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Navigating the Intersection: Cost Reduction and Sustainability in Logistics Strategies

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Abstract

Background: Cost reduction in logistics is crucial for improving profitability and achieving continuous sustainability improvement. Companies aim to maintain margins through cost reduction strategies in logistics yet staying sustainable in competitive markets.

Purpose: The thesis analyses the impact of supply chain management cost reduction on sustainability as well as the other way around, particularly focusing on logistics cost cutting and their influence on efficiency improvement and long-term sustainability.

Method: The research methodology involves qualitative research, including interviews with experienced professionals in the logistics field who have tackled cost reduction and sustainability.

Conclusion: Achieving sustainability in supply chain management necessitates the successful integration of logistics strategies and the implementation of cost-cutting measures. Companies can strike a balance between economic efficiency and sustainable practices by optimizing operations, minimizing waste, and adopting responsible approaches.

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1. Introduction

This chapter starts with an overview of the thesis topic, which is about supply chain sustainability and the logistics costs impact.

1.1 Background

The supply chain management (SCM) involves upstream and downstream processes and relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain. For effective utilization of management constructs, a consensus on the broader definition of the supply chain is essential.

In the current body of research aimed at comprehending the SCM concept, the downstream processes involve relationships amongst focal firms when becoming qualified suppliers to the distribution of products to end customers (Roy & Sivakumar,2010), i.e., from order request to delivery to the end customers, including application registration, storage, inventory, raw materials purchasing and transportation, to which logistics plays a crucial role with impact on the overall SCM cost efficiency (Ha et alt., 2011).

Logistics are an essential part of the supply chain. Logistics is defined as the process of strategically managing the procurement, movement and storage of materials, parts and finished inventory (and the related information flows) through the organisation and its marketing channels in such a way that current and future profitability are maximized through the cost-effective fulfilment of orders. In it, “Logistics Costs” are defined as all relevant costs impacting the supply chain. Several types of logistics costs are identified by, i.e., “Production cost” (Bowersox and Closs 1996; Chen 1997; Sachan et al. 2005; Byrne and Heavey 2006); and the “Manufacturing cost” (Chen, 1997; Bowersox and Closs, 1996) and require to be managed.

Cost reduction in logistics refers to the process of reducing expenses associated with the transportation and storage of goods. This can be achieved through various methods such as optimizing supply chain management, increasing operational efficiency, utilizing technology, and negotiating better deals with suppliers and carriers. The goal is to improve profitability and competitiveness while maintaining high standards of service.

Logistics costs management is relevant for improving profitability per customers, assessment of logistics activities, continuous logistics improvement. Moreover, the consequently lack of natural resources, increased environmental pollution, and natural disasters, with impact on the socioeconomic aspect of social sustainability, has been paid more attention (Bonassina et al., 2018).

In an increased competitive market, companies must make sure that their margins can be maintained by cost reduction. Yet cost reduction is a challenging subject in logistics and distribution because it easily leads to wrong strategy for companies. Customers and end users are driven by products value rather than brand name or supplier loyalty. Companies to deal with market competition must pursue both pricing strategies combined with effective supply chain management, so that cost can be significantly reduced, and profits increased. Logistics and Supply Chain cost reductions methods have been effectively used and the results in big multinational companies i.e., warehouse costs, transportation costs… There has been recognition that the key to major cost reduction lies not so much in the internal activities of the firm but in the wider supply chain (Christopher & Gattorna, 2005).

To understand more about cost reduction, the term supply chain costs and main drivers of supply chain costs need to be well-understood. Supply Chain Cost (SCC) is defined as all relevant costs in the supply chain of the company or organization, more specifically, the flow of manufacturing costs refers to the process of using materials as well as labour to produce a finished product ready to be sold to a customer. Furthermore, a supply chain management system can reduce the cost and complexity of the manufacturing process, particularly for a manufacturer who uses many parts. There are six areas of supply chain costs namely as manufacturing cost, administration cost, warehouse cost, distribution cost, capital cost, installation cost (Pettersson & Segerstedt, 2013). The focus of the study is to get the perspectives of specialists working in the field with profound experience in order to see the general picture of how companies are cutting cost and maintaining sustainability. Hence, the problem is observed from an professionals' points of view, particularly from the operational side in cost reduction and sustainability. Qualitative research to understand concepts, thoughts and experience will be used to understand further the topic. The empirical evidence will be collected by gathering information from conducting interviews with employees working at logistics fields who have tackled and

well-experienced with cost reduction to save companies logistics costs and budgets as well as sustainability.

The intent of this thesis is to reflect on sustainability management on the pass action considering environmental factors and social aspects of organisational activities and their integration with economic performance (Seuring and Müller, 2008a; Schaltegger & Burritt, 2014). To do so, this thesis will provide understanding on logistics process such planning, implementing, and controlling impacting the SCM efficiency and effectiveness in flows from production to end-users.

1.2 Problem discussion

The problem with the impact of supply chain management practices on sustainability is that many articles and research studies focus on green logistics (e.g., Govindan et al., 2014) but are not connected to the broader discussion of supply chain sustainability (e.g., Chaabane et al., 2011). The impact of management, information, communication, technology, and the reduction of waste effect on the cost of sustainability (e.g., Mandičák, et al., 2021) is still uncertain. On top of it, there is a lack of further understanding of the relationship between cost reduction and the cost of being sustainable and how to bridge global companies' logistics activities to cost reduction with an impact on sustainability as these issues have not been fully studied. The lacking studies about the practical relation of those two research fields can be identified as a gap in the current literature. The current studies lack the practicality of including the adaptation to sustainable processes as part of the logistical cost package and the sustainability (socioeconomic) cost impact on the supply chain. Thus, this thesis aims to connect the topics “logistics cost cutting” and “sustainability” to see how they are conducted in the real business world and how they are related to each other. This will be analysed with qualitative research conducting on 5 cases of companies of different sizes worldwide.

From the supply chain management point of view, this thesis will review on theoretical studies that explore how supply chain management practices, such as supplier selection, inventory management, and transportation planning, can contribute to cost reduction in logistics. From that, we will study the practical logistics cost cutting and sustainability in companies and connecting the bridge between theory and real business life. The research is to find out what kind of common patterns of logistics cost cutting for (i.e. transportation, warehousing), which ones the available common methods that companies

used to reduce logistics costs and effectiveness based on real experience. Understanding that, there will be slight discussions for those cases on areas to focus and the relevant issues, potentials of each method used and advantages as well as disadvantages of each method. It is useful to examine case studies or real-world examples of successful cost reduction initiatives in logistics operations. This will provide practical insights and support for the thesis.

1.3 Research purpose and Research questions

The purpose of this thesis is to analyse the supply chain management costs of sustainability, specifically the logistics costs with impact on the efficiency when improving sustainability.

To fulfill this purpose the following research questions (RQ) will be answered:

RQ1*: What logistics practices are relevant for reducing the current costs with impact on the supply chain sustainability?*

RQ2: *"What is the interrelation of logistics cost reduction strategies to the efficiency to the SCM sustainability?"*

1.4 Delimitation

Understanding that logistics is the process of planning, implementing, and controlling the efficient, effective flow and storage of goods, services from production place to end-users at the lowest total cost possible, the cost saving does not always apply to every aspect of logistics and supply chain management. Emergency logistics, for example, has different characteristics which cost saving is not the optimal purpose of logistics but instead the mission of saving lives and easing out tragedies as effectively as possible. Emergency logistics is excluded from the research. The difference of emergency logistics from normal business logistics apply to the nature of problem, operational purposes, and demands. Emergency logistics aims at helping the affected people under emergency conditions, so cost reduction is not an optimal criterion in this case (Sheu, 2007).

2. Literature Review

The following chapter will present a comprehensive literature review which provides insight into the topics of cost cutting methods, and supply chain sustainability.

2.1 Supply chain management and sustainability

In supply chain management (SCM), the **sustainability** is related to evaluation of logistics functions comprises of three different areas: productivity, utilization, and performance. Logistics plays a vital role to the goals of reducing operational costs and maintaining sufficient level of service with impact on the cost-efficiency of the overall SCM (Roy and Sivakumar, 2010). Efficiency is measured by how resources are utilized (Mentzer & Konrad, 1991). There are many key influencers in measuring effectiveness and efficiency of logistics activities: transportation, warehousing, inventory control, order processing, logistics administration. Mentzer & Konrad, (1991), claimed that transportation is measured by labour, handling cost, equipment, energy, which is assessed by the performance of sizes of goods loaded and loading time, and that warehouse management is evaluated by time, labour, cost, utilization, and administration. They also argued that inventory control is like logistics administration in capital charge and inventory risk, and that the order processing includes tasks such as order editing, order handling, shipping, billing, which are involved in the day-to-day logistics activities operations; logistics financial performance, customer communications are among the measurement factors for logistics administration.

In SCM, **strategies** are significantly and positively associated with both environmental and operational performance, which then indirectly leads to improved financial performance. Sustainable (or green) supply chain management shows positive effects on financial outcomes of companies (Singh et al., 2020). Green supply chain practices can directly bring about operational and financial efficiency. Cross-functional operations to obtain the maximum benefits of green logistics (Feng et al., 2018). Through communication and cooperation internally and externally, trust will build up along the line and improved financial performance will be gained (Feng et al., 2018). **Green logistics and supply chain** provides many financial benefits such as reducing risks and speed up innovations, lessening the operational costs and build up alignment with

suppliers and providers across the logistics lines through more advantageous strategies (Singh et al., 2020).

For companies to implement a sustainability strategy in their supply chain operations, the logistics function needs to play an important role because of the involved logistics costs and the opportunity to identify and eliminate inefficiencies and reduce the carbon footprint (Dey et al., 2011). Designing an optimal logistic network and using suitable modes of transportation, load capacities and routes can decrease the travel distance and enormously lessens the carbon footprint, fuel prices and lead time (El-Berishy et al.,2013). Minimizing the distance travelled is an important step in network optimization due to the reduced emissions and total supply chain costs (Sbihi & Eglese, 2007). Effective usage of energy will mitigate the waste and help organisations reduce the natural source energy usage (Markley & Davis, 2007). Green logistics helps reducing waste in production and transportation, thus impacts on the environmental performance and improve operational performance, quality and flexibility are boosted (Feng et al., 2018). Activities of reducing waste of maintenance and improving inventory management practices such as materials losses, hazardous materials reduction can help significantly with reducing costs (Markley & Davis, 2007). Moreover, cost effective and energy saving transportation of goods through green logistics and supply chain also obtain financial benefits for companies (El-Berishy et al.,2013). Green logistics consume less raw materials and energy, which leads to cost saving in production process (Feng et al., 2018). Investment in the production process efficiency will also improve the financial performance of companies (Feng et al., 2018). Green logistics will reduce the emission to the environment and lessen the pollution with less energy consumption (Feng et al., 2018). Going green will have major impact in the future and benefits the financial aspects of companies through long term sustainable growth (Salama, 2005).

