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Development of Performance Management in Refrigerated Transportation Company PT WET Logistics Indonesia Based on the Balanced Scorecard (BSC)

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ABSTRACT

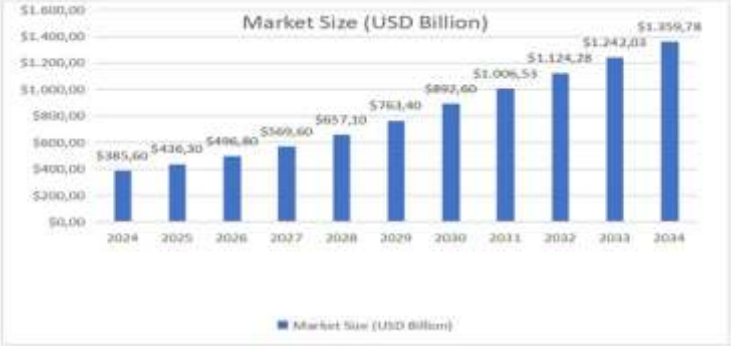
PT WET Logistics Indonesia is a company engaged in the refrigerated truck rental sector. To improve service quality, PT WET Logistics Indonesia has implemented integrated Industry 4.0 technology through the Transportation Management System (TMS), Global Positioning System (GPS), and data thermologger (DTL) across its fleet, positively impacting the company's revenue. Nonetheless, management realizes that developing a long-term strategy cannot rely solely on financial performance indicators and customer satisfaction. This dependence risks delays in responding to changes in the business environment and lost strategic opportunities. Therefore, this research aims to design the stages of strategy formulation by translating the company's vision, mission, and strategy into four Balanced Scorecard (BSC) perspectives and developing a strategic map based on cause-and-effect relationships. The research method involves performance management design aligned with the company's vision and strategy, supported by Focus Group Discussions (FGD) and interviews with stakeholders. The results show that the strategy formulation stage yields an elaboration of the vision, mission, and strategy into four BSC perspectives. The strategic planning stage produces a strategic map, 13 strategic goals, 15 critical success factors (CSF), and 17 key performance indicators (KPIs) with priority targets and weights determined using the Saaty scale (1–9). Furthermore, 39 strategic initiatives were formulated and are monitored through a BSC-based performance management dashboard with a traffic light control system.

INTRODUCTION

Construction project delays are a global phenomenon that has a significant impact on cost, time, and quality (AchieveIt, 2024; OnStrategy, 2024; Spider Strategies, 2024). According to a World Bank report (2020), around 40-60% of global infrastructure projects are delayed with an average cost overrun of 20-30% of the initial budget. In the Asia Pacific region, research by Hwang et al. (2019) showed that 75% of construction projects experienced time deviations with an average delay of 35-50% from the planned schedule. A study by Santoso & Soeng (2016) revealed that 85% of government construction projects in Indonesia are delayed, with the impact of state losses reaching Rp 12.5 trillion per year based on data from the Ministry

of Public Works and Public Works (2022). This phenomenon reflects the complexity of project management involving multiple stakeholders, limited resources, and the dynamics of technical and administrative problems (Adianto et al., 2014).

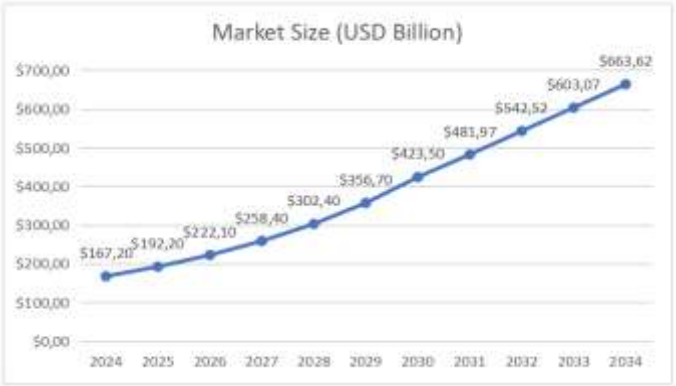
Logistics includes the entire process of planning, implementing, and controlling the efficient and effective flow of goods, services, and information from the point of origin to the point of consumption (Makasa & Hapompwe, 2024). This process involves a variety of activities, including transportation, warehousing, inventory management, and others (Rizaldy, W. et al. 2018). Meanwhile, cold chain logistics (CCL) is part of a sub-set of logistics that focuses on maintaining stable and controlled temperatures throughout the supply chain for products that are perishable or sensitive to temperature fluctuations (AchieveIt, 2024; OnStrategy, 2024; Spider Strategies, 2024). The global CCL market size reached USD 385.60 billion by 2024 and is expected to increase from USD 436.30 billion in 2025 to reach around USD 1,359.78 billion by 2034, with a projected compound annual growth rate (CAGR) of 13.46% from 2025 to 2034 (Precendence research 2025). Chart of CCl market size globally. This canbe seen in the picture (Behdani et al., 2019).



