



Optimizing Fleet Utilization in a Moving Logistics Company

A Literature Review-Based Approach

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Abstract

Fleet utilization is recognized as one of the key factors of operational efficiency and reduction of cost in the logistics sector. When it comes to moving logistics, maintaining productivity can become a challenge because the demand fluctuates, the jobs vary in size and the routing is irregular. The study was aimed at examining current inefficiencies in fleet operations and the factors that affect fleet performance. The study also examined the best practices in scheduling and routing and presented research-based recommendations for improving fleet utilization. The main method used was a structured literature review. There was a systematic collection and analysis of peer-reviewed academic articles, case studies from the industry, and relevant logistics frameworks. The thematic analysis was applied to the findings to categorize them into operational practices, technology, organizational behavior, and external constraints. It was found that fleet underutilization is often the result of poor scheduling, underfilled trips, insufficient planning and routing, and underuse of digital tools. The operational barriers that were identified included inconsistent data, siloed departments, and untrained staff. Real-world examples provided by logistics leaders showcased the effectiveness of integrating digital systems with a trained workforce. Maximizing fleet utilization must go beyond upgrading technology. After evaluating various case studies, it was determined that organizational readiness, alignment of processes and continual improvement are equally important. While the findings were based on secondary data, the results can provide a useful framework for organizations who wish to improve the efficiency of logistics.

Keywords/tags (subjects)

Fleet utilization, moving logistics, route optimization, load consolidation, telematics, lean logistics, performance efficiency, sustainable logistics, logistics management

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1 Introduction

It is important to have efficient fleet utilization in moving logistics companies to minimize costs and maximize productivity. The "Optimizing Fleet Utilization in a Moving Logistics Company" thesis will go through current fleet usage and find the best strategies to improve scheduling, logistics, and load management. Nowadays customers expect timely service, fuel prices are rising, and there is urban congestion; all of it pushes moving logistics companies to optimize their fleet usage to achieve efficiency. And fleet optimization is a key focus in logistics; it allows companies to have good scheduling, load balancing, and real-time tracking for future improvements. To achieve the maximum of its fleet's potential, companies must find practical and cost-effective strategies. The thesis will contribute to trends by finding realistic solutions for moving logistics companies, following industry trends in sustainability. Bad fleet utilization affects fuel consumption, vehicle wear, and delivery windows and can lead to rising operational costs and poor service quality (Rodrigue, 2024). By optimizing fleet utilization, companies will achieve efficiency, cost reduction, and customer satisfaction. This will lead to smoother workflow, reduced worker stress, and sustainability improvements.

This thesis will focus on optimizing fleet utilization in a moving logistics company. It will go through track logistics, scheduling, and load management; this will result in efficiency improvement and cost reduction. This study will be more about data-driven strategies and solutions rather than complex algorithms; this will make finding usable for moving logistics companies.

1.1 Objectives of the Study

Identification and analysis of strategies for optimizing fleet utilization are the main objectives of this study. Smooth operations, cost-effectiveness, and customer satisfaction are being achieved by using vehicle resources efficiently. Still, companies nowadays face problems such as poor route planning, scheduling difficulties, and the underuse of their fleets. For instance, Breunig et al. (2019) discusses that the use of electric vehicles that have limited range makes it much harder to do route planning in multi-tier logistics systems.

By reviewing researches and industry practices, this thesis goes through these problems in order to identify inefficiently working methods and analyze factors affecting fleet performance. The paper also provides examples of best practices and practical strategies that can help companies with future improvement of their logistics operations. The objectives of the study are

- Reviewing existing fleet utilization strategies.
- Identifying key challenges in fleet utilization.
- Exploring industry best practices.
- Evaluating cost and efficiency impacts from strategies.
- Providing general recommendations.

1.2 Scope of Work and Utilization of the Research Findings.

This thesis focuses on finding working solutions to improve efficiency of fleet utilization. The difficulties in managing a fleet, such as scheduling, route optimization, and low-capacity utilization, are the main research's scope. This study is not focused on technical aspects or logistics software; it is concentrated on analyzing and understanding larger practices and contributing factors to underutilization.

The research does not use single company data; it is rather a development-oriented literature study. To guarantee that the findings are applicable to a variety of logistics operations, the study gathers information from sources such as journals, articles, case studies, books, logistics reports and other documents. Logistics experts, planners, and decision-makers can use the thesis's findings. To improve fleet performance, the results could be used as a basis for evaluating current procedures and identifying areas for improvement. This study provides a broad framework that could help companies with their development.

1.3 Overview of Chapters

The thesis is divided into ten chapters. The first chapter introduces the topic and outlines the objectives of the study. The next chapter outlines the research's methodological approach. It describes how the data was analyzed and steps involved in the literature review. In the third chapter

theoretical framework and fleet utilization literature are reviewed. The fourth chapter concentrates on finding factors that influence fleet performance. Chapter five has an overview of the industry's best fleet utilization practices and strategies. The sixth chapter examines the possible operational and environmental effects of fleet optimization. The seventh chapter discusses organizational, technological, and external factors that can become barriers for the companies that are trying to improve their fleet utilization. The eighth chapter summarizes the key findings. The ninth chapter assesses the reliability of the research. The last chapter summarizes the overall findings.

2 Methodological Approach

The methodological approach that is being used to carry out the research is being presented in this chapter. It begins with design and questions description, then moves on to discussing literature review process and material analyzing methods.

2.1 Research Design and Questions

The research aims to collect, analyze, and combine knowledge on fleet utilization in moving logistics; to fulfill this task the thesis uses a literature review-based approach. The research questions have been chosen to support the research. The following questions will be addressed by the study:

- What are the most common inefficiencies in fleet utilization in the moving logistics industry?
- What factors influence fleet performance, including operational, financial, and external constraints?
- Which best practices in scheduling, truck logistics, and route planning lead to improved fleet efficiency?
- What practical, research-based recommendations can be applied to improve fleet utilization?

2.2 Literature Review

A literature review is essential to this thesis since it is the main source of information and insight needed for answering the research questions. The literature review was selected as the most suitable technique for gathering data, analyzing previous findings, and finding development opportunities. Both academic and industry-based sources are being used since they offer reliable fleet utilization information. Publications that study vehicle usage, route optimization, truck scheduling, and operational performance are the main materials that the review focuses on.

This section aims to make it clear what type of literature review is used, the sources chosen, and how review is being carried out.

2.2.1 Definition and Purpose

A systematic method for analyzing the existing knowledge on a particular topic is a literature review. The purpose of a literature review is to clarify a specific academic or research topic by identifying, analyzing, and synthesizing research (Snyder, 2019). It helps to point out gaps, difficulties, and areas for improvement of research. The use of literature review in this thesis helps to collect, evaluate, and compile information about fleet utilization in the moving logistics field. According to Snyder (2019), while writing development-oriented studies it is essential to use literature reviews to form a theoretical basis. They help with evaluating previous approaches, research moving logistics field, and define key concepts. This thesis applies a narrative, thematic literature review.