Moreover, green logistics helps gain better market images, build customer loyalty, increase customers satisfactions, and appear to be more attractive to future candidates (Salama, 2005). Green logistics also bring the companies to better market position by differentiate companies from other candidates (Salama, 2005). Companies gain more market shares by producing more environmental-friendly products to the market. Less cost spent on pollution control and less cost invested in waste disposal means companies save more money and improve financial results. (Markley & Davis, 2007). As the green logistics helps reducing costs by improving operational performance, it also improves

customer relationships because customers long for the long-term sustainable products, customer satisfaction built up, trust and loyalty are beneficial for financial gains in the long run (Mirghafoori et al., 2017). Customer satisfaction is a vital key in corporate performance success and companies with better environmental performance can build up brand image (Mirghafoori et al., 2017). The higher the customer satisfaction, the lower the price is and there is a close and positive relationship between customer satisfaction and financial performance (Mirghafoori et al., 2017). Higher customer satisfaction will increase higher customer loyalty and the overall costs can be reduced through gaining more customers (Mirghafoori et al., 2017). Companies which recognize customer desire gain more competitive advantages; they attract higher customer satisfaction and their constant development on green products, entering new markets, investing in facilities for green product production will lead to higher profitability and market share and gain more competitive advantages compared to other rivals in the market (Mirghafoori et al., 2017). Environmental performance is positively related to financial performance by investing in building good environmental reputations which helps companies achieve higher competitive advantage, enhancing shareholder's strength, attracting future job market and investors (Salama, 2005). Good reputation built up from positive environmental reputation helps companies attain better profits (Salama, 2005). Green logistics and supply chain obtained through collaborative management of suppliers, manufacturers and customers will give optimal financial results in the long run with the advantages of effective management (Feng et al., 2018). Financial improvements of companies are results of investments in resource efficiency and when companies have sets of new standards in the industry, which may be too difficult for business competitors to keep up with, companies get more market share (Feng et al., 2018). There have been proven close relations between environmental performance, operational performance and financial performance (Feng et al., 2018). Implementation of green logistics is an approach that benefits sustainability, a key the international measurement which delivers long-term profitability (El-Berishy et al.,2013).

Observation shows that companies which improve environmental performance and operational performance will also improve financial performance (Olayeni et al., 2021).

The environmental management such as green logistics and supply chain has a positive relationship with an organization's economic performance (Zhu & Sarkis, 2004). The benefits gained through green logistics and supply chain are positive economic

improvements, including decrease of cost for materials purchasing, cost reduction for energy consumption, waste reduction and environmental accidents fine minimization (Zhu & Sarkis, 2004).

More positive environmental performance and operational performance will generate more profits, revenues and cost reductions (Feng et al., 2018). There are many factors lead to improved financial performance, managers and leaders should focus on sets of green logistics standards and practices for positive financial outcomes (Feng et al., 2018). Strategic cooperation between companies has been known to enhance environmental performance and bring down costs (Carballo-Penela et al., 2019). Participants of a supply chain cooperate to optimize CO2 reduction to meet customer expectations and lessen risks in term of climate change, lower energy costs, and improve public image (Carballo-Penela et al., 2019). There is a great potential of mitigating the carbon footprint of products through collaboration (Carballo-Penela et al., 2019). Companies change into green environmental supply chain management to improve cost management with green products, especially products obtained in global supply chains which go through many intermediaries across the global supply chain (Carballo-Penela et al., 2019).

Green logistics bring about many important values for corporates and environment such as lowering the sources of wastage, reduction of raw materials and energy usage (Malviya et al., 2018). Many companies believe that green logistics plays a key role in cost reduction because it is more efficient than traditional logistics procedure to lessen the environmental impact. Green production tries to reduce parts, optimize materials usage and reuse components to build more efficient products (Malviya et al., 2018). Eco-friendly products, cost reductions and competitive benefits are the advantages companies opt for and planned strategies are set accordingly to achieve such advantages (Malviya et al., 2018).

There are mechanisms to reduce costs such as improving process efficiencies, shortening cycle time and increasing supply chain visibility, using lean techniques, utilizing resources, getting rid of unnecessary resources and lowering inventory levels. Cost reduction is a prioritized strategy in supply chain (Mpwanya et al., 2017). With constant effort, supply chain focus on improving performance and identifying activities to lessen costs, improving communication, integration and inventory visibility across the supply chain. Moreover, partners of the supply chain should focus on waste, purchasing, distribution and inventory reduction and cutting off on non-value-added activities

(Mpwanya et al., 2017). Strategic alliances between supply chain players also help to bring costs down (Mpwanya et al., 2017). Outsourcing supply chain activities and direct purchasing from manufacturers are some ways to cut costs (Mpwanya et al., 2017).

2.2 Logistics practices

2.2.1 The cost cutting in transportation

There are many ways to save logistics costs and reducing the supply chain cost in transportation is very crucial because it helps save a lot of budgets in company's overall logistics spending. Transportation cost involves many processes such as production supplies, components, semi-knocked down products and spare parts to production line within warehouses, wholesalers, retailers or end customers. There are many ways of reducing the supply chain transportation costs, which companies dealing with international market should consider in their strategies of budget savings (Peterson & Debo, 2009).

Transportation and logistics chain costs are accumulated by the most essential costs. Transportation insurance, transport port consignee, port handling discharging, inland warehouse abroad, sea freight, truck transport-port loading and handling are breakdown costs of the total transportation costs. The most significant cost is the sea freight cost, and it comprises of 55% of the total transportation costs. High sea freight cost might depend on the lack of competition of shipping companies, the second and third important costs are port handling discharging costs and transport port to the consignee, subsequentially. Transport and warehousing costs in export industry can be optimized to stay competitive with efficient machinery, product automation, better product quality to mitigate the long transportation costs. The efficiency in logistics transportations have been improved tremendously during the latest decades (Hämäläinen et al., 2017).

Choosing carriers, among them are reducing the number of carriers and assigning each carrier more workload to achieve lower rates across all the routes, choosing trust-worthy carriers and ensure customer's satisfaction and planning optimal routes can lead to more efficient logistics transportation (Peterson & Debo, 2009).

Consolidate shipments is another strategy of reducing transportation cost. The more products each shipment can carry, the fewer shipments are made and thus, lower rates due to larger shipments can be negotiated and financial benefits can be exploited. Many companies ship parts and materials from many suppliers whose locations scattered over

large area. There are opportunities to reduce total logistical costs by consolidating orders and sharing trucks. Consolidating shipments means that transportation will be prioritize more of full truck load (FTL) over less than truckload (LTL). Orders from plants to warehouses inside companies and apply full truck load strategy to optimize transportation and big orders from huge customers can be transported through full loaded trucks. Discounts for larger shipments are almost always available by carriers and this strategy should be always considered to reduce costs. Shipments are optimized in truck utilization in full container load truck load and less than container load shipments to decrease freight cost (Peterson & Debo, 2009).

Drop-shipment and *Cross-docking* in logistics are also methods of cost cutting, saved by improved and organized operations, which relate to labour, efficiency, asset utilization and inventory accuracy. Direct shipments from warehouses to end customers also save some transit costs for the company. Big companies also focus on drop shipment and cross docking. Drop-shipping is a method of selling in which the seller does not keep the products in stock. Normally, the retailer will purchase products from wholesalers and store them in their warehouse, products will be shipped to end customers later. With drop-shipping, the seller uses this method by purchasing the product from the third party and ship them directly to the customers. This method will save a lot of cost because retailer outsource warehousing and distribution process. To be more specific, products are purchased and stored from the supplier's warehouse and then shipped directly to the buyer's address. This will result in product cost and higher profit (Zając, 2014). Cross-docking is a process of all products which come to the same destination will be transported to one docking centre called 'cross dock' terminal. The inbound transportation will bring products from all production plants and warehouses to these docking terminals. From here, products can be unloaded, sorted, identified with destinations, and moved to different trucks to correspondent destinations. Then these will stay at the cross-docking centres for a brief period and shipped at the earliest opportunity, this will also help cut the warehouse costs. More than that, this method will save transportation cost because it combines many small product loads into bigger loads to same destinations or customers, thus save on delivering trips and increase productivity and time efficiency. Faster service flows and product handling, better customer's satisfaction, elimination of redundant similar procedures are among the benefits that cross-docking method brings (Hosseini, Shirazi & Karimi, 2014).

The main utilization of cross-docking is to reduce transportation costs. Customer service and responsiveness can be improved with optimized routing, fewer wasted miles, fuel reduction and vehicle service costs. Consolidation of transportation with full truck load shipments can lower transportation costs with warehouse used as consolidation point. Cross-docking provides fixed asset cost savings and less facility square footage. Combining traditional warehousing and cross-docking can bring maximum advantages which can reduce transportation and handling costs as well as inventory reduction. Managers need to make strategies on combining the traditional and cross-docking, weighing the benefits and evaluate suitable strategies for their products delivery and supply chain (Benrqya, 2019).

Modes of transport are key aspects concerned to the costs of transportation through by companies can minimize costs (Meixell & Norbis, 2008). Modes of transport should be flexible, for example, sea freight is always a cheaper mode than airfreight, rail freight is cheaper than trucking and companies need to utilize all the modes of transport to be less expensive and more time efficient (Meixell & Norbis, 2008). One thing to take into consideration is available route of transportation that relevant for the business (Meixell & Norbis, 2008). Transportation costs constitute a significant portion of overall production costs, managing transportation and distribution efficiently is crucial for manufacturing companies to maintain competitive pricing. Carrier performance will affect enormously the success and effectiveness of the whole logistics chain process of selecting an appropriate transport carrier is important to the firm's success (Meixell & Norbis, 2008). Choosing a correct mode of transportation and carrier is important and becoming more complex, the choice of mode and carrier must be compatible and appropriate for the company's industry and scope (Meixell & Norbis, 2008). The purpose of shipping full truck load, preferable pallets than individual cases to reduce the price and well-considered and planned transportation costs to minimize the total cost and avoid unexpected cost (Meixell & Norbis, 2008).

Labor costs in transportation during loading and unloading process can be optimized, managers should create incentive programs for employees in the warehouse or during transportation to work efficiently. Operational costs for a carrier include three major components: man, work cost for picking up deliveries, transportation cost between terminals, freight handling and consolidation cost. To reduce the labour cost, changing the layout of a terminal is also an effective way without investing in work training. This

will reduce the work hour because workers spend less time of travelling when goods arrive at the dock. By reducing a small labour cost by balancing travel distance and congestion, companies can see a significant effect on the profits (Bartholdi & Gue, 2000).

2.2.2 The cost cutting in inventory

Cost saving is a crucial topic for organizations, supply chain has been closely looked at to seek for ways of reducing costs (Strack & Pochet, 2010). Larger companies face higher pressure of delivering quicker service while ensuring profits and lower costs. Managers concentrate on minimizing warehouse and inventory costs, in which order picking comprise of 65% of total cost and 50% of the workforce spent on (Strack & Pochet, 2010). *Technology investment* on tools development to handle inventory and warehouses more efficiently will become helpful for cost management (Strack & Pochet, 2010). Decision process is integrated with phases of inventory replenishment decisions, products allocations in warehouse systems, products assignment to storage locations. (Strack & Pochet, 2010). *Workload of order picking* can be reduced by optimizing the quantity of products allocated at the forwarded area, inventories replenishment should have clear policies to avoid redundant storage and cost waste (Strack & Pochet, 2010).