Source: Precedence research 2025

Figure 1 Global scale CCl market size chart

Meanwhile, the CCL market size in the Asia Pacific region is recorded at USD 167.20 billion in 2024 and is projected to reach around USD 663.62 billion in 2034, with a compound annual growth rate (CAGR) of 14.76% from 2025 to 2034 (Yasni, H. 2024). The CCl market size chart by Asia Pacific is shown in Figure 2 below.



Source: Hasanudin Yasni 2024

Figure 2 Asia Pacific scale CCl market size chart

Based on the increase in the market for CCL needs, both on a global scale and in the Asia Pacific, the demand for related CCL infrastructure—such as warehouses and refrigerated transportation—has automatically risen (Kuo & Chen, 2013; Singh et al., 2018). PT WET Logistics Indonesia is a company that operates in the refrigerator truck rental sector. To improve the efficiency of internal business processes, PT WET Logistics Indonesia has developed a transportation management system known as the Transportation Management System (TMS). TMS is an innovative logistics platform that utilizes advanced technology to assist businesses in planning, executing, and optimizing the physical movement of goods, both inbound and outbound, as well as ensuring delivery in accordance with the right provisions and documentation. The entire refrigeration truck fleet has been equipped with a global positioning system (GPS) and data thermologger (DTL) integrated with TMS, which can be monitored online and in real-time to ensure that goods arrive at their destination on time, in good condition, and safely (Fleet, 2015; Yuan et al., 2024).

The company has added value to the quality of service through the application of Industry 4.0 technology, resulting in increased revenue. The management of PT WET Logistics Indonesia realizes that there are limitations in formulating a long-term corporate development strategy if it relies solely on key information in the form of improving the company's performance, which is reflected in enhanced financial performance and customer satisfaction alone. If this information is used as a reference for formulating and planning future strategies, it is very inaccurate and can result in delays in responding to changes in business dynamics, often lagging behind in capturing emerging opportunities (Markets and Markets, 2025; Qiu et al., 2025). To date, the company has not implemented a maximum and comprehensive performance measurement system oriented toward long-term improvement. This is due to the lack of effective performance management within the company itself (Costa et al., 2015; Saniuk, 2021).

Several previous studies have examined the application of the Balanced Scorecard in various industrial sectors. First, research by Kaplan & Norton (1996, 2001), as developers of the BSC concept, showed that the BSC can translate organizational vision and strategy into measurable operational actions through four interrelated perspectives. Second, a study by Niven (2006) analyzed the implementation of the BSC in the nonprofit and government sectors, finding that adapting the BSC to nonprofit organizations requires a modification of perspectives by placing the organization's mission as the primary focus. Third, research by Gaspersz (2005) and Mulyadi (2005) explored the implementation of the BSC in Indonesia, identifying key challenges in the form of difficulty in identifying causal relationships between perspectives and resistance to organizational culture. Fourth, a study by Anggraini et al. (2014) implemented the BSC at the Sekupang ferry terminal, resulting in 18 KPIs divided into four BSC perspectives to measure the terminal's operational performance. However, research specifically integrating the BSC with Industry 4.0 technology in the refrigerated transportation sector in the Asia Pacific region is still very limited (Bhatti et al., 2014; Gusnadi & Hermawan, 2020).