2.2.2 Type of Literature Review Chosen

A narrative literature review is used in this thesis. It is possible to be flexible in exploring a variety of sources and perspectives due to using a narrative approach. The narrative review style uses a collection of literature to analyze, summarize, and offer suggestions for the topic. A narrative review is helpful for integrating, summarizing, and synthesizing the large volume of literature on a topic. (Cronin et al., 2008).

Efficiency, route optimization, truck logistics, and scheduling are the focus of the review. Academic journals, logistics manuals, white papers, and studies from the last twenty years are among

the sources that were chosen. Ensuring credibility and relevance to modern logistics practices. Since fleet utilization topic combines theoretical models and real-world application, it is essential to use academic and professional sources literature.

The ability of the narrative thematic review to combine theoretical and practical knowledge led to its selection. This approach is different from systematic reviews, which follow strict rules, and scoping reviews, which study wider topics. It allows for a more focused, interpretative approach. It allows to recognize patterns, contradictions, and key ideas across different literature.

2.2.3 Source Selection Criteria

The sources selected in this thesis are based on an academic touch, reliability and publication quality. The prioritized sources for this research are journal articles, books, and academic papers. Moreover, logistics industry reports and case studies from organizations are selected. This aids in supporting real-world context. Mostly modern sources are being selected, with a focus on literature from the past 10-15 years.

2.2.4 Steps of Conducting the Literature Review

A systematic and structured approach is required when conducting a literature review, involving several different steps, aimed at the thorough synthesis of existing research (Xiao & Watson, 2017). There are several structured methods for conducting a literature review, they usually depend on discipline, topic scope, and research goals. According to University of Texas Libraries (n.d.), the process of writing the literature review includes seven steps:

1. **Define the Research Question:** Clarifying the research question or topic is the first step in conducting a literature review, because it establishes parameters for the literature search.
2. **Determine Inclusion and Exclusion Criteria:** Having clear inclusion and exclusion criteria helps with focusing on important thesis related information.
3. **Choose databases and conduct the search:** It involves using academic databases and specific search techniques.

4. **Review your results:** Reviewing and selecting the most relevant literature for analysis requires critically evaluating each source.
5. **Synthesize the information gathered:** It involves summarizing findings, identifying common themes, and evaluating the strengths and weaknesses of individual sources.
6. **Analyze the information gathered:** Finding the best methodological approach, checking if there are any gaps in the literature and confirming that the topic is clear.
7. **Write the literature review:** It involves organizing and presenting collected and analyzed materials.

2.3 Search Process and Tools

Literature search is carried out using several databases and search engines. The e-library of JAMK, Science Direct, Google Scholar, and SpringerLink are used. Keywords used in the search include:

- "Fleet utilization"
- "Route optimization in logistics"
- "Moving company fleet management"
- "Telematics systems"
- "Lean logistics practices"
- "Driver behavior logistics"

Phrase search methods assist with narrow search results. The title and abstract of search results are checked before full-text review of articles. This is done to ensure alignment with the research objectives.

2.4 Method of Literature Analysis

The sources that have been collected are analyzed qualitatively thematically. Then they are grouped into thematic categories. After, each category is being analyzed to find main ideas, con-

traditions, and areas of innovation. In the end, theoretical insights are being combined with practical findings in order to find similarity and divergence. This approach helped in building an analytical and evidence-based thesis.

2.5 Observation and Analysis

The analysis took into account general observations from logistics operations and industry developments. The observations presented here are based on case studies and reports detailing real world problems and their solutions. Qualitative content analysis was used to examine the data and compare key themes across multiple sources.

2.6 Findings and Suggestions

Later chapters' recommendations are based on the literature review and thematic analysis. These recommendations are meant to help logistics operations grow. They will provide useful concepts for fleet utilization optimizations. The work offers adaptable recommendations that can be used in different settings.

2.7 Ethical Considerations

Throughout the entire research process, ethical integrity was maintained. Only credible sources were used. They include peer-reviewed journal articles, books, and industry reports. To ensure reliability, only studies and publications with transparent methodologies were used.

Interpretation of the findings was carried out without bias. The work or conclusions of any author were not misrepresented or mis-identified.

Additionally, APA 7 style were used to cite all sources properly. Clear distinguishing between evidence and author opinions ensured responsible reporting. This approach supports transparency and academic honesty.

3 Understanding Fleet Utilization in Moving Logistics

3.1 Definition and Role of Fleet Utilization

Vehicle utilization measures how efficiently a fleet of vehicles is used and how productive it is. Fleet utilization is important because it helps logistics manage the truck's capacity according to the time, distance, and workload. A high fleet utilization rate shows that vehicles are being used for productive tasks, while a low utilization rate suggests idle time, empty running, and poor scheduling—all of which increase costs and reduce service effectiveness (Coyle et al., 2020). Fleet utilization is about how well you are using the trucks in your fleet during their working hours, balancing delivery time windows, route efficiency, and loading time (OByrne, n.d.). Because of the service nature, fleet utilization becomes significant in the context of moving logistics. Due to variations in size and distance, moving tasks must be customized for each customer and scheduling must be precise too. This means fleet utilization involves more than just how many jobs are completed. It is also about how effectively the time, space, and routing are utilized for each operation within constraints. According to Rushton et al. (2022), post-optimization vehicle use reduces operating expenses, enhances the reliability of delivery, and improves the customer satisfaction level.

Fleet utilization can be measured with metrics such as vehicle fill rate, average trip distance, time on task, and percentage of fleet in use. These metrics allow logistics managers to determine how well trucks are being utilized and where improvement is needed. According to Crainic and Laporte (1998) when accurate forecasting and real time monitoring are accessible, strategic planning of the vehicle's route and scheduling can greatly improve fleet efficiency.

Also, better fleet utilization supports sustainability goals. When trucks are used properly, they will consume less fuel, there will be lower emissions, this way logistics SRM can become environmentally friendly (McKinnon et al., 2015).

3.2 Key Performance Indicators

Key performance indicators or KPIs can measure how effective as well as efficient the fleet's utilization in logistics. Logistics managers utilize these indicators to track performance, recognize areas

for improvement, and make performance decisions. During logistics movements where services demand time and resources, KPIs play a key role in managing operations and guaranteeing customer satisfaction.

Fleet management companies frequently utilize the vehicle utilization rate, which measures how often a vehicle is in use compared to its total availability. Scheduling problems or the fleet's capacity not meeting demand is usually behind low utilization rates (Coyle et al., 2020). Another important metric is something called the load factor, which is how much carrying capacity of the vehicle is used on each trip. According to Rushton et al. (2022) due to lower load factors costs per unit will increase and energy will be wasted.

Another crucial KPI is empty running, which is the proportion of kilometers carried without any cargo, it is especially relevant in the moving logistics. Emissions can be significantly reduced and fleet efficiency increased by optimizing route planning, also it lowers emissions (McKinnon et al., 2015). Similarly, fleet fuel efficiency, measured in liters per 100 kilometers, it can indicate the fleet's economic and environmental performance.