Companies hold inventories because inventory is considered to be one of the most important assets of a business (Dooley, 2005). Companies want to improve their customer service and save costs by meeting customer service targets and ensure a secured cash flow without running out of stock, thus holding inventories is one of their objectives in inventory management (Dooley, 2005). Sometimes companies may face the peak season or event periods which need an excessive number of products, having stock at hand to deliver to customers on time is important to business relationship as well as financial benefits (Dooley, 2005). Ordering a large amount of goods from suppliers can increase the cost advantage, discounts can be passed onto end customers to boost the sale volume. Cost saving in supply chain management largely comes from reduction in inventory cost (Dooley, 2005). *Inventories reduction* have been pursued by logistics management strategies and in order to obtain most effective logistics strategy, inventories, product demand and supply chain capabilities have to be correctly understood (Dooley, 2005). Inventories management is largely affected by product demand including parts, components, materials (Dooley, 2005). Retailers opt for managing inventory by item in inventory control. Manufacturers usually use the flow management to control their

inventories, firms which produce raw materials do not have inventory management. Manufacturers use calculations as part of flow management to control their inventories, deliveries schedule, capacity management (Dooley, 2005).

Safety stock is the number of extra stocks maintained in order to smooth delivery and demand and to mitigate the risk of stockouts (Minner, 2001). Safety stock strategies can have a substantial financial impact. The relationship between safety stock and service level needs to be understood correctly, to effectively reduce inventory without reducing the service level (Minner, 2001). Reducing inventory or safety stock often requires managers to understand, which drivers are the most important in the supply chain and develop interesting approaches to these key drivers to manage and reduce safety stock. Interests are put towards *return and reverse logistics* (Minner, 2001). The reasons for this are that the enormous amount of broken or faulty return products cause huge disposal costs and managers see the positive economics savings by returned products disassembly and remanufacturing. Spare parts could be sold and reused from components extracted from these returned products. Raw materials, green environment and amount of supply chain safety stock will be saved, thus reducing the supply chain costs in general (Minner, 2001).

2.2.3 The cost of resources/competence

The material movement throughout the firm could be managed systematically, leading to a significantly improved logistics operation. Close coordination between purchasing costs, transport cost, inventory costs and warehouse costs provide high level of service. The overall potential efficiency and effectiveness brought from integrated logistics management is crucial base for companies' logistics cost cut-down (La Londe & Masters, 1994). There are skills and competence needed for managers in order to achieve supply chain excellence. (Christopher & Mangan, 2005). Numbers of companies, particularly international companies have recognized the importance of in-house learning capabilities. (Christopher & Mangan, 2005). The supply chain can be only well managed if corporates seek out for training and learnings from institutions for employees' skills and updated knowledge of supply chain management. (Christopher & Mangan, 2005). Managing supply chain is not a simple task, and companies need competent logistics executives who are fully capable of guiding logistics functions through competitive market yet ensure an effective and efficient flow (Christopher & Mangan, 2005).

2.2.4 The cost of logistics planning

Strategic logistics planning defines how a product can be delivered to customers to ensure long-term profitability of an organization. Powerful and flexible supply chain planning influence greatly the cost and profits of the organization. Logistics managers not only individually take strategic action on their behalf, but also consider the whole corporate's strategies (Gattorna & Hargreaves, 1991). *Strategic logistics auditing*, in the other hand, also plays a crucial role in evaluating logistics activities such as materials, component specifications, location of economic sources of supply, country of origins, inventory control and materials handling (Gattorna & Hargreaves, 1991). It offers the potentials to reduce unnecessary activities and costs, provide the right level of customer service and increase process transparency (Gattorna & Hargreaves, 1991). Logistics service if effectively managed will bring down the customer's costs and enhance their satisfaction through providing the right product in the right place at the right time (Christopher, 1993). The impact of customer service can be enduring, leading to longer term relationships with customers and bring about greater profitability (Christopher, 1993).

Understanding the importance of well-planning logistics and supply chain management and that poor logistics planning and decision making can result in excessive expenditures, failed delivery deadlines and damaged goods, optimizing operational efficiency and reducing logistics costs are crucial in companies (Lambert & Stock, 1993). When top management looks at companies cost reduction projects to improve the company's financial situation, logistics and supply chain costs should be among the top priorities for any international business which does oversea shipping and long for cutting cost and optimizing financial situation (Lambert & Stock, 1993). Companies might have cost reduction program with top management's support; specific goals, reports, projects with cost avoidance should be set out. Supply chain includes a complex system of activities, processes, resources, and organizations, dealing with the flow of goods and services from suppliers to consumers (Lambert & Stock, 1993). Objectives and achievements must be measured and evaluated timely in the following programs regarding supplier development, supplier cost reduction, materials substitution, make-or-buy analysis, value analysis, waste reduction, pay terms and conditions improvement, volume buying and process change (Lambert & Stock, 1993). Companies can cut costs by joining buying pools. Volume contracts are a way to leverage purchase requirements over time, between business units. locations or different line-item requirements (Lambert & Stock, 1993).

Reduction in purchase prices and administrative costs is the result of combining purchases. Cumulative volume discount will allow more purchases with lower prices over an extended period and encourage small order but more frequent buy in just in time (JIT) purchasing. Increase in the purchase quantity also helps suppliers to reduce costs and thus suppliers will be more inclined to accept lower unit margins for higher volume, thus helps businesses to cut costs (Lambert & Stock, 1993). Systems contracts (blanket orders) aim at cut materials-related costs such as purchase price, inventory, administration, transportation and etcetera (Lambert & Stock, 1993). Volume purchases help reduce the final cost to the buyer, fixed price will be agreed over a contract period (Lambert & Stock, 1993). Stockless purchasing is a system when companies try not to hold inventory of purchased materials by these methods: inventory level reduction, supplier's reduction, administrative cost and paperwork minimizing, reduction of small value goods and encouragement of bigger value volumes, on-time deliveries (Lambert & Stock, 1993). Moreover, performance measurement and evaluation activities are necessarily planned, reports should be issued to the top-management and functional reviews procedure audits, corrective action should be made to ensure effective logistics cost cutting (Lambert & Stock, 1993). Key performance measures to ensure purchasing control, price effectiveness, cost saving, workload, are also vital in cost saving and cost avoidance (Lambert & Stock, 1993).

Cost saving includes cost reduction and cost avoidance, cost reduction is reducing the price compared to the previous price and cost avoidance is the new unit price lower than average quoted price (Lambert & Stock, 1993). Strategy sourcing also ensures the outsourcing process effectively and enable profitable growth in the long run (Lambert & Stock, 1993). Managers have to look at the cost view to find out sustainable cost reduction opportunities and more important, total cost of ownership (Lambert & Stock, 1993). Cost of ownership involves suppliers and buyers' activities. Purchasing higher quality products will lower manufacturing defects, lower inventories requirements and administrative costs (Lambert & Stock, 1993).

Procurement specific strategic pathways are effective methods of reducing ownership costs (Lambert & Stock, 1993). They include buying less, buying better, consume better and selling better. By improving companies' procurement process, logistics can be cost-saving with well-planned and well-managed procurements (Lambert & Stock, 1993).

Suppliers' relationship increases the level of procurement development and enhance profits significantly (Lambert & Stock, 1993).

Key performance measurement should be considered when companies conduct cost saving strategies, including price effectiveness, cost savings, workload, administration and control, efficiency, vendor quality and delivery, material flow control, environmental measures, procurement planning and research, competition, inventory, transportation (Lambert & Stock, 1993). Price effectiveness determines how actual price performance compared to planned price which can be calculated based on the item lines or total price budget. Actual unit cost minus planned cost, price variance percentage are among the ways how price effectiveness is calculated (Lambert & Stock, 1993). Workload is indicated by many categories such as workload in, workload current, workload completed. Workload is currently counted by work received, backlog of work; work completed measurement includes purchase order placed, line items ordered, contract written (Lambert & Stock, 1993). Moreover, administration and control are measured by the annual administrative purchasing function budget. Depending on many functions such as markets, forecast, workload, the adjustment from the original budget can be increased or decreased for the current budget. Efficiency also plays a vital role in measuring two factors: input and output (Lambert & Stock, 1993). Procurement planning and research are important since they evaluate procurement plans and price forecasting accuracy (Lambert & Stock, 1993). Competition measures many factors such as yearly purchase dollars, purchase percentage on annual contract, purchase volumes to see how the company stay competitive in the market (Lambert & Stock, 1993). To sum up, cost avoidance and reduction in logistics and supply chain management are topics for a long-term project every company should consider, management should devote considerable amount of time and effort as well as the commitment of employees in strategic logistics and supply chain management (Lambert & Stock, 1993). The measurement and evaluation of cost reduction should be taken seriously to maximize the benefits of the company, to stay competitive in the global market.

Cost negotiation and breakthrough ideas are suggested ways to bring down costs. Companies should not only reduce costs but also focus on standards of products, effectiveness and customer services (Mpwanya et al., 2017). Outsourcing services can bring about success and efficiency by professional logistics providers. Profitability can be raised with networking sharing, capital cost reduction and operating costs reduction

(Mpwanya et al., 2017). Cost drivers' identification help to delete unnecessary cost activities and enhance process efficiency for greater competitiveness at reduced prices for end customers (Mpwanya et al., 2017).

2.3 Logistics strategies

2.3.1 The strategic alliances

The strategic alliances and collaboration between big companies among the logistics and supply chain players also help to bring costs down across the supply chain (Brekalo & Albers, 2016). Common business agreements that help lowering distribution and storage costs, significantly improving customer service. Partners try to obtain their mutual benefits by merging the logistics operations (Brekalo & Albers, 2016). Fixed charges and rates are agreed upon for certain period regardless of shipment quantity help reduce costs by bringing guaranteed profits and stable logistics operations for route planning (Brekalo & Albers, 2016). There are certain risks associated with logistics alliances as well, for example poor performance penalty, late delivery… (Brekalo & Albers, 2016). Some logistics alliances emphasize efficiency gains through cost reductions and increased productivity (Brekalo & Albers, 2016).

2.3.2 The lean logistics

There is a way to improve logistics activities of companies internally, especially warehouse logistics (Abushaikha et al, 2018). It is to reduce the non-value-added activities through figuring out waste activities. Reducing waste activities will improve the overall efficiency of the whole logistics system and thus, leads to lean warehousing and reduce time and cost of operations (Abushaikha et al, 2018). Optimizing warehouse operations will improve distribution performance and there are various aspects to optimize including inventory (Abushaikha et al, 2018). The urge of optimizing the whole logistics systems has forced companies to focus on the non-value-added activities reduction throughout the inventory improvement, material handling, equipment, loading and off-loading operations, staffs (Abushaikha et al, 2018). Lean logistics focuses on maximizing the logistics resources (Abushaikha et al, 2018). Waste reduction practices put companies in more competitive positions for gaining market shares and improve business performance. As a result, quality of offered goods and services will be upgraded and resources usage is upgraded (Abushaikha et al, 2018). Lean logistics contributes

remarkably to cost reduction since it significantly affects the cost reduction, staff productivity and helps achieving better quality, better stock control; improved picking accuracy and lower storage costs are the results lean logistics brings and it helps firms stay competitive in the market. It has a significant impact on business operation performance and distribution performance (Abushaikha et al, 2018). Manufacturers spend budgets on waste transportation and disposal fees; thus, reduction of production waste is a way to cut cost in logistics to avoid undesirable outcomes (Fercoq et al., 2016). Waste reductions bring about advantages of environmental and financial performance (Fercoq et al., 2016). Companies will rather focus on waste production than the waste disposal. Reducing waste by reusing used materials can lower the costs for firms and investing in resources for waste production (Fercoq et al., 2016). There are major potentials of getting competitive advantages in the market through waste reduction (Fercoq et al., 2016). Lean manufacturing improves constantly production process and reduce non-value-added activities (Fercoq et al., 2016). Key drivers for manufacturers to focus on are lean and green logistics strategies are to create environmental benefits for reducing costs and risks, to increase profits as well as to improve brand image (Fercoq et al., 2016). Green manufacturing leads to lean logistics and optimized cost performance (Fercoq et al., 2016). Costs can be raised due to unplanned purchased of raw materials, overproduction, inefficient resource usage, additional and redundant warehousing expenses and excess transportation costs (Chen et al., 2019). Inefficient usage, unplanned route and poor management are among the reasons that lead to cost excess. (Chen et al., 2019). Lean management has been implemented and proven to be a successful and effective method to bring down costs and reduce different types of waste in a production system (Chen et al., 2019).