Therefore, PT WET Logistics Indonesia needs to develop performance management using the right methods. The most suitable method is the Balanced Scorecard (BSC)-based approach; the BSC method, introduced by Kaplan and Norton (1992), is a performance measurement system designed to improve executive effectiveness, enabling companies to

better understand the progress and development achieved. Within the BSC framework, company performance is measured through four main interrelated perspectives: (1) financial perspective, (2) customer perspective, (3) internal business process perspective, and (4) learning and growth perspective.

Furthermore, in the discipline of strategic management, the focus of research is now directed toward strengthening the planning phase, namely strategy formulation and strategic planning (Frederico, 2020). This is because operational effectiveness in the field—as demonstrated by PT WET Logistics Indonesia—will only provide sustainable added value if it derives from a framework that balances four main perspectives: finance, customers, internal business processes, and learning and growth. Thus, the development of BSC-based performance management systems in the CCL sector is currently seen as a scientific solution to transform technical data into measurable and adaptive competitive advantages amid massive market growth in the Asia Pacific region (Mollov, 2020). Based on the background outlined above, the company needs to develop performance management that adopts a comprehensive Balanced Scorecard (BSC)-based approach to create a conducive and dynamic work environment.

The novelty of this research lies in three main aspects: (1) the integration of the BSC framework with Industry 4.0 technologies (TMS, GPS, DTL), which has not been widely explored in the BSC literature for the refrigerated transportation sector; (2) the development of a cause-and-effect relationship-based strategic map specifically for CCL companies, considering the unique characteristics of the refrigerated transportation industry, such as temperature control, real-time monitoring, and fleet management; and (3) the preparation of 39 comprehensive strategic initiatives with a traffic light dashboard-based monitoring system that can be adapted by similar companies in the Asia Pacific region (Karakuş et al., 2019; Winkelhaus & Grosse, 2020).

The development of the company's performance management will be carried out in a limited manner across two stages in the planning process: the strategy formulation stage and strategic planning only. The objectives that the author seeks to achieve in this study include: (1) designing the stages of strategy formulation by describing and translating the company's vision, mission, and strategies into the four BSC perspectives, and (2) designing the strategic planning stages by creating a strategy map using the cause-and-effect relationship framework, determining strategic goals, critical success factors, key performance indicators (KPIs), targets, and weighting as the basis for formulating strategic initiatives for the company.

METHOD

This study employed a mixed-methods approach with a sequential exploratory design, combining qualitative and quantitative methods. The qualitative phase explored the company's vision, mission, and strategy and identified critical factors for Balanced Scorecard (BSC) development. The quantitative phase weighted KPIs using the Analytical Hierarchy Process (AHP) method with a Saaty scale of 1–9. This applied research developed a BSC-based performance management system for PT WET Logistics Indonesia.

The research took place at PT WET Logistics Indonesia, headquartered in Jakarta, with operations covering Greater Jakarta (Jabodetabek) and major cities in Indonesia. It was

conducted from January to June 2024, encompassing data collection, focus group discussions, analysis, and performance management system development.

This study used primary and secondary data, presented in both quantitative and qualitative forms. Primary data were collected directly from the research object through interviews, questionnaire surveys, and in-depth observations with internal company parties and external customers using PT WET Logistics Indonesia's refrigerated transportation rental services. Secondary data were obtained from the company's financial and internal statements, literature studies, and trusted online sources.

Data collection employed qualitative and quantitative techniques. Primary data collection involved two main approaches: interviews and focus group discussions (FGDs) with stakeholders, as well as surveys and observations (Sugiyono, 2013; Sugiono, 2009).

Weighting of KPIs used pairwise comparison via the AHP method, followed by a traffic light system for scoring target achievement (Remik, 2020; Zhang et al., 2009). The BSC design incorporated FGDs and stakeholder interviews, aligned with the company's vision, mission, and strategy (Saefudin et al., 2017). The performance management system development occurred in two stages: strategy formulation and strategic planning.