The cost per delivery, the frequency of vehicle maintenance, and the on-time delivery rate are also frequently tracked by businesses. These metrics help to ensure the fleet can meet long-term service quality and operational sustainability requirements. According to Crainic and Laporte (1998), activities can be better aligned with business objectives when KPIs are incorporated into daily monitoring and decision-making processes. Fleet utilization is an essential part of logistics and is directly affected by operational performance, service level, cost, and environment.

3.3 Common Inefficiencies in Fleet Operations

Fleet operations can face many inefficiencies that can negatively impact their productivity level, cost, and service quality. Finding and fixing these problems is important to fleet performance. Among fleet operations, inefficiencies can take place, but some happen regularly. Below are some of the most common inefficiencies in fleet operations:

1. Lack of System Integration.

Many logistics-related companies use various systems that cannot communicate with each other. According to Jonker and Carstens (2018), this disconnect makes it more difficult to make decisions quickly and can lead to scheduling conflicts, resource waste, and delayed responses.

2. Inefficient Route Planning

Ineffective route planning can result in excessive fuel use, missed delivery timelines, and increased moving expenses. Delivery time windows, road conditions, and traffic congestion should all be taken into consideration when designing new routes. Not doing so will lead to lower profitability and reduced customer satisfaction (Brunheroto et al., 2022).

3. Poor Maintenance

When a car is not regularly serviced, unexpected breakdowns may happen. Scheduling maintenance will ensure the reliability and durability of the vehicles beforehand. According to Brunheroto et al. (2022) poor maintenance practices raise costs and risk.

4. Poor Driver Management

Driver behavior has a big impact on fleet efficiency. When drivers speed too much, brake too hard, and idle too long, fuel is wasted and the car gets worn out. Reducing these behaviors and enhancing fleet performance can be achieved through the use of monitoring systems and driver training programs (Aflabo et al. (2020).

5. Regulatory Non-Compliance

Legal regulations require companies to perform proper vehicular inspection and comply with the hours-of-service rule, otherwise, they may face penalties, legal action and reputational harm. To avoid the non-compliance problem, regular audits, and employee training should be done (Brunheroto et al., 2022).

4 Factors Influencing Fleet Performance

4.1 Operational Factors

Operating factors are among the immediate and controllable elements that have an impact on fleet utilization. Operational factors include day-to-day operations affecting important functions such as scheduling of vehicles, assigning drivers, planning loads, and routing (Goel, 2009). The effectiveness of the entire fleet may be impacted by inefficiencies at this level.

4.1.1 Scheduling and Dispatching

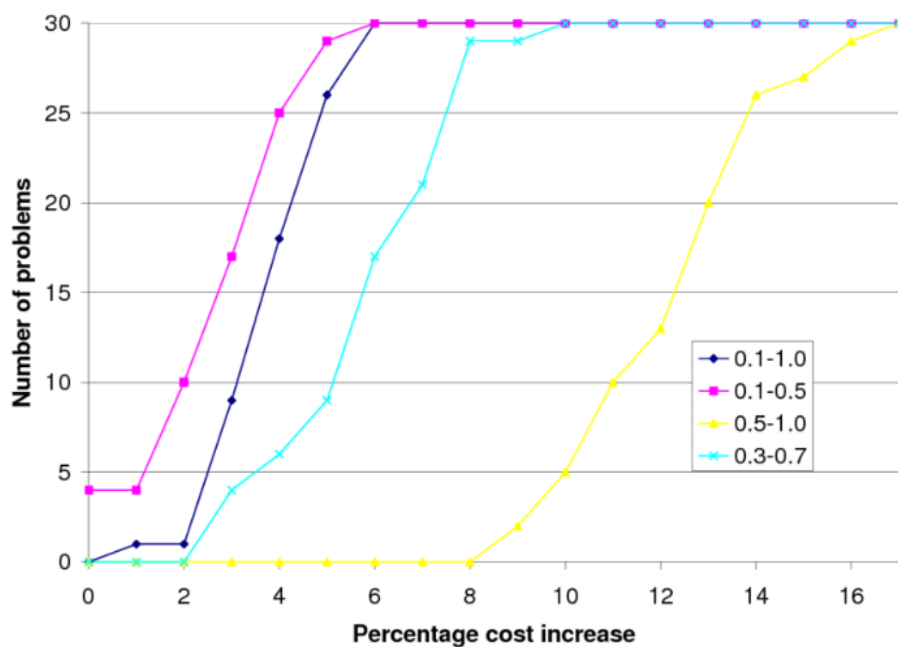
To make sure that vehicles are used in a way that meets requirements, efficient scheduling and dispatching should be done (Horn, 2002). When vehicles and jobs are not coordinated, deliveries are delayed, there is idle time and tasks overlap. Brunheroto et al. (2022) state that scheduling inefficiencies are one of the most cited operational barriers in fleet performance. According to Barrera et al. (2020), underutilization can be decreased by using precise planning tools and reliable real-time data.

4.1.2 Load Planning

Load planning is another critical operational factor. Using vehicles for partial loads increases the cost per delivery unit. Studies show that when a load size is between 51% and 60% of a vehicle's capacity, split deliveries are cheaper (Nowak et al., 2009). According to Crainic and Laporte (1998), the capacity of vehicles must match the demand. Otherwise, load planning can be so poor that the number of trips increases, fuel consumption increases, and the wear and tear of vehicles increases.

Figure 1:

Cumulative histogram for the number of problems versus the percentage cost increase without split loads for 125 request problem set.



Note. Adapted from *Pickup and Delivery with Split Loads*, by Nowak, M., Ergun, Ö., & White, C. C. (2008). *Pickup and Delivery with Split Loads*. *Transportation Science*, 42(1), 32–43.

<https://doi.org/10.1287/trsc.1070.0207>

4.1.3 Route Planning and Execution

Route planning is closely tied to operational efficiency. Ignoring factors like traffic conditions, road restrictions, and order of destinations can add to the traveling time and excess mileage. Carrasco and Moreno (2020), for example, mention that better use of data and preparation tools for real time decision can improve fleet utility and responsiveness. According to Taniguchi et al. (2014), smart route planning not only improves fleet performance but also reduces fuel consumption and emissions. It is common nowadays for companies to use dynamic routing that adapts in real-time to improve fleet utilization.

4.1.4 Downtime and Maintenance

One of the most repetitive issues in fleet management is operational downtime. It can be due to maintenance, breakdown, or unavailability of the vehicle in the long run. Fleet operations lose a lot of time when serviceable vehicles are unavailable. Both planned maintenance and vehicle shortages can cause this, which raises expenses and reduces operational time (Verleijdonk et al., 2024). Brunheroto et al. (2022) suggest that if the operational plan is integrated into maintenance scheduling, unexpected downtimes can be eliminated, ensuring that fleet is consistently available.

To sum up, operational factors mostly influence the outcomes of fleets utilization. Improvements of scheduling, load planning, route planning, and maintenance tracking help logistics providers with using their vehicles more effectively.

