors has led to significant logistics improvements for the company.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

15 The company invests in new technology to remain competitive in logistics.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

16 The company stays updated with new regulations affecting logistics.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

17 Regulatory changes are communicated effectively within the logistics department.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

18 The logistics processes in the company comply with current industry regulations.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

19 The company adapts quickly to regulatory changes in the automotive industry.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

20 Compliance with regulations is a priority in the company's logistics strategy.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

21 The logistics team is trained to handle regulatory changes effectively.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

22 Digital transformation has improved overall logistics efficiency.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

23 Performance metrics for logistics have improved due to digital initiatives.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

24 There is a tangible positive impact on logistics operations from digital transformation.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

25 The company is well-prepared for future technological advancements in logistics.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

26 Continuous investment in digital technology is essential for logistics.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)

27 The company has a clear vision for the future of its logistics processes.

- ☐ Strongly Disagree (SD)
- ☐ Disagree (D)
- ☐ Neutral (N)
- ☐ Agree (A)
- ☐ Strongly Agree (SA)