RESULT AND DISCUSSION

PT WET Logistics Indonesia in formulating its strategic policy direction adopts the balanced scorecard (BSC) framework as an approach to developing integrated performance management. BSC is a management concept that helps translate strategy into action, BSC is more than just an operational measurement system but also a management system for companies to interact with in the long term. PT WET Logistics Indonesia does not have strategic management, so this thesis will discuss the development of BSC-based performance management which will use only two stages, namely strategy formulation (stage 1) and strategic planning (stage 2). The following is a brief explanation of what the stages of strategy formulation and design are as follows:

1. The strategy formulation stage functions as an instrument for trend observation, future vision formulation, and strategy selection. As a trend observation tool, the strategy formulation stage is used to monitor the dynamics of changes in the macro and industrial environment and to identify opportunities and threats that arise from within the organization. In this thesis, the strategy formulation stage includes the elaboration of the company's vision, mission, and strategy based on four perspectives in the balanced scorecard (BSC).
2. The strategic planning stage functions as a tool to translate the outputs produced by the strategy formulation stage. The goal of creating a strategic planning system in performance management is to align employees' daily activities with the organization's long-term goals, so as to improve overall effectiveness, efficiency, and productivity. The system creates a clear roadmap to guide everyone toward the same goal, improves focus, identifies relevant metrics, provides guidance to monitor and evaluate progress, and allows for more structured performance measurement.

Strategy Formulation Stages

The stages of formulating PT WET Logistics Indonesia's strategy began with the elaboration of the company's vision, mission, and strategy into four Balanced Scorecard (BSC)

perspectives through the involvement of top management in Focus Group Discussion (FGD) activities. This process aims to ensure continuity between the vision, mission, and strategy and define the key success factors of the company. The company's vision as a leading provider of refrigerated transportation services in Indonesia is elaborated into the perspective of finance, customers, internal business processes, and learning and growth.

The company's mission is then adjusted to each of these perspectives, starting from increasing profitability and market share, providing fast and reliable services, integrating technology for operational efficiency, to developing innovation and employee competencies. Based on this vision and mission, a company strategy is formulated that is structured in four BSC perspectives, including increasing profitability and cost optimization from a financial perspective, increasing customer satisfaction and loyalty from a customer perspective, increasing efficiency, reliability, operational standardization, and concern for K3 and the environment from the perspective of internal business processes, as well as increasing competence, employee satisfaction, and developing information systems strategic from the perspective of learning and growth. This entire elaboration forms a sustainable strategic framework and is the basis for the implementation of company performance management based on the Balanced Scorecard.

Stages of strategic planning

The strategy planning stage is the second crucial stage in the development of Balanced Scorecard-based performance management (BSC) after strategy formulation, as it focuses on the preparation of balanced and comprehensive short-term and long-term profit plans (Balza-Franco & Cardona-Arbelaez, 2020). At this stage, the company's vision, mission, and strategy are translated into a strategic roadmap and strategic goals that describe the cause-and-effect relationship between the four perspectives of BSC, namely learning and growth, internal business processes, customers, and finance. The process starts from the perspective of learning and growth with the goal of improving employee competence, developing integrated systems, and increasing employee satisfaction as the foundation for strengthening internal business processes. The perspective of internal business processes is then focused on improving marketing, standardization and reliability of fleet management and delivery, operational efficiency, as well as improving K3 and social contributions. These goals are expected to have a direct impact on the customer's perspective through increased customer satisfaction and acquisition. The entire series of strategies boils down to a financial perspective, which focuses on achieving short-term goals through spending optimization and productivity improvement, as well as long-term goals through revenue growth strategies. With this strategic linkage, the company is expected to be able to increase profitability in a sustainable manner and strengthen its competitiveness.

CONCLUSION

PT WET Logistics Indonesia, a refrigerated transportation company with two decades of operation and a fleet of 100 vehicles, faced challenges from the lack of a comprehensive performance management system; this thesis addressed that gap by developing a BSC-based system through two stages—strategy formulation and strategic planning. The strategy formulation stage translated the company's mission, vision, and strategies into BSC's four perspectives (financial, customer, internal business processes, and learning and growth) to observe trends, formulate visions, and select strategies. The strategic planning stage then

produced a strategy map, 13 strategic goals, 15 critical success factors (CSFs), 17 KPIs with quantitative targets and priority weights via the Saaty scale (1–9), consolidated results graphs, decision matrices, and 39 actionable strategic initiatives for implementation, monitoring, and evaluation. For future research, scholars could validate and refine this BSC model through longitudinal implementation at PT WET Logistics Indonesia, testing its impact on operational efficiency and financial outcomes in the dynamic Asia Pacific refrigerated logistics market.

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