4.2 Financial Considerations

Fleet utilization strategies are significantly influenced by financial factors. Efficient fleet management positively influences operational costs and long-term productivity. Furthermore, it helps in achieving economic and ecological objectives. To find financial impacts on the fleet, it is necessary to analyze both direct and indirect costs.

4.2.1 Cost Structures in Fleet Operations

According to Coyle et al. (2020), vehicle acquisition, leasing, fuel, maintenance, insurance, and labor costs are the main cost structure in fleet management. Fuel prices tend to fluctuate the most because of their dependence on the global market. According to McKinnon et al. (2015), improved route planning and vehicle optimization lead to fuel cost savings. Carbon emissions decrease is also being achieved

On the other hand, Crainic and Laporte (1998) point out that examining fuel prices in isolation from vehicle utilization rates results in less favorable overall results. Their analysis indicates that in order to guarantee fleet sustainability, a financial strategy needs to consider both operational efficiency and resource maximization.

As a result, short-term cost savings can seem like an appealing option. But they still need to be compared to long-term fleet optimization goals, in order to find the best solution.

4.2.2 Capital Investment vs. Operational Savings

Should the company invest with capital or focus on cost savings? It is an ongoing debate in literature.

Investing in fleet operations involves the acquisition of new assets, for example, fuel-efficient and electric vehicles. Rodrigue (2024) states that capital investment can save costs and the environment in the long term. Unfortunately, small and medium-sized moving logistics companies don't have access to this due to the initial investment requirement.

On the other hand, operational savings will require companies to make certain changes in existing processes, like improvements in scheduling, routing, or load management. Brunheroto et al. (2022) state that operational strategies such as load planning and dynamic routing usually yield lower investment costs and faster financial returns.

This observation serves to highlight that companies are expected to match their financial strategies with their resource capacity as well as sustainability levels. In circumstances where capital is limited, the choice of operational efficiency may be the best route to economic performance and environmental responsibility.

4.2.3 Hidden and External Costs

Hidden and external costs significantly affect overall financial performance; that is why fleet utilization strategies must include them. Hidden costs include vehicle downtime, accident expenses, increased insurance payments, and penalties. According to Piecyk and McKinnon (2009), if not properly managed, these costs can accumulate over time and affect profitability.

Vehicle downtime has a significant impact on fleet efficiency and financial outcomes. Out-of-schedule repairs or maintenance disruptions lead to increased labor and rescheduling costs. Similarly, not following safety inspections or driver working hour limits regulations can lead to penalties (Brunheroto et al., 2022).

The cost of increasing environmental regulations must also be taken into account. Due to tighter government regulations on fuel consumption and emissions, businesses are facing increased costs. These costs are not yet dominant in all regions, but they are expected to grow and, over time, increasingly influence fleet management decisions (McKinnon et al., 2015).

4.3 External and Environmental Constraints

There are a range of external factors that influence fleet utilization that companies must adapt to. These factors bring uncertainty into planning and require flexible and responsive strategies.

4.3.1 Traffic Congestion and Infrastructure Limitations

Traffic congestion is an external problem that is seen in urban areas. When roads are congested, deliveries take longer and trucks need more fuel, and scheduling outcomes are more unpredictable (Taniguchi et al., 2014). Doing routing and vehicle selection is becoming more difficult due to

infrastructure limitations such as weight-restricted bridges, narrow streets, and constrained loading zones. When companies are planning their operations, they must also account for these physical barriers. Otherwise, they may not use the vehicle in the best manner possible. It is essential for companies to take into consideration physical barriers such as traffic jams, road restrictions, and time windows for delivery when planning operations (Barbosa et al., 2022).

4.3.2 Regulatory Requirements

There are government regulations that impact fleet operations. These regulations include road usage fees, emissions limits, driving hours, and vehicle safety inspections. According to Brunheroto et al. (2022), following these regulations may result in increased planning complexity. Additionally, it can result in penalties, delivery delays, and reputational damage. Due to these consequences, not only operational costs will rise but, also customer trust and satisfaction will decline. For example, not following the last-mile delivery regulations can result in large fines and a negative company image (Wise Systems, 2024).

4.3.3 Market Volatility and Seasonal Demand Fluctuations

Logistics operations are impacted by the market and season. A change in labor availability, fuel price, or customer demand may require businesses to revise their fleet strategy. To meet demand, companies will need to stay flexible to be able to adapt to the market. To prevent underutilization, logistic companies need fleet management strategies that can be easily adjusted up or down in scale (Crainic and Laporte, 1998).

4.3.4 Environmental Pressures

Fleet utilization is starting to be more affected by environmental pressures. Cities are limiting access to fleets or imposing additional requirements due to the implementation of low-emission zones and noise regulations (McKinnon et al., 2015). Despite the fact that environmental constraints are currently a moderate operational factor, their impact is predicted to increase, so it is wise for businesses to take ecological effects into account when developing long-term fleet strategies. The long-term fleet planning supports sustainability and cost-effectiveness when the ecological impacts are considered (Hong et al., 2023).

In conclusion, fleet utilization becomes variable and more complex to plan due to external and environmental constraints. To operate a logistics plan, it is essential to keep an eye on external factors. Ensuring both regulatory compliance and continued service efficiency.

5 Best Practices in Fleet Optimization

Improving fleet utilization in the moving logistics sector involves several aspects, apart from cost cutting or route planning. The best practices in this area include lean concepts, engaging the workforce, planning for demand, and utilizing technology. This chapter offers a comprehensive analysis of six core strategies. They are generally accepted in the literature to significantly impact fleet efficiency.

5.1 Demand Forecasting and Resource Planning

Demand forecasting and resource planning are the first steps in ensuring that fleet capacity is aligned with demand. Businesses that take into account past delivery quantities, seasons' patterns and behaviour trends of customers can forecast workload peaks and declines with greater accuracy. Forecasting can reduce late changes in schedule, vehicle underutilization, and excess overtime costs. Wittmann et al. (2020) point out that observing historical delivery volumes, seasonal trends, and customer behavior trends allows companies to have a better idea of workload fluctuations.

Berry et al. (2002) suggest that forecasting should be incorporated in a planning system like ERP or TMS. This helps departments to interact with each other. Scenarios can be modelled by using systems like these, which let planners test the resource strategy under demand conditions. This applies even more in the case of moving logistics where the amount of work and the destinations keep changing.

By prepositioning vehicles and cross-training drivers, companies can be more responsive with resource planning without being inefficient. Flexible resource planning enhances fleet responsiveness and operational efficiency (Hidayat & Kinoro, 2023).

5.2 Route Optimization and Load Consolidation

The most commonly used techniques to improve fleet utilization are load consolidation and route optimization. The use of technology reduces costs, shortens delivery timelines, improves vehicle productivity, and helps reduce fuel consumption. These activities are especially important in moving logistics because every job is different in relation to destination, load amount, and timing.