2.3.3 The outsourcing of logistics

Business needs to constantly look for opportunities to minimize costs, and these opportunities lie on wide supply chain network rather than the company's operations. Trend such as logistics and supply chain out-sourcing by specialist service providers is gradually applied for many companies instead of the traditional inhouse activities (Christopher & Gattorna, 2005). Supply chain, if done correctly and effectively, offers significant cost reduction and value improvement (Christopher & Gattorna, 2005). Supply chain strategies alignment by business partners strengthens the service quality and less

cost will be achieved, prices can be reduced, and margin can be maintained. Lack of transparency, visibility and communication can hinder the successful alignment across the supply chain (Christopher & Gattorna, 2005).

Traditional and vertically integrated firms have gradually opted for outsourcing their logistics functions to third party logistics providers. (Rabinovich et al., 1999). The benefits not only lie on corporate's flexibility and cost reduction, but also beneficial long-term partnerships have been built between partners based on core competences and trust (Rabinovich et al., 1999). Across many industries, logistics outsourcing has become a rapidly expanding source of competitive advantage and logistics cost savings (Rabinovich et al., 1999). Firms reported that it helped save their logistics cost by 30 to 40 percent. (Rabinovich et al., 1999). It is understandable since highly specialized operational skills from providers like physical assets, technologies, efficiently coordinated flow of logistics confirm better customer-firm relations brought by third logistics providers (Rabinovich et al., 1999). In addition to that, inventory carrying and stock-out expenses and raw materials ordering cost will be lessened through the service of third logistics (Rabinovich et al., 1999). Timesaving and money-saving benefits through partnership are the main motives for companies to opt for logistics out-sourcing (Solakivi & Ojala, 2013). Out-sourcing distribution, transportation, logistics flow allows companies to concentrate more on business objectives and customers satisfaction (Solakivi & Ojala, 2013). There are many ways that partnering with a trusted third party can benefit companies financially. With the experience of a third logistics service provider, companies will significantly save their budgets as well as time investing in planning and executing logistics strategies (Solakivi & Ojala, 2013). Choosing a suitable outside service provider is also a key element in companies' logistics performance success. (Solakivi & Ojala, 2013). There is a connection between cost saving and logistics outsourcing, that is, companies which outsource their logistics activities experience lower logistics cost and companies tend to spend more if they do not have their logistics and supply chain outsourced (Solakivi & Ojala, 2013). To alleviate the pressure of global competitive markets, corporation take strategic decision on offshore outsourcing (Maskell et al., 2007). Initially, a corporation's reason for offshore outsourcing is driven by a need of logistics cost minimization but over the time, managers realize that quality improvement is as critical as cost advantage and thus, outsourcing innovation in low-cost countries is realized and need to be achieved in offshore outsourcing as well (Maskell et al., 2007).

Nowadays companies have options for operating their logistics activities partially or totally hand it over to a third party (Deepen, 2007). There are benefits and risks of sourcing out logistics activities, yet companies can handle this effectively and efficiently with options of service of function-in-house, having logistics subsidiary or own logistics firm, logistics service from outside provider (Deepen, 2007). There has been a trend in current companies that they use external logistics service providers to reduce the cost of logistics and maximize their quality to customers (Deepen, 2007). Increasing demands in developing markets have made the competition even harsher for companies, thus choosing a third professional service provider will increase the company's stand in the market. Companies, however, should investigate the aspects of until what extent and which parts of the logistics should be outsourced and the advantages and disadvantages of having a third logistics service provider, or 3PL (Deepen, 2007). One of the advantages of having 3PL is that the cost of logistics will be reduced. Moreover, the company also can get access to expertise and experience from the 3PL and build up a customised logistics system for itself and from that, focus on the core competencies of their logistics system (Deepen, 2007). Another benefit of having a 3PL is that companies can gain flexibility and scalability, helping them react faster to the changing markets and gain more productivity (Deepen, 2007). Future business growth will be enabled and their stand in the market will be expanded, thus improve customer satisfaction in general (Deepen, 2007).

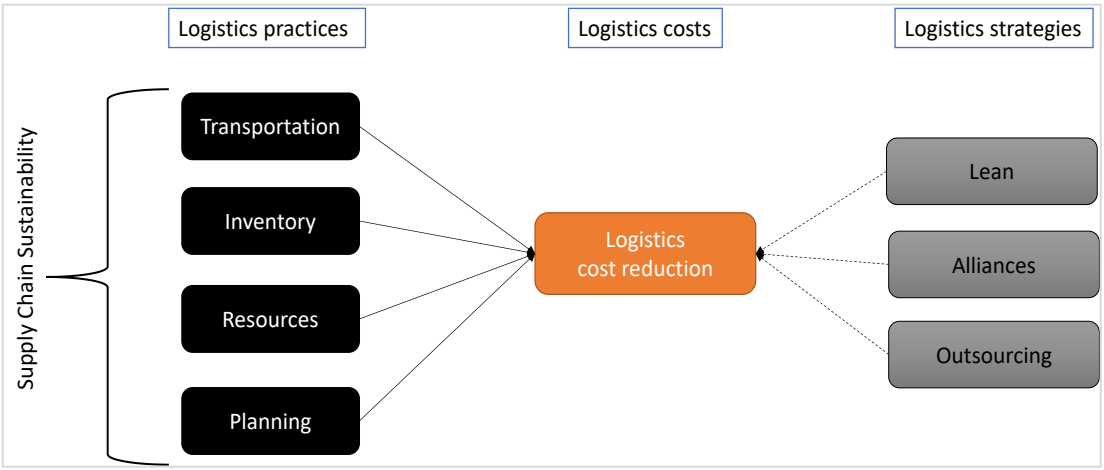
In the other hand, there are also drawbacks of having a 3PL. Tasks can be handled perfectly and efficiently with 3PLs, complexity of business activities can be eased out but disadvantages of having a third party engaging in company's logistics activities can bring about some disadvantages of outsourcing (Deepen, 2007). First, companies will lose some control when hiring the third logistics partners, trust is the upmost important issue when assigning vital logistics activities to an outsider (Deepen, 2007). Although there are cost savings noticeable benefits such as transaction cost, control costs, there are hidden costs from unexpected activities that ignored during logistics activities and can be financially unfavourable towards the company in the long run, not to mention also security risks from data protection and privacy of customer' information on the verge of leaking out when outsourcing (Deepen, 2007). Strategic dimension logistics outsourcing projects are neglected. Moreover, quality control and standard can be ignored by the third logistic partners when profits are the optimal priority which can drive away customers' loyalty

and relationships (Deepen, 2007). Lack of communications, understanding and mutual agreements can be disadvantages when outsourcing logistics activities to third partners (Deepen, 2007).

2.4 Summary of the literature review

This section has argued that there is a gap between research and practice in concern to logistics costs impact on SCM sustainability and suggested some practices and strategies. This thesis claim that this gap is also a great opportunity for SCM and Sustainability researchers to consider their efficiency through logistics costs. To sum up the literature review, *Figure 1*, is showing the logistics practices of SCM sustainability, indicating the focus of this thesis's literary views from previous research. Figure 1., reveals logistics practices (transportation, resources/competencies, and planning of logistical activities), logistics cost (cost reductions), and logistics strategies (lean, alliances, and outsourcing) with current concerns for practitioners and academics. Note that the figure did not include arrows connecting these aspects because it is uncertain which should be the higher level or interrelated, and where they should be placed after in the developed concept. Although the logistics costs focus strongly on cost-reduction and being competitive, only a few researchers deal with SCM efficiency and cost-reduction, and non-many the researchers tacked the costs of sustainability.

Figure 1 Logistics costs impact on the efficiency of supply chain sustainability



Source: inspired by early research within the literature review by Bäckström (2023)

3. Methodology

This chapter illustrates research approach and strategy, followed by the method of data collection as well as chosen method of data analysis.

3.1 Research approach

Inductive reasoning was used in the research because it was the process of developing conclusions from collected data by weaving together new information into theories. The text was analyzed with an open mind to identify meaningful subjects answering the research questions. (Bengtsson, 2016). Moreover, a qualitative approach is used due to the nature of its topic and the purpose it aimed to fulfil. A **qualitative approach** showed that the study was based on nonnumerical data like opinions, experiences and the meanings which are collected from words (Easterby-Smith et al., 2015). The knowledge and experiences of specialists from logistics field were ideal sources of data which answered the research questions. **Explanatory approach** allowed the use of data as tools which are more qualitative in nature.

3.2 Research strategy

This study was a **multiple case study** of cost reduction in companies, sustainability and practical connection between logistics cost reduction and sustainability. Cases were international companies with a huge logistics department or logistics activities providers which gave depth to the study from a variety of aspects.

3.3 Data collection

3.3.1 Primary data

I used qualitative research method with qualitative interviews as main source of data collection and with this method, **semi-structured interviews** were conducted. Qualitative interviews evolved around questions and answers around a specific topic which requires in-depth exploration of a particular topic or experience. Aiming at learning about practical scenarios which were challenging to observe, interviews provided interviewer with the opportunities for mutual discovery, understanding, reflection, and explanation with lived experiences and viewpoints from specialists (Easterby-Smith et al., 2015). These illustrated my primary data source.

Due to the complications and barriers of the current Covid-19 situations, all the interviews were conducted remotely in written form or via Skype or Teams. This is also a plus since it gives interviewer and interviewees time flexibility and travel cost saving yet the results and quality of the interviews are still ensured. Interviews are successful way of conducting qualitative research (Easterby-Smith et al., 2015). However, during the interviews interviewer always kept in mind the importance of interviews skills, clear structure of the interviews and bias avoidance. There were six issues to take into consideration when conducting interviews: obtaining trusts, social interaction awareness, appropriate attitude, and language, getting access, choosing interview location, recording interviews (Easterby-Smith et al., 2015). Obtaining trust is important, so before conducting any interviews, interviewer had been scanning through their website to understand current crucial issues within the company and conducted the interviews in a professional and enthusiastic way so that the interviewees see the benefits and importance of conducting the interview (Easterby-Smith et al., 2015). During the interviews, interviewer tried to use appropriate language and attitude, expressed knowledge about the field yet stayed humble, attentive, and avoided judgements (Easterby-Smith et al., 2015). Interviewer appreciated the interviewees for their time and support they put for these interviews and thanked them at the end of the interviews. The interviewer recorded the interviews with interviewees' permission and sent follow-up questions and updates in case there are issues needed to be discussed further and, to increase the accessibility of those interviews.