5.2.1 Route Optimization

Route optimization is one of the most popular and effective ways to improve a fleet's efficiency. It is being done by calculating the most efficient travel path from one point to another. Today's routing systems use real-time GPS data, traffic feeds, and predicted trends to suggest optimal routes. Brunheroto et al. (2022) claims that fleet management software can reduce needless travel and increase delivery punctuality.

According to Brunheroto et al. (2022) use of systems with real-time data improves traffic response and last moment changes. These systems use algorithms such as genetic algorithms and ant colony optimization, positively affecting route efficiency (Crainic & Laporte, 1998). Dynamic routing has positive effects on delivery punctuality and the number of kilometers covered per delivery.

An important theme in the literature concerns the trade-off between efficiency of routes and operational complexity. Dynamic routing is more flexible when compared to static routing, but it needs digital infrastructure and experts to manage route planning tools. As a result, it is beneficial for small or mid-sized logistics providers to use semi-dynamic routing, since it does not require real-time data but uses already known variables.

Furthermore, emissions from vehicles are reduced, which helps in environment sustainability. By reducing idling time and kilometers driven, lower fuel use and greenhouse gas output are being achieved. This not only makes the fleet more efficient but also aligns it with modern societal expectations for greener transport.

5.2.2 Load Consolidation

Another important strategy is load consolidation, which is useful in operations with different sizes of shipments. Load consolidation involves combining two or more shipments into a single vehicle trip on a specific lane or route. When deliveries are picked up and dropped off at the same time or location, the truck-fill rates increase. This practice reduces the number of trips made for deliveries.

According to Cheng et al. (2025), to achieve successful load consolidation, it is essential to use precise scheduling, adaptable vehicle configurations, and coordination between orders. Logistics hubs or cross-docking centers are often used to support load consolidation. As a result, partial loads from different sources are effectively combined and redistributed. This method helps in reducing pricing and carbon footprint.

It is important to note that the factor of balancing between consolidation and customer service should be taken into account. McKinnon et al. (2015) note, delays in individual shipments can occur when load efficiency is maximized. This means when implementing consolidation strategies, companies should ensure that customer expectations and time windows for delivery are not compromised.

Companies benefited significantly from warehouse management systems, order management systems, and transportation management systems due to great load consolidation. With the help of these tools, planners can match orders and arrange loading operations to minimize time and handling errors. According to Ojha et al. (2023), optimization-based load planning tools can help planners with loading organization and order matching.

By combining two strategies, route optimization and load consolidation, companies can maximize their fleet utility. In contrast, one's efficiency depends on the type of operations, availability of digital tools and competence of planners. Load consolidation can increase productivity in dense urban areas with close delivery points. On the other hand, optimized routing can reduce idle miles and fuel expenses; it is more beneficial to use it for long or rural routes.

5.3 Integration of Telematics and Monitoring Systems

The development of telematics and monitoring systems is among the most significant in fleet management. With these tools, companies can make the shift from reactive to proactive operations. As these technologies provide data in real time on vehicle status, driver behavior, route compliance, and fuel consumption. Telematics allow companies to have smarter and more efficient fleet utilization.

5.3.1 Role and Functionality of Telematics

Telematics is the technology that makes it possible to do long-distance transmission of vehicle data. These systems usually have GPS modules, sensors, wireless communication, and fleet management software. The key objective is to record data like speed, location, engine health, idling time, and route adherence (Crainic and Laporte, 1998).

Telematics systems can give fleet managers real-time information about vehicle movements from the vehicle itself. It provides managers with live visibility and an archive of past trips, which could be useful. This information assists in scheduling, maintenance planning, and performance evaluation.

Incidents such as unauthorized vehicle use, change of route, and excessive idle time can be identified immediately. If something like this happens, alerts can prompt real time intervention. Over time, this improves fleet responsiveness and delay associated inefficiencies. A real time fleet monitoring system can monitor when a fleet changes its route or idles for long periods, allowing for quick actions (Monnerat et al., 2019).

5.3.2 Enhancing Driver Behavior and Accountability

Telematics can also be a powerful tool to help influence drivers' behavior; this can positively impact fleet performance. Acceleration, hard braking and idling, exceeding the speed limit and not switching off the engine when parked can waste fuel, escalate maintenance, and risk safety. Telematics systems can identify these behaviors and show them on digital dashboards or auto-

mated scorecards. According to Shao and Cheng (2023), with the help of systems like this, individual training programs can be created. After collecting data, some companies tie the data to incentive structures, which have been shown to increase safety and cost-effectiveness. Not only does this reduce the number of accidents, but it also cuts down emissions and improves fuel efficiency. According to Nævestad (2022), switching to eco-driving techniques can help reduce the crash rates by up to 10%, which is beneficial for the environment and better for safety as well.

Moreover, drivers can change their driving behavior quickly through in cab feedback alerts and real-time coaching. Studies show that companies where this approach has been adopted, delivery punctuality is constantly improving Brunheroto et al. (2022).

5.3.3 Maintenance Optimization through Predictive Data

Classic maintenance strategies use either fixed schedules or respond reactively to failure breakdowns. But there is an alternative in the form of predictive maintenance, it is a data-driven approach where the health of vehicle components is monitored in real time. When parameters like mileage, engine hours, and fluid levels hit certain thresholds, automated maintenance alerts are sent (Geotab Team, 2024).

According to Cheng et al. (2025), predictive maintenance can help improve the lifespan of the fleet, reduce unplanned downtime and increase its availability. It is more effective and cost-efficient to maintain a vehicle based on actual condition and not calendar based.

Apart from improving continuity of operations, this will help with procurement and replacement decisions. For example, the telematics data might support the business case for replacement if a vehicle shows highly maintained performance.

5.3.4 Strategic Value and System Integration

Apart from the tactical use, it is possible to use a telematic for strategic fleet planning. Connection with other information systems (WMS/CRM/ERP) creates a single data environment of information. Features like digital proof of delivery, automated dispatching, and real-time customer up-

dates are all supported by this integration. Using a combination of automated dispatching, electronic proof of delivery, and real-time customer updates can improve efficiency and experience (Ward, 2022).

It is important to have connections like this, in moving logistics that often have delays, rescheduling, and address changes. Having synchronized data across platforms enables operational decisions to be taken based on 100% current data. Having access to synchronized data across platforms improves logistics operations' responsiveness and efficiency (Vivaldini et al., 2012).

However, it is important to recognize the challenges of telematics adoption. Main barriers are installation costs, monthly subscriptions, complexity of integration, and driver resistance (Brunheroto et al., 2022). Moreover, the monitoring systems can cause tensions among staff with fears of being surveilled or penalized. To limit this, organizations should establish clear messaging strategies and ensure the positioning of the monitoring systems as support and growth, not surveillance.

5.3.5 Environmental and Compliance Benefits

Although the primary goal behind telematics is not the environment, nevertheless, telematics can provide environmental benefits. It is possible to achieve this by better route planning, reducing engine idling, and improving vehicle servicing. Efficiency helps in saving fuel and reducing CO₂ emission, which contributes to the sustainability goals. According to Xuan et al. (2024), by lowering carbon dioxide (CO₂) emissions, fuel-efficient vehicles can meet modern sustainability objectives.

5.4 Lean Logistics Practices

Lean logistics is a result of applying traditional lean principles to logistics and transportation operations. The main objective is to reduce waste, optimize process flow, and maximize the value delivered to customers. Lean practices in fleet management lead to more efficient usage of vehicles, lower downtime, and make it easier to do scheduling.

5.4.1 Principles of Lean in Logistics

The core principles of lean logistics consist of five important principles, which are identifying value, mapping the value stream, creating flow, doing pull-based planning, and the pursuit of perfection (Womack & Jones, 1997). By utilizing these principles, a logistics company can assess its processes not only from a cost perspective but also on how well each process adds to the overall value.

In a logistics context, “waste” refers to things such as underused vehicles, overuse of fuel, excess handling, waiting times at the loading dock, and large amount of paperwork. When businesses reduce and eliminate such forms of waste, it streamlines workflows and improves fleet availability.

According to Doolen and Hacker (2005), lean logistics is not a system; it is more of a culture of continuous improvement. This culture empowers the teams to identify inefficiencies and take ownership of their own changes. The adaptive mindset is essential in moving logistics, where job orders, routes, and resources are varied daily.

5.4.2 Just-In-Time Dispatching and Load Leveling

Just-in-time dispatching is a well-known lean technique in logistics. These vehicles are designed to move only when necessary, according to real-time demand. It assists in minimizing unnecessary vehicle movements and wastage of fuel, also helping in creating alignment between customer demand and fleet operations.

Load leveling is also known as heijunka; it is a method that aims to spread the workload over time. In fleet management, this optimizes delivery schedules to avoid congestion. By analyzing past demand patterns, planners can distribute work throughout the week with a final goal of maximizing the use of fleet and manpower (Womack & Jones, 1997). Using these practices improves resource utilization, staff efficiency, and customer satisfaction.

5.4.3 Value Stream Mapping in Fleet Operations

Value Stream Mapping tool is being used to visualize the flow of materials, information and activities. An ordinary value stream in moving logistics includes order processing, scheduling, vehicle

assignment, loading, travel, unloading, and documentation (Villarreal, 2012). By mapping this, value stream mapping find and identifies duplication, delay, and non-value adding steps.

With the help of VSM, logistics teams can evaluate their operational processes based on actual flow (Gurumurthy & Kodali, 2011). VSM can help uncover previously unnoticed problems such as double-handling, inefficient route planning, and poor communication with drivers.

By updating these processes, planers can shorten lead times, make schedules more predictable, and increase fleet throughput.

5.4.4 Continuous Improvement (Kaizen)

Continuous improvement, also known as kaizen, is another basic principle of lean logistics. It involves getting everyone, from management to frontline drivers, to spot problems and suggest changes. It is often ignored due to the fast pace of logistics operations, but Kaisen still stays as an effective aid that allows the inclusions and innovations in the companies. According to Nejjari et al. (2025), Kaizen encourages employees and workers to engage in improvement and problem-solving activities that enhance performance.

In fleet optimization, Kaizen activities can have driver workshops, team huddles, and groups analyzing delivery delays. According to Doolen and Hacker (2005), when employees get involved in improvement, there is an increase in motivation, decrease in resistance to change, and a generation of practical ideas.

Over time, small improvements like this result in significant performance gains.

5.4.5 Challenges in Lean Logistics Implementation

Though there are numerous benefits of lean logistics, it's necessary to acknowledge implementation issues too. It is essential when adapting lean logistics to shift from command and control to a more decentralized management. Companies that currently have hierarchical cultures can have difficulties with doing so.

In addition, small logistics companies often lack the resources to consistently apply process discipline. Shah and Ward (2002) note that, without leadership commitment and support, the use of lean tools will be isolated and lack continuity.

5.5 Workforce Training and Engagement

Training and engaging the workforce are crucial components of fleet optimization strategies, yet they are often given little emphasis. Truck drivers, dispatchers, and logistics coordinators influence directly fuel consumption and route compliance, vehicle condition, and customer service. The well-trained and motivated personnel are essential for having an effective organization.

5.5.1 Importance of Training for Driver Performance

Responsibility of fleet-related tasks, from handling vehicles safely to following optimized routes are laid on drivers' shoulders. Driver behavior impacts fuel usage, vehicle upkeep costs, and consistent delivery of goods. Doolen and Hacker (2005) note that training programs that incorporate eco-driving, safety awareness, and the effective use of digital tools are likely to have improved fleet performance. Results of the study suggested that structured training and retraining programs result in fewer accidents and a greater adherence to operating procedures.

Similarly, Brunheroto et al. (2022) note that the telematics data can be improved with targeted driver coaching. According to their findings, tracking behavior is not enough. People do not use data properly without the required training. This point is somewhat different from Crainic and Laporte (1998), who highlight that it is the changes to the system what matters. Thus, training is complementary and not central.

Both are true. Technology can find inefficient parts of a process, but it is the behavior of the workers that will determine if implementation is successful. Therefore, combining monitoring tools with training interventions is the most effective way of gaining performance gains.

5.5.2 Cross-Training and Role Flexibility

With the help of cross-training, logistics employees can perform and handle multiple roles. These roles include loading, scheduling, and customer interaction, and they offer several advantages. To begin with, it enables operational flexibility during staff shortages or peak demand. Second, it provides better transparency into the whole workflow and help improve communication and prevent mistakes.

According to Gurumurthy and Kodali (2011), cross-trained teams have better abilities to adjust to disruptions in the flow of work. Also, they succeed at the implementation of lean logistics practices. Supporting this, Shah and Ward (2003) note that by suggesting that human resource flexibility enables high-performance lean operations.

On the other hand, organizations with narrow specializations are efficient in the short run, but they lack flexibility.

5.5.3 Motivation, Incentives, and Organizational Culture

Without employee involvement, training is insufficient. The final success of fleet optimization strategies is strongly influenced by the organizational culture and motivation. Doolen and Hacker (2005) say that training should be linked to a specific performance expectation and have regular feed-back. Staff members become more engaged and committed when they can see a clear connection between their behavior and an organizational outcome.

Giving rewards based on performance can support the preferred worker's behavior. On the other hand, Brunheroto et al. (2022) warn that motivation should not be misaligned with organizational objectives. It would be helpful to use a balanced scorecard approach to measure safety, punctuality, and efficiency.

Culture also plays a big role. Encouraging open dialogue, continuous learning, and frontline feedback loops can help companies to make more realistic, sustainable improvements. This aligns with lean thinking. Womack and Jones (1997) noted that lean thinking views employees as participants in continuous improvement rather than merely rule followers.

5.5.4 Challenges in Implementation

It can be quite difficult to implement training and engagement effectively, despite their importance. Logistics companies that are smaller in size may not have the resources to organize training frequently. Long-standing staff may resist change, which is a common barrier to the adoption of new programs.

To deal with these challenges, companies should consider training and engagement processes to be ongoing, not one-time events. One way a strategic advantage can be gained is by embedding learning in everyday operations through coaching, peer mentoring, or learning management systems.