3.3.2 The sampling

The sampling was typical case sampling, in which interviewees selected based on their fit for the case (Easterby-Smith et al., 2015). Relevant companies were chosen based on their logistics activities, international trading, and size. The process of looking for suitable candidates was challenging since interviewer's limited contacts with related specialists and the situation of Covid-19. Some of the companies' websites, although appeared to be international, have limited English information and responsible contacts for specialist working in the field, who might be a right fit for the research interviews. Some interviewees were got in touch through contacting many middle steps and people until the interviewer reached them due to their personal schedules of vacations and absence from the office.

During the process of seeking for suitable candidates, some criteria were set for the interviewees who could be the perfect fit for research questions. Specialists who are directly working in the field of logistics, especially those who were dealing with cost cutting in the department and had already 5 years plus experience in the field. This is the most crucial part of the selection because without firm knowledge about logistics cost cutting, sustainability it would be hard for interview's depth and quality as well as insights to suggesting future developments. Moreover, interviewees could answer from their specialty, position, experience, and knowledge thus, with their round expertise from the field, new suggestions and ideas could come up during the interviews. The interviewer contacted 5 different companies and got in touch with 5 specialists who were right candidates for the sampling criteria. Different interviewees with different backgrounds and experiences were chosen to ensure the variety of perspectives and rich source of in-depth information collected. The diversity of solutions and answers helped to enhance the quality and the depth of the topic. The interviews conducted were in semi-structured form (Easterby-Smith et al., 2015) which were an effective method for data collection and the purpose of this method was to collect qualitative data yet allowed the interviewees to express thoughts, personal beliefs and own experience about the topic. The interviews were divided into four sections which closely related to the research questions. Participants were not required to answer all questions but only picked the ones which were related to their job responsibilities and expertise, this allowed the interviewees space and freedom to answer the questions willingly and opened for personal suggestions. The four main parts were "introductions", "cost reduction methods", "sustainability", "relation between cost reduction and sustainability". Data about companies and interviewees were protected for the first part and the last three parts were related to the research. For the last three parts, firstly, the interviewees were asked about their expertise in cost reduction in logistics and how it was an important subject in saving company costs. Secondly, they were asked about how the company focused on logistics costs reduction and what kind of methods they were using in their logistics operations. Thirdly, they were asked if sustainability was a major concern in their logistics activities and what they were doing or what actions they had taken to stay sustainable. Moreover, the connection between logistics sustainability and cost reductions were also asked to see what strategies and effectiveness the company had achieved and whether there was a close relation

between these two. Finally, they were asked if there were any paths or future suggestions for cost reductions and recommendations and advice to stay sustainable.

3.3.3 Secondary data

Qualitative secondary analysis illustrates the use of already produced data to develop new social scientific and/or methodological understandings. One of the reasons why qualitative secondary analysis was used for this research was to find and relate my own primary research or data to existing data resources (Irwin, 2013). The database used mainly was the ABI/Inform, a ProQuest database which contained a variety of related topic content from thousands of business and management publications globally, ranging from many aspects of business, full text articles for most titles. It provided profound studies about related issues for the topic. This was also one of the difficulties encountered from looking for in-depth suitable information because the pool of information appeared to be overwhelming with thousands of articles and books, but it was challenging to go through and found suitable data for the research. Bearing that in mind, key words were used for each part of the research, for example, "logistics cut costing", "sustainability" with the years of publication as latest as possible. English language, peer-reviewed and high rated journals or publications were also added to the sorting. Substantially, the data search was narrowed down, and related articles /books were scanned through for data selection. Because the anonymization of the interviewees/organizations was ensured, their websites could not be mentioned within this paper.

3.4 Data analysis

Content analysis was chosen for this research. The purpose of content analysis was to identify concepts from available data, organized and elicited meaning from the data collected and drew realistic conclusions (Polit & Beck, 2006; Bengtsson, 2016). In the research the manifest analysis was used, which was broad surface structure, described what the interviewees said, stayed very close to the text, used the words themselves, and described the visible and obvious in the text. (Bengtsson, 2016). Four distinct main stages should be followed when analyzing data: the decontextualization, the recontextualization, the categorization, and compilation (Bengtsson, 2016). In stage 1- The decontextualization- the author familiarized with the data to see a broad picture of what was going on. In the inductive analysis, codes might change as study went further as more

data became available. At stage 2 - the recontextualization –the author compared with original data to see if all aspects of related data were mentioned and let go irrelevant as well as unimportant data (Burnard, 1991; Bengtsson, 2016). Then the author proceeded to stage 3- the categorization to bring subjects together by identifying themes and categories. And finally, with stage 4- the compilation manifest analysis, interviewees' words were used and referred to the original text to stay closer to the original meanings and contexts (Burnard, 1991; Bengtsson, 2016).

3.5 Research quality

In the process of qualitative research, any risks could occur because of tiredness, wrong interpretation, and personal bias (Bengtsson, 2016). It was a key responsibility to maintain the quality of the process by assuring validity and reliability of the whole research, to reach conscientious and trustworthy results as much as possible (Bengtsson, 2016).

Credibility refers to the study process which was how the data, and the analysis procedures were conducted and to ensure not to leave out any relevant data. Credibility was achieved in the research using a variety of sources of data. Moreover, *transferability* refers to the degree to which the results may be applicable to other settings or groups and to the interviewees. For example, not all companies interviewed applied sustainability strategies with green and lean logistics. How companies cut logistics costs and what kind of cost cutting they focused on were also among main factors to modify the guidelines and data accordingly. *Confirmability* was crucial in terms of referring to the objectivity or neutrality of the data (Bengtsson, 2016).

3.6 Thesis ethical implications

Ethical issues were also crucial during the process of conducting this study. In the procedures of conducting interviews, the author had to make sure that no harm comes to any participant (Easterby-Smith et al., 2015). No negative comments or destructive feedback should come to the participants with their answers. Ensuring that research participants provide fully **informed consent** is necessary in ethical principle (Bell & Bryman, 2007), so all participants were requested to sign a consent form, provided in Appendix 1.

Dignity is essential, which involves the respectful treatment of research participants, researchers, or any related individuals, and the avoidance of actions that may lead to discomfort or anxiety (Bell & Bryman, 2007). Respect for their dignity also took place as interviewees were not forced to answer questions that they were uncomfortable with, or any actions were conducted against their will during the interviews.

During my thesis, I took careful consideration of ethical aspects to safeguard the well-being of the interviewees. I protect the **confidentiality and anonymity** of the participants. **Confidentiality** concerns the safeguarding of information provided by research participants against disclosure to third parties, where **anonymity** entails preserving the identity of an individual or organization by hiding their names or other identifying details (Bell & Bryman, 2007). All the information and data provided during the interviews are kept securely by the researcher and no access can be made from the third party. The respect for anonymity was paid attention to and therefore, interviewees' information, position, and organizations they worked with were kept undisclosed (Easterby-Smith et al., 2015). Names of participants, job positions and companies are not mentioned in the thesis.

Deception involves the possibility of misleading actions or lies during the research process (Bell & Bryman, 2007). To avoid that, clear communication and full disclosure of intentions were given to participants.

It is also necessary to avoid **misrepresentation**, including misunderstanding, misrepresenting or false reporting of research findings (Bell & Bryman, 2007). Understanding the need to uphold transparency and accuracy in the reporting of research findings, in my research, interviews results were objectively analyzed with no further truth twisting, considering that qualitative research was also a method with subjective perspectives.

4. Findings

In this section, the key findings of thesis are unveiled. These discoveries, derived from thorough interview questions and knowledge sharing, offer valuable insights into the core questions we explored. The findings contribute to the existing knowledge in the field and provide a foundation for further exploration.

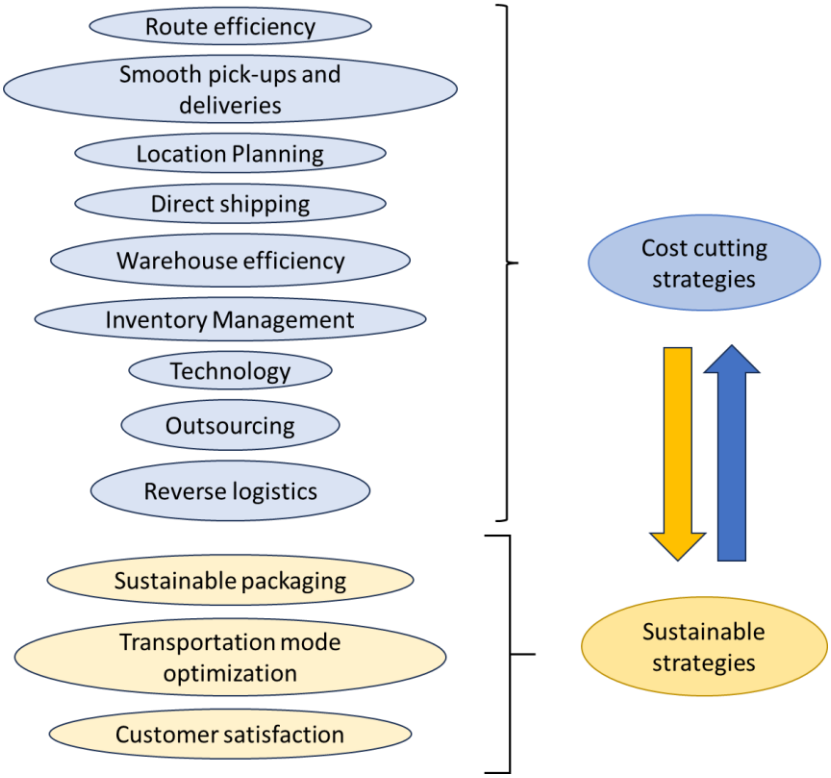
The cases were international companies with a huge logistics department or logistics activities providers which gave depth to the study from a variety of aspects. Anonymized information of companies and participants are illustrated in the below table 1.

Table 1 Interviewees information

Participant	***Job title***	***Company type***	***Form***	***Length***
1.	Transportation manager	Logistic provider of agricultural products	Teams	60 mins
2.	Logistics and foreign trade team leader	Multinational engineering and technology company	Skype	60 mins
3.	Logistics manager	Multinational technology and transportation company	Teams	60 mins
4.	Logistics manager	International manufacturer of trucks and buses	Teams	60 mins
5.	Logistic leader	Global provider of agricultural science and technology	Teams	60 mins

Let's dive into the significant revelations that emerged from this study. There are 12 codes which are categorized from these interviews sorting from the key words and themes found in the interviews. By adopting a combination of these cost-cutting methods, companies can streamline their logistics and supply chain operations, resulting in improved financial performance and a competitive edge in the marketplace. The table below illustrates the theme analysis model for the findings.