5.6 Industry Case Examples and Good Practices

Theoretical models are valuable, but fleet optimization in the real world gives insight into what works and what does not. This section presents selected case studies from the logistics sector and draws out good practices.

5.6.1 DHL: Route Optimization and Telematics Use

DHL, a logistics giant, has equipped the entire fleet of delivery vehicles with smart telematics and dynamic routing systems. Using the systems of this technology has allowed DHL to reduce their idle time, unnecessary mileage, and improve delivery time predictability. In addition, routing the vehicles more efficiently and reducing the vehicles' idling lowers greenhouse gas emissions.

According to Raschka (2023), DHL combines historical and real time traffic data by using predictive analytics. This improves last-mile delivery regularity. As a result, delays are reduced, the number of additional miles is reduced, and delivery times are more predictable.

DHL also embraces driver feedback and training through telematics, in accordance with the lean logistics principles we discussed before. This proves the effectiveness of technology combined with human resources development, as seen in both Doolen and Hacker's (2005) and Shao and Cheng's (2023) studies.

5.6.2 UPS: Load Consolidation and Delivery Efficiency

ORION (On-Road Integrated Optimization and Navigation) is a UPS real-time system for estimating the optimal route for delivery vehicles. According to the company, saving just one mile per driver per day results in millions of dollars of fuel savings each year.

UPS is also efficient with load consolidation, meaning multiple packages take up fewer routes. According to Cheng et al. (2025), dynamic consolidation results in operational savings, fewer emissions, and lower emissions as a result.

UPS is an excellent case study on how data science, automation, and operations management can help in daily supply chain activities. Moreover, it indicates that the use of lean tools is a great way of reconfiguring inefficient delivery systems.

5.6.3 DB Schenker: Cross-Docking and Workforce Involvement

DB Schenker has reduced inventory holding and improved delivery time by using cross-docking operations. According to Anand and Kodali (2008), this method is aligned with lean logistics concepts as it eliminates any intermediate storage and helps in minimizing cost.

Moreover, Schenker has improved the flexibility and responsiveness of its workforce during peak demand by adopting multifunctional workforce models. In these models the same employee is trained for dispatching, documentation and customer service.

DB Schenker's case illustrates that technology investment alone is not enough, organizational design and employee engagement must also be improved. According to Shah and Ward (2003), lean transformation involves process redesign and internal capability building.

5.6.4 IKEA: Green and Lean Logistics Practices

IKEA is generally known for retailing, but its logistics system has integrated a sustainable transport solution. IKEA uses high-capacity trucks as well as rail transport schemes for the bulk movement of

products between storage and stores. This strategy increases truck fill rates and decreases trips, therefore raising the effectiveness of the fleet and environmentally friendly performance.

Furthermore, IKEA uses backhauling. This refers to the wholesale pick-up return trip from the shop to the supplier. It is being used to avoid empty miles. According to Carvalho et al. (2010), this is an illustration of the synergy between lean and green logistics practices for reducing costs with ecology.

IKEA's scope and possibilities of integration may be hard to imitate for smaller companies. However, its strategic design of network and ongoing assessment of sustainability can inspire future fleet planning initiatives.

6 Challenges and Barriers in Fleet Optimization

Fleet optimization can assist in reducing costs, improving operations, and increasing sustainability. However, it's not usually that simple to implement. Companies engaged in logistics operations face organizational, technical, financial, and external challenges. To implement strategies, it is essential to understand these barriers.

6.1 Technological Complexity and Integration

One of the main challenges is the integration of telematics, predictive maintenance, or fleet management systems. These new technologies can make improvements in routing, fuel efficiency, and vehicle monitoring. But many companies do not adopt them, and the reasons are high initial costs and system connectivity issues. As noted by Brunheroto et al. (2022), technology driven optimization heavily relies on integration across platforms and data availability. The requirement is troublesome for many small and mid-sized companies.

6.2 Human Factors and Resistance to Change

Human factors are another barrier. Mainly their resistance to operational changes is a problem. According to Doolen and Hacker (2005), even if the company uses new technological tools, it is not

enough, since fleet efficiency will suffer from not having trained or motivated staff. Employees that have been on the job for a long time may dislike being monitored by telematics. Operational teams may also use only familiar and inefficient manual processes.

This problem gets worse when leadership does not recognize the importance of culture and change management. Shah and Ward (2002) note that sustainable operational change is achievable only when the workforce works in alignment with company goals.

6.3 Short-Term Financial Constraints

Many fleet optimization programs require significant up-front investment to gain long-term returns; this makes them not appealing to companies with tight budgets. Initial expenses are rising due to the use of telematics hardware, cloud-based systems, and staff training. Since the costs may be beyond their capacity, small and medium enterprises may delay or fail to complete implementation.

This financial barrier is being even more complicated by the uncertainty of returns (Azevedo et al., 2011). Companies may not want to invest unless they have a forecast or benchmark based on another cases.

6.4 Inconsistent or Incomplete Data

Real-time data is essential for making fleet optimization decisions. However, the vast majority of logistics companies don't collect this data or manage it in siloed systems. This results in inconsistent performance metrics. Brunheroto et al. (2022) argue that data silos, as well as non-integration, are the main challenges in implementing advanced analytics.

Further, small firms may not have internal analytics. They depend on third parties or spreadsheets, which are inflexible and inaccurate.

6.5 Sustainability Trade-offs

It's becoming increasingly common for environmental goals to conflict with economic ones. For example, investing in electric or fuel-efficient vehicles increases costs in the short term. According to Carvalho et al. (2013), organizations often find it difficult to balance ecological and financial priorities.

Also, adopting green practices may involve some compliance and reporting systems. That adds an administrative burden without immediate returns.

6.6 Fragmented Operational Planning

The dispatch, vehicle maintenance, customer service, and other departments work independently among logistics operations. Even good strategies can be ruined if departments are unable to coordinate. According to Gurumurthy and Kodali (2011), siloed operations cause schedules to be misaligned, capacity levels to be inconsistent, and processes to be redundant. That ultimately lowers overall fleet utilization.

The implementation of integrated planning systems and collaborative planning meetings can help with this problem. But it requires leadership support and IT infrastructure.

6.7 Misunderstanding of Lean and Digital Practices

Many logistics companies that are starting to use lean methods or digital tools usually don't understand how important their system becomes. For instance, reducing staff without modifying processes may result in disrupting operations. Azevedo et al. (2011) note that if systems are not properly adjusted, that could lead to negative outcomes after new techniques adoption.

Logistics activities require the adaptation of lean and digital methods rather than copying them from manufacturing models. Otherwise, new bottlenecks could appear.

7 Summary of Findings

This chapter summarizes the key findings gained through literature-based investigation.

7.1 Common Inefficiencies in Fleet Utilization

In logistics operations, fleet underutilization continues to be a challenge. The literature indicates repeated inefficiencies. One of them is a mismatch between vehicle capacity and load size. Due to unpredictable scheduling or last-minute job orders, trucks operate not fully loaded. A low vehicle load lowers cost efficiency, increases vehicle wear, and raises fuel costs.