Figure 2 Findings codes and themes



4.1 Routing efficiency

Logistics practices like route planning are the key goal for staying green and maintaining profound profit. Participant 1 (P1), stays sustainable by finding ways to reduce wasted time, wasted fuel and redundant deliveries. Route planning plays an important part in maximizing profits and staying sustainable. "*Route optimization is focus when, planning the route schedule which facilitates all the pick-ups and delivery locations for the next day to ensure smooth deliveries and enhance the entire supply chain" (P1). "The focus is keeping the deliveries effective and profitable, yet still ensure a competitive price strategy for customers*", *"Manufacturers-in this case goods' providers need in-time pickups and retailers need on time deliveries to form a smooth flow of logistics, and in order to do that, improvements on routing plays key role and it is expected to bring positive outcome in the* lo*ng run" (P1).*

Environmental sustainability in logistics is paid attention to and using artificial intelligence for optimal delivery plays an important role in minimizing carbon footprint. Car sharing with other passengers is also encouraged according to P3. *"Travelers heading in the same direction can pool rides to enjoy reduced fares. For drivers, dropping off multiple passengers on a single route enables them to maximize their daily trips, resulting in increased earnings. Before the ride begins, all shared riders are matched with the*

driver. In the past, new bookings could be assigned to an ongoing trip, causing occasional unplanned detours" (P3).

4.2 Smooth pick-ups and deliveries

Within the task of logisticians pick-ups of deliveries from manufacturers and the deliveries to nearby retailers' routes need to be designed carefully, with frequent reexamination to save fuel costs and time. *"On routes what are crowded and have many intersections, they are taken into consideration if it is the most effective route or a little bit longer roads with less traffic jams will be more profitable and favorable" (P1)*. Wasting fuel brings negative impact on environmental sustainability. "*Opting for a suitable gasoline to reduce emission is also a way to stay sustainable" (P1)*.

P3 shared that the company provides more affordable options for users, encouraging them to stay green by participating in route efficiency themselves. *"Sharing a meal as a group fosters social connections, enabling people to collectively contribute to a shared order and reduce delivery costs through bill splitting. We've been actively improving the group ordering experience, streamlining the coordination process. Users now have the option to opt for a lower delivery fee by being willing to wait a little longer for their food. Achieving this involved implementing batching, enabling delivery partners to pick up multiple orders in a single trip. This not only benefits customers by reducing costs but also allows delivery partners to increase their earnings by completing more orders with greater efficiency." (P3).*

4.3 Location planning

Demographic analysis should be conducted to identify regional consumer behavior, preferences, incomes, from there the most ideal location should be chosen, which is in the center of customers and potential merchant-partners should be identified. "*For us, gathering service providers to the same location or nearby locations diversifies customers selection and reduce travelling costs between those places to finish the same order to decrease delivery time per order. Fast delivery and same day delivery, combining many services at the same time to save costs" (P3)*. From this, fuel reduction and CO2 emission are also reduced accordingly. "*Our company puts effort to protect the environment in order to ensure economic and social stability by reducing carbon footprint and choosing sustainable packaging solutions" (P3).*

As mentioned by P5, resource efficiency such as labor work, energy, space, time packaging and transportation made a positive impact on the environment. *"Our company also takes into consideration warehouse locations to stay green, designing the warehouse network closest possible to important customer centers to optimize shipping routes and reduce emissions" (P5).* Reducing fuel emissions can also cut fuel costs in addition to consolidating shipping costs and streamlining efficiency, according to P5.

4.4 Direct shipping

The direct shipping practice in logistics is used by our company for direct shipping full-container orders, especially for overseas orders with volumes of 2 containers or more. Goods are sent directly from manufacturers to customers (final distribution centers or big customers). The logistics and foreign trade team leader (P2) stated that "*direct shipping of the products can help the company to save a lot of logistics and warehouse costs such as transportation costs and duty costs". "Because it is fully charged for the fee of one full container even though it is half loaded, our company is always seeking ways to combine orders to fully ship containers to maximize the efficiency for lean logistics. Moreover, it also helps reduce CO2 emissions" (P2).*

"Consolidated shipment is also our strategy for optimizing the full-truckload shipping by combining different orders from many customers to one shipment to cut cost and reduce CO2 emission*" (P4).*

According to P5, the company focuses on carrier productivity and reducing any wasteful resources related to transportation to achieve better environmental impacts. *"Our methods are consolidating shipments, full loaded trucks for cost reduction and resources utilization" (P5)* and *"Consolidating orders from different customers into fewer shipments to optimize space and shipping routes to save fuel and fuel costs and transportation fees" (P5).* The strategy is to continuingly improve productivity and route optimization to customers and partners.

As outlined by P5, reducing resources usage by using cross-docking. Saving up on inventory holding costs and warehousing costs by transferring materials from a manufacturer directly to the customer - *"the risks of wasting damaged goods related to storing are minimized".*

4.5 Transportation mode optimization

In addition to other strategies, modes of transport are also important to P2. "*Company will first try to reduce transportation, and when transportation is needed, more sustainable improvements can be implemented on the choosing of transportation modes and sustainable transport vehicles with carbon neutral fuel or electric vehicles" (P2)*. P2 also pointed out that the company is trying to improve environmental, social, and economic impact through reducing waste.

As stated by P5 when discussing deliveries strategies, "*our company opts for using less fossil fuel energy and it leads to cost saving, some of the fleet using electric trucks to deliver within short distances*".

"*Our company also uses electric vehicles and hybrid operators as well as facilitates ridesharing and carpooling in order to stay sustainable with transportation system*" *(P3).* P4 stated that "*Our company needs to innovate solutions for cost effective shipping to stay competitive in the market. That is why being flexible in transportation modes can reduce costs and help a company stay sustainable".* As the price of fuel and equipment goes up, managers make strategic decisions on what modes of transportation to opt for and which one is more eco-friendly and still goes smoothly, and when to make a necessary switch. "*Intermodal transportation, meaning the combination of two or more modes of transportation is also a way to cut costs, be on time with delivery and stay sustainable" (P4).* "*Sea freight is less expensive than air freight international routes and rail freight is less expensive inland, but a combination of them can deliver effective transportation if planned well ahead. Our company can categorize the shipments based on their urgent status, can help reduce costs by sending urgent shipments with fast freight mode and the rest of the shipment use less expensive alternatives" (P4).*

4.6 Using technology in their logistics

Moreover, companies also use technology in their deliveries to smooth out the process. According to P4, tracking shipments with automation is crucial to reduce lost packages and avoid delays and logistics disruptions, resulting in safer, faster delivery and cost efficiency. Logistics operations are conducted with software to ensure efficiency and mitigate risks, leading to cost alleviations and higher customer satisfaction scores.

"Optimizing the supply chain is an advantage of technology from tools and flatforms to find relevant transporting providers and more advantageous routes to control emissions and reduce waste for sustainable supply chain" (P5).

Following P5, in the warehouses, software is used to calculate the nearest customers to save on transportation costs. *"Our improvements to warehouse operations have had positive impacts on the whole logistics activities" (P5).*

4.7 Sustainable packaging

The packaging practices are grasping an important factor for reducing impact on the environment, P2 also stated that "*realizing the importance of reducing impact on the environment, our company is improvising new ways of packing its products with carton boxes, environmentally friendly materials, and recyclable materials",* with an attempt to lessen their carbon and environmental footprint, while simultaneously saving on costs. Logistics process involves significant quantities of expensive packaging materials and managers when reviewing on cutting cost and staying sustainable must investigate impact from the sourcing of the materials to its ultimate disposal, they must take responsibility for a product's packaging with eco-friendly alternatives to traditional packaging materials. *"We changed from recyclable plastics packaging to carton boxes*". They also optimize packaging design to reduce the cost of product packaging: "*The wrapping for many small boxes in one palette also allows the company to save big carton boxes which waste can be damaging to the environment and generate more costs (P2).* Strategically for production of goods is the sustainable packaging. *Our company is considering tons of plastic to be replaced with recycled material within two years. Recycled, eco-friendly materials are being used in the packaging for the green product line. Our efforts in this regard have also paid off" (P2).* The project has been recorded to have saved so far nearly half a million euros. It did not only cut costs but also saved the environment because of scarce raw materials; thus, has brought big achievement of being the first major industrial company to make itself climate-neutral, and it is now working to further improve the quality of its carbon neutrality. "*In this manner, all our upstream and downstream activities along the value-added chain – from the goods the company procures to the products that we sell – are to be made as carbon-neutral as possible" (P2).* In the same strategy path, P3 also presented that "*our company use packaging*

solutions sustainably with reusable and eco-friendly materials and encourage green, environmentally friendly consumer behaviors".

In reference to P5, transitioning to eco-friendly packaging also contributes to sustainability with natural packaging materials to protect the environment with cheaper costs and lightweight to be easier to transport. Those are the methods used to build a greener and more equitable supply chain.

4.8 Warehouse efficiency

Warehousing is another practice in logistics that generates costs. Designing a logistics network which aligns production plants, warehouses, distribution centers aimed at reducing delivery timelines and minimizing logistics costs. "*When choosing a new warehouse location, utilizing logistic networks design, it will be more beneficial to minimize transportation costs by locating warehousing facilities close to customers to help reduce time, effort, and costs" (P2)*. Moreover, companies can react faster in emergent situations. As a result, the service streamline is beneficial for the company and customers because it cuts costs and raises customers' satisfaction with quick response and speedy logistics. *"Our company also tackles the make-or-buy decision, choosing between manufacturing a product locally or purchasing it from an external supplier overseas*" *(P2).*

"*In our company, warehouse automation is used in some processes to help reduce labor costs, less mistakes and time and energy saving, thus efficiency and waste reduced*" - As mentioned by P5, the company tries to make storage space effective and protect inventory to prevent waste and damage.

As per P5, the company promotes sustainability as a strategy by different kinds of practices - "*Our focus is on storage optimization so that costs related to moving products will be reduced. Our company tries to lessen damaged goods with proper methods of storing products*.".

"*Reusing pallets and storage materials also brings positive environmental effects, saving on disposal costs" (P5)*.

"*Energy saving in the warehouse using natural lights and automated lights also keep the costs of running energy down" (P5).* "*Warehouse equipment changed into new ones which consume less energy and require less maintenance" (P5).*

4.9 Inventory management

Inventory takes up warehouse space and warehouse space costs money, inventory stay in the warehouse for excessive period can lead to higher storage costs and product deterioration. Taking that into account, P2 presented the company's logistics overstock practices in warehouses: "*Goods and inventory which are a generator of costs are resold to dealers with good prices to reduce waste and the cost of stocking them. When ordering for warehouses they will base on demand, and give promotion for seasonal products, to avoid stocks which stay in warehouses for too long*". To avoid the costs of overstocking, "*JIT (just in time) stocking strategy is used to supply the need of immediate demand" (P2).* Using JIT stocking in inventory management technique helps cut cost and reduce the risks of wasting.

"*Our companies also detect hazardous material to reduce the harm it may cause to the environment. Choosing product components with minimal reliance on those materials can reduce the cost of hazard disposal and handling" (P5).*

4.10 Reverse logistics

Strategies such as reverse logistics are maximized with effective repair, repackaging recycling, and material harvesting. They try to avoid warehouse returns as much as possible. P2 shared that product with quality issues, depending on the level of damage, are sorted out with two solutions. If they are just about package damage, it will go to internal sale for employees with reasonable price; products with severe quality damage will be prepared for scrapping. "*Our company tries to avoid the amount of scrap due to environmental protection and cost reduction. Reverse logistics is a significant part of our company's logistics in maximizing profitability, asset recovery and optimizing supply chain efficiency by reducing costs and improving customer experience" (P2).* Reverse logistics is important because it keeps operating costs low and devotes itself to the company's sustainability practices. As it helps companies produce less waste, maximize value from assets and recycle materials and products. Reverse logistics lessen environmental impact and increase profits and asset utilization by reselling unsold inventory and disposal or recycling of unused materials. For economics reason, sometimes using materials from reused products is a cheaper option, decreasing the use of raw materials (Akdoğan & Coşkun, 2012). "*It is beneficial if implemented properly*

because it brings business further into sustainability and minimizes administrative, transportation and support costs" (P2).