Outdated route planning systems create another case of inefficiency. Many companies still rely on manual systems without considering real-time variables. As a result, trucks may travel longer than required, idle unnecessarily, or spend excessive time.

Organizational fragmentation caused further inefficiencies. Often, dispatch, customer services, and fleet maintenance departments are not coordinated. This structure creates conflicting schedules. Resulting in vehicles not being fully used and reactive maintenance that causes downtime. Failure to efficiently use technology is yet another cause of inefficiency. Companies that do not implement telematics, vehicle tracking, or digital scheduling tools cannot do real time performance monitoring.

Inefficiencies such as unnecessary idling, aggressive driving, and failure to use optimized routes are caused primarily by drivers. These behaviors remain unchecked without proper training and performance monitoring, resulting in operational losses over time.

7.2 Factors Influencing Fleet Performance

This thesis shows that fleet performance is determined by the operational, financial, and external environmental factors. Scheduling processes, routing strategies, maintenance programs, and driver management systems all have a direct impact on performance. Organizations that have performance KPIs and monitoring projects show better utilization and on-time delivery.

Financial capacity has a significant but indirect effect on performance. Systems like route optimization software and predictive maintenance systems will improve utilization but come with a cost. Due to limited cash flow, many small and mid-sized logistics companies tend to delay such investments. As a result, they depend on manual tools and workarounds.

External factors also have a notable impact. These factors include weather conditions, regulatory compliance, road infrastructure quality, and fuel price. For example, restrictions or emission standards specific to the cities may complicate routing. Companies must stay dynamic due to these forces, which is only possible if the internal systems are highly flexible.

Cultural and organizational factors affect fleet performance too. Fleets are more likely to maintain a high level of efficiency if companies invest in their staff and align the goals of their departments. This finding shows that optimization is more than just technical management, it also requires a behavioral aspect.

7.3 Best Practices in Scheduling, Truck Logistics, and Route Planning

During the literature review, several best practices were found. Dynamic scheduling and routing systems are among the best. Companies are able to increase daily trip density and reduce empty miles by basing their decisions on real time data. This becomes possible by using GPS tracking and fleet management software.

In truck logistics, load consolidation turns out to be quite useful in reducing trips and utilizing maximum capacity. This is achieved by grouping together various customer orders with similar destinations into one load. As a result, it helps to reduce carbon footprints due to a smaller amount of fuel consumption.

Predictive maintenance is another best practice; it turns the maintenance schedule from reactive to proactive. Fleet managers can predict failures by using telematics and have maintenance carried out during downtimes. This helps to avoid unexpected failures and extend the component life.

Value stream mapping has been useful for fleet operations as well. When companies map every move in the delivery process from booking to unloading, they can identify where delays or redundancies occur. The UPS and DB Schenker experience shows that a structured and data-driven improvement process improves utilization, customer satisfaction and flexibility.

In the end, it is important to make sure that drivers and operational staff are involved in these processes. Using training programs is essential in achieving it. Programs with a focus on eco-driving and safety can improve compliance and reduce behavioral dysfunctions.

7.4 Research-Based Practical Recommendations

By studying academic texts and industry cases, a number of practical recommendations have been developed.

First, diagnostic reviews of existing scheduling and routing should be carried out by companies. Inefficiencies can be revealed even by simple data collection. Basic tools, such as route planners and telematics systems, can generate immediate benefits by supporting decision-making.

Second, fleet utilization rate, on-time delivery percentage, and cost per kilometer indicator should be established. Regular monitoring of these metrics helps identify improvement areas.

Third, workforce development must be prioritized. The financial performance of any fleet is directly impacted by driver behavior. Ongoing coaching and rewards could positively affect the adoption of new practices.

Fourth, companies must adopt lean methods. This includes just-in-time scheduling, cross-docking, and load leveling. Doing this can reduce delays, remove unnecessary steps, and improve departments' synchronization.

Finally, companies should start evaluating some basic environmental indicators. These indicators include fuel usage, empty trips, and average emissions per kilometer. Customers and regulators

are concerned about the challenges of green logistics. Aligning it from the beginning would give a marketplace advantage.

8 Summary of Findings

This thesis's findings are expected to help the researchers, practitioners, and logistics managers to increase their understanding of the improvement of fleet utilization. The overall literature and practical cases review provides a collection of knowledge that can be used as a reference for further studies. A comprehensive and structured literature review strengthens the study's credibility. In order to make sure the findings were generally relevant, different perspectives were included, and various logistics contexts were considered.

However, certain limitations must be acknowledged. This research is based on secondary data and did not involve interviews, surveys, or company-specific case work. This makes it impossible to evaluate the applicability of the findings in a certain operational setting. The recommendations made in this report are drawn from peer-reviewed literature and real-world examples. However, the fit of each recommendation for a particular company depends on a number of factors. Such as their fleet size, geographic region, digital maturity, and organizational culture.

This thesis supports professional and academic discourse on fleet utilization. The framework will help with better decision-making and continuous improvement for logistics managers, as given by the research.

9 Conclusion

To improve utilization of the fleet, logistics companies are upgrading their systems to lower operational costs. In the same moment, still improving efficiency and customer service. According to the findings, optimization involves more than only technical tasks. Strategic planning, operational discipline, and employee involvement are also required. Focusing on implementation tools and software alone would only produce partial benefits.

Short and long-term efforts are both included in fleet optimization. The performance is affected by scheduling, routing, and load planning. However, the decisions related to technology, training, and investments impact the final outcomes. These two levels must support each other. Improvement initiatives may not be successful if the goal and process are misaligned.

Cost remains the main obstacle. Many optimization solutions require an initial investment. This involves telematics systems, route planning, and talented staff. Due to limited resources, small and medium sized companies delay such upgrades. It can be difficult to convince stakeholders to invest in long-term benefits when the short-term results are unknown.

Time and effort are required when changing the existing systems. Older workflows are often built on habits, not data. It takes leadership communication and training to modify these routines. In the end, even useful changes may face resistance from staff. Clearly specified goals, targets, and feedback are required for success.

Optimized fleet utilization also supports sustainable development goals. From an economic perspective, logistics companies can lower their operating costs, fuel utilization, and vehicle lifespan. From a social perspective, drivers' well-being improves and stress levels at work decrease. From an environmental perspective, reduced emissions and energy consumption are achieved. Although the focus of this study was on operational activities, these findings show that sustainable fleet management can also contribute to more value creation across all three dimensions of sustainability.

The thesis shows that without staff engagement, effective optimization is not possible. Performance is influenced by drivers, dispatchers, and planners. Even the best systems may not work well without their involvement and support. Training and motivation are required for teams to adapt and improve.

The process of fleet utilization requires both good tools and strong management. Careful planning, team involvement, and result monitoring are essential. The practices reviewed in this paper present a flexible framework. Each business can evaluate and adapt them to their needs.

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