4.11 Outsourcing

Managers need to do the cost analysis to determine whether it is cheaper and more sustainable to buy it from local or buy it overseas. "*When manufacturing products using materials from the locals, there are costs to bear in mind such as* ***extra labor*** *needed for production, monitoring costs, storage requirements costs, and waste product disposal costs resulting from the production process, transaction costs" (P2).* It also carries the "*spoilage of work or scrap",* and the "*risk of wasting",* which are not favorable for the environment. "*In the other hand transportation cost, duty cost, handling costs, and CO2 emission from sourcing overseas also considered" (P2)*. The analysis of these costs coming from the two sources helps managers take a decision about whether to **make** or **buy**, and the sustainability it brings about. Moreover, according to P2, when making a buy decision, the company pays attention to the "s*ourcing materials",* if they are environmentally friendly materials, whether it is safe for transportation and users. "*Our company maximizes sustainability by close cooperation with reliable partners who have a lot of experience in sustainable logistics" (P5).*

4.12 Customer's satisfaction

P4 shared the importance of customers' satisfaction "*Deliberately, due to the increased customer satisfaction, the company needs to find new ways to stay on the budget and ensure the logistics flow smoothly"*. Agreeing with this opinion, P1 stated that *"long-term relationships with customers and business partners are important to maintain good image and reputations, which are key things for business sustainability, and with that in mind, improvements in routing brought about cost-saving and customers' loyalty, along with other relationship strategies"*. P1 added that, more focus on reducing the consumption of fuel shows that the forwarder focusses about committed to efficient routing and minimizing fuel consumption, care about supply chain sustainability, thus gain more credibility with consumers and business partners, competitive advantages are gained. Moreover, effective planning brings shorter waiting times and keeps the forwarder stay competitive over their rivals in today's business world where speedy deliveries define high customers' expectations - "*Our positive experience gained from those fast deliveries*

maintains the long-term relationship with customers and maintains their satisfaction" *(P1).*

The cultivation of a 'green' image has emerged as a crucial component within marketing strategies. It involves not only the creation of environmentally friendly products but also the implementation of various environmentally responsible practices. Achieving this objective can also be integrated into a broader customer relationship strategy. Marketing purposes are also one of the key drivers of return logistics (Akdoğan & Coşkun, 2012). Due to the good "green" image from reverse logistics strategies, *"customer satisfaction also went up and the company's long-term customer loyalty and brand image also improved, which can lead to higher profits and improved products flow and effective supply chain management" (P2).*

"Logistics sustainability and cost cutting help the company stand out from competitors in gaining the initial market share and brand awareness in the region" (P3).

In the long term, effective implementation of those strategies will help cut costs and keep the environment greener, boosting strong brand image as well as eco-friendly logistics systems" (P3).

Company's leaders engage actively in sustainability efforts to keep a good reputation and protect the environment, according to P5.

5. Analysis

In this section, the analysis is conducted through qualitative method, allowing us to explore connections and relationships within the collected data. Each particular area is examined both within individual cases and across cases, aligning my findings with existing literature. Key aspects will be summarized, creating a link between the data analysis and the final conclusion.

Logistics cost reduction strategies are closely related to the efficiency of supply chain management (SCM) sustainability. The primary goal of logistics strategies is to optimize the flow of goods and services from the point of origin to the point of consumption in the most efficient and effective manner possible. Dey et al., 2011 mentioned minimizing transportation costs, reducing inventory holding costs, and optimizing the use of resources. In practice, companies conducted these cost saving strategies in their logistics to ensure efficiency, reported by the interviews.

Cost reduction is an important part of logistics strategies as it directly affects the profitability of the organization. Both researchers in literature and interviews point out that by reducing costs, organizations can achieve a competitive advantage in the market and ensure long-term sustainability. Cost reduction initiatives can involve streamlining processes, optimizing transportation routes (El-Berishy et al.,2013), reducing inventory (Markley & Davis, 2007), and leveraging technology (Strack & Pochet, 2010) to improve efficiency. These strategies are currently applied effectively by P2, P4 and P5.

The correlation and the relationship between supply chain cost cutting and sustainability are complicated and nuanced. While logistics and supply chain cost reduction can have ***positive impacts*** on sustainability, it can also have ***negative impacts*** if not managed properly.

Logistics and **supply chain cost reduction** can have a **significant positive impact** on **sustainability**. It has been noted in the interviews that by focusing on logistics and supply chain cost reduction, companies can reduce their environmental impact and improve their sustainability. They are the cause and effect of each other and support each other tightly. Efficiency in logistics cost reduction strategies and initiatives *can positively impact the sustainability of SCM* by reducing waste, conserving resources, and improving

environmental performance. Literature as well as empirical data strongly highlight the importance of the positive impacts cost cutting brings about on sustainability of SCM. For instance, reducing transportation costs by optimizing routes and reducing the number of trips can lead to reduced fuel consumption (El-Berishy et al.,2013), lower greenhouse gas emissions (Sbihi & Eglese, 2007), and a reduced carbon footprint (El-Berishy et al.,2013). Companies can enhance their sustainability and concentrate on reducing logistics and supply chain costs by minimizing their environmental footprint (El-Berishy et al.,2013). Agreeing on this, interviewees have multiple methods for transportation cost cutting by transport mode optimization (P2), using less fossil fuel energy (P3, P5) and effective route planning (P1, P3).

Similarly, reducing inventory holding costs can lead to less waste and better utilization of resources (Markley & Davis, 2007). Interviewees such as P2 have pointed out that it is necessary to avoid the costs of overstocking, and hazardous materials should be minimized (P5). Moreover, theoretical and empirical material highlight that optimizing transportation routes, reducing waste, and minimizing energy consumption, companies can reduce their carbon footprint and contribute to a more sustainable future. Optimizing transportation routes (El-Berishy et al.,2013) and using more efficient modes of transportation (Meixell & Norbis, 2008), minimizing the distance travelled (Sbihi & Eglese, 2007), companies can reduce their carbon emissions and lower their transportation costs. Agreeing on this, most of the interviewees noted the positive results in cost cutting and long-term sustainable savings.

Minimizing waste in the supply chain, companies can reduce the amount of material that goes to landfill or incineration, reducing greenhouse gas emissions and saving costs (Markley & Davis, 2007). Touching upon this waste reduction stressed the importance of reducing packaging materials (P2, P5), improving product design (P2), and implementing recycling programs (P2).

By implementing energy-efficient practices and technologies, companies can reduce their energy consumption and costs while lowering their carbon emissions. This can include using renewable energy sources, improving building insulation, and upgrading equipment to more efficient models (Strack & Pochet, 2010). Regarding this, P2 and P5 have a full focus on their logistics to implement such practices to cut costs.

However**, cost-cutting measures can be conflicting with sustainability goals** but can be beneficiary in other cases to sustainability goals. In the cases that cost cutting methods go against the sustainability goals, "*materials from suppliers with poor environmental or social records, or to cut corners on safety measures, which can result in a lower-quality product or service" (P2, P4, P5)*. These actions can have negative impacts on sustainability, and they try to check and avoid these issues in their const cutting practices. This could ultimately harm the company's reputation and result in lost sales. Moreover, in urgent or unplanned situations companies may end up choosing transportation modes that are less sustainable, such as using air transport instead of sea transport or truck transport instead of rail transport for urgent orders (P2, P3, P4, P5). This can result in *increased logistics costs and carbon emissions* and a higher environmental impact. Financial records from conducted interviews indicate that high costs have been documented, with a particular emphasis on measurements related to the implementation of cost-cutting strategies leading to increased budgets.

Furthermore, interviewees emphasized that to minimize expenses, certain companies might compromise on environmental standards, such as measures for pollution control or waste management. This could lead to adverse environmental effects, including air and water pollution, soil contamination, and habitat destruction. That is not a solution for short term cost reduction and participants presented the goals of preventing such scenario to happen.

In addition to that cost reduction measures, if not planned carefully according to P2, P4 and P5 can lead to a *reduction in product quality*, which can result in increased waste, negative customer feedback, and loss of brand reputation. This can also have a negative impact on sustainability since products that are discarded or replaced before their intended lifespan contribute to increased waste.

Reducing expenses has the potential to create a more efficient supply chain; however, it may make the supply chain *more vulnerable to disruptions*. For instance, *reducing inventory levels could increase the risk of stockouts or delays in delivery, which could damage customer relationships* (P1).

Cutting costs can make a company's supply chain less flexible and adaptable to changes in customer needs or the market. "*When company plans cost-cutting, we try to avoid a situation when the company focuses too much on cutting costs, especially by reducing labour expenses, it can lead to poor working conditions, low wages, and a lack of benefits*

for employees" (P2). This not only raises social and ethical concerns but also negatively impacts sustainability, as bad working conditions can result in health and safety issues for workers. In contrast, companies which have been interviewed, with their good human resources standards and practices, view this issue as more of a strategy to avoid in cost cutting to set out companies' standards as well as ethical conducts. They view it as significant aim to maintain ethical conduct and uphold established corporate standards even during cost-cutting efforts, recognizing that it is crucial for both the companies' reputation and their employees' well-being.

Cost-cutting measures can help a company save money, they should be implemented carefully and with consideration for the potential drawbacks. It is important for companies to consider the potential negative impacts of cost reduction measures on sustainability and to take steps to mitigate them. This can be done through "*proper planning, implementing sustainability measures" (P2, P4, P5)*, and engaging in "*transparent reporting and communication with stakeholders" (P1, P4).*

In the other way around, **sustainable practices can also lead to cost savings**. Sustainability is a powerful approach that involves carefully managing raw materials and resources to control costs effectively (Scott, 2017). Businesses choose to adopt sustainability for various reasons, including the unpredictable nature of energy prices, rising material costs, increased expenses for waste disposal, changes in waste regulations and environmental laws, evolving customer expectations, and the desire to gain a competitive market advantage (Scott, 2017). "*Sustainability can help with cost cutting in logistics and supply chain management in several ways" (P2).* Efficient energy utilization will alleviate wastage and enable organizations to decrease their reliance on natural energy sources (Markley & Davis, 2007). Touching upon this, resource efficiency focuses on "*optimizing resource usage*" (P2), which can lead to reduced costs. *"Reducing water usage, using renewable energy sources"* (P5), "*using recycled materials" (P2)*, and "*optimizing energy consumption" (P4)* can help cut costs in the long run.

Enhancing the efficiency of the entire logistics system can be achieved by minimizing waste activities, as suggested by Abushaikha et al. in 2018. Reducing waste can *"lower disposal fees and even generate revenue from recycling, thus helping cut costs" (P2).* Implementing a "*closed-loop supply chain, where waste materials are reused or recycled, can save money on raw materials and disposal costs" (P5).*

Sustainable logistics and supply chain management focuses on creating an efficient logistic network by selecting appropriate transportation modes, load capacities, and routes can significantly reduce travel distance, thereby greatly decreasing carbon footprint, fuel costs, and lead time (El-Berishy et al., 2013). Minimizing travel distance is a crucial aspect of network optimization as it results in reduced emissions and overall supply chain expenses (Sbihi & Eglese, 2007). Theoretical and empirical material highlight that fuel consumption reduction can lead to reduced energy costs.

The reduction of costs throughout the supply chain is facilitated by the strategic alliances and collaborations forged among major companies within the logistics and supply chain sector (Brekalo & Albers, 2016). Sustainability often involves working closely with suppliers to ensure ethical and sustainable practices to "*improve supplier relationships" (P1)* with common goals of "*better quality products, and reduced costs associated with supply chain disruptions" (P1),* "*reduced waste, and more efficient processes" (P2).*

The long-term benefits can include reduced costs and increased profitability and sustainability can be a key driver of innovation and growth in logistics and supply chain management. The overall environmental impacts of consumption are increasing as brand companies, driven by brand companies capitalizing on corporate sustainability to gain a competitive advantage, foster business expansion, and boost sales (Dauvergne & Lister, 2012). They are achieving environmental gains in product design and production (Dauvergne & Lister, 2012). Sustainability improves *reputation and brand value* of companies, leading to increased customer loyalty and sales which helps offset any costs associated with implementing sustainable practices (Mirghafoori et al., 2017). Companies where P1, P2, P3 and P5 are part of focus more on building positive brand names for their long-term sustainability. Sustainable practices can help companies with regulatory compliance related to "*environmental protection, labor laws, and supply chain transparency*" (P2). Compliance with these regulations can "*help prevent fines, legal fees (P2, P3), and other costs associated with non-compliance (P2, P5).*

Sustainability can have a positive impact on cost cutting in logistics and supply chain management in the long run. However, **sustainability goals may also require initial costs** to implement. There are **challenges to consider** when implementing sustainable practices that could affect cost-cutting efforts. Implementing sustainable practices may require investment in new technologies, equipment, or training, which can *increase upfront costs*. For example, P3 stated that "*using more environmentally friendly*

transportation methods, such as electric or hybrid vehicles, may require a significant investment in new vehicles and charging infrastructure". "*Sustainable materials may be limited, more expensive or less readily available than traditional materials" (P2)*. This can make it more difficult to implement sustainable practices and may increase costs in the short term. Implementing sustainable practices in a *complex global supply chain* can be challenging. "E*nsuring that suppliers comply with ethical and sustainable practices can be difficult" (P5)* and *"verifying compliance can be time-consuming and costly" (P4)*. Substantial improvement in the environment is frequently required with substantial investments, which brings no or negative financial returns (Neto et al., 2008).

The conscientious consumption of environmentally friendly products is a key concern in nowadays society, as consumers become more environmentally conscious and they are willing to purchase environmentally conscious products (Tsarenko et al., 2013). Meeting these "*demands may require significant changes"* (P4, P5) in supply chain processes, "*which could increase costs" (P3, P4, P5)*. While sustainability may lead to long-term cost savings, "*the financial benefits may be uncertain and difficult to quantify in the short term" (P3)*. This can make it difficult to justify the upfront costs associated with implementing sustainable practices. Interviewees when asked about this matter were uncertain on the exact upfront costs for investing in sustainability. In general, while there may be some potential challenges or negative impacts associated with implementing sustainable practices in logistics and supply chain management, the long-term benefits outweigh the short-term costs. By carefully considering these potential challenges, companies can develop strategies to overcome them and achieve both sustainability and cost savings. In conclusion, logistics cost cutting strategies are critical components of SCM sustainability. By optimizing logistics strategies and reducing costs, organizations can achieve long-term sustainability and positively impact the environment while remaining competitive in the market.

6. Conclusion

In this section, the ultimate summary outlines the results obtained from our qualitative investigation for each research question and establishes connections with the overall research objective.

The purpose of this thesis was to analyze the supply chain management costs of sustainability, specifically the logistics costs with impact on the efficiency when improving sustainability. To fulfil this thesis purpose, the two research questions are answered:

RQ1: What logistics practices are relevant for reducing the current costs with impact on the supply chain sustainability?

Logistics is not only about transportation but also about warehouse and storage. Companies seek renewable energy like solar energy to make a positive impact on the environment. At the beginning it might cost a lot to invest in the system with significant upfront cost, but eventually it will turn the business into an environmentally friendly supply chain. **Indirect costs** from planning out new sustainability strategy such as changing vehicles from traditional to electric ones, managers should investigate and weigh pros and cons over time, if the setting up costs and vehicles substituting costs worth the effort and beneficiary to the business sustainably. **Converting into carbon-neutral solutions** also urges companies to seek business partners who are sharing similar strategies to ensure the whole supply chain with sustainable models. Furthermore, businesses start to see positive results on their investment as procurement sustainable practices. **Engaging and collaborating** on supply chain is pursued more nowadays by companies, recorded cost saving is a positive sign for those carbon management activities. This thesis concludes that for logisticians to set reduction targets and make performance improvements, companies should pay attention to **tracking and reporting** supply chain emissions. It is not easy to implement sustainable, quantifiable climate change policies and practices persistently, but with efforts and persistence and vivid vision and mission, practices of sustainable operational level in supply chain can help companies strive and succeed. Understanding that **green warehouse practices** reduce cost, companies enhance their corporate image and prove that they care about environmental sustainability to

stakeholders and customers, as well as setting criteria of candidates with strong sustainability when choosing suppliers. The future of business will change positively with the correct green and lean practices. Cost-effective competitive advantage gained when customers opt for **greener products** nowadays, as implementing green practices lead to cost-saving because companies improve efficiency and reduce waste. Companies who use **renewable energy** completely achieved significantly in cost-cutting than companies who use fossil energy. Leaders consider sustainability majorly important. Companies want to pursue being socially responsible and environmentally sustainable with **improved vehicle performance**, reduced emissions, and minimal operational costs. Being able to **identify** where **the cost inefficiencies** come from can help managers and leaders make the right decisions through correct assessment and from then, opt for more efficient logistics solutions to improve visibility and seek new opportunities. **Green procurement** is an example of improving environmental impact. Cost reduction and good service do not oppose each other but instead, support each other positively. Product packaging with optimal techniques to create product fit packaging can save customers time and troubles from bulky and heavy wasteful packaging. By minimizing the amount of packaging used, companies can save costs from material saving and generate customers satisfaction. Product lines can have wasteful packaging and **optimizing packaging** can help customers purchase experience smoother and help companies with inefficient cost caused by space and lead to cost reductions.

RQ2: What is the interrelation of logistics cost reduction strategies to the efficiency to the SCM sustainability?

Supply chain management sustainability involves managing a company's supply chain in a way that considers environmental, social, and economic factors. Logistics cost reduction strategies play crucial roles in achieving sustainability within the supply chain and they are interrelated to SCM sustainability.

A sustainable supply chain helps strengthen brand reputation. Corporate logistics sustainability is not only about waste, emissions, and recycling but also about green logistics, cost reduction and long-term commitment which leads companies towards a good reputation and worldwide recognition. ***Not all cost reduction is beneficial.*** Companies need to use different techniques and solutions available to design and plan their own cost reduction program. Some companies focus only on one cost reductions

thus one line of cost might be reduced by increasing the costs of others, thus causing false cost savings.

One major highlight of this study is that **sustainability is based on long term strategies and most cost cutting methods are temporary financial alleviation**. In the long run, if companies want to stay sustainable, reducing waste is a practice to be competitive in the advanced market. Different companies have different methods and strategies which are suitable for their capacity and visions. **Reducing waste** from biggest costs drivers sustainably and effectively, reducing production cost, materials and maximum utilization of facilities, reducing CO2 emission into the environment are among the methods. Waste in the three areas should be focused on are with **costs, people and processes**. Lean implementation that conducted strictly and persistently can lead to continuous improvement, especially the financial improvements which can be seen straight away. Wastes on products, activities and resources which bring no value adding and deletion of those activities will not harm. Identifying waste and reducing or getting rid of waste is necessary. The integration of sustainable development, lean, and logistics concepts into a lean sustainable logistics system will not be mentioned in this thesis.

Another main point is that **supply chain sustainability includes mitigating risks** and to do so, renewable energy is a way to go. Sourcing renewable energy helps companies to maintain operations even through crisis time and save budget, the sustainability of supply chain is boosted to cut costs. Warehouses and distribution channel efficiency can reduce expenses with digital automation. There is so much data in logistics and supply chain and companies overloaded with many processes such as forecasting, product procurement, scheduling, so artificial intelligence is there to help cut inefficiencies in procurement, logistics, and back-office activities.

7. Discussion

The outcome of this thesis is to raise awareness of logistics sustainability and how companies pay attention to this topic. Nowadays, due to their economic benefits and regulatory obligations, green logistics practices and sustainable logistics systems have become crucial. Green supply chain management allows organizations to improve productivity, supplier, quality, process, and products thus this is important for companies to take actions.

As logistics systems are interrelated, they can provide optimal route design that can lead to shorter trips to reduce CO2 emission and environmental pollution. Efficient distribution and transportation to end customers evolve optimized delivery speed and lower environmental impact, which can be achieved with the goals of well-planned logistics route and supply chain to improve customer service and lower costs. Environmental awareness has been raised among consumers, companies and direct suppliers which show in their daily operations. Companies can take minor steps and walk their way gradually to sustainable logistics and supply chain. It is also important for companies to respond and adapt swiftly to fast-changing situations, especially in this financial crisis and pandemics, facing difficulties yet fulfill the requirements for environmental sustainability, and see it as a good opportunity for further innovation. Long term goals should be set to integrate environmental sustainability and update and look back every now and then to check on their performances to evaluate and improve constantly, how to turn green in their logistics. In these pandemics businesses worldwide confront significant losses in the air freight and as a result, prices will rise high, companies can opt for better route planning with more reasonable prices and more sustainable supply chain, see the hardship as opportunity to improve sustainability, and little by little, transform the whole supply chain.

7.1 Drivers and obstacles in maintaining a sustainable supply chain

There are drivers and obstacles in maintaining a sustainable supply chain**. Obstacles** such as costs, lack of knowledge, lack of training, lack of integration of IT system, poor organizational structure, poor commitments from practitioners can hinder the implementation of sustainable logistics, which bring challenges for proper integration of eco-friendly systems. In the other hand, there are also **drivers** that mainly contribute to

the successful logistics sustainability, regulations, customers, suppliers are among the key drivers. Businesses taking the sustainable logistics road should consider the major drivers and barriers that they might face in their logistics operation.

In summary, the effective integration of logistics strategies and cost reduction measures is essential for fostering sustainability in supply chain management. By optimizing operations, minimizing waste, and embracing responsible practices, companies can achieve a balance between economic efficiency and sustainable supply chain management.

7.2 Recommendation for logistics specialists

7.2.1 Invest and conduct cost cutting strategies

To sum up, logistics specialists need to stay sustainable and implement cost cutting at the same time. Implementing sustainability measures in logistics and supply chain can often require **upfront investment or increased costs**. There are ways to reduce costs while staying sustainable, one of the strategies is considering using more fuel-efficient vehicles or switching to electric or hybrid vehicles. This can help reduce transportation emissions and save costs on fuel and maintenance. Optimizing routes and consolidating shipments can help reduce the number of trips and distance traveled, which can save on fuel costs while reducing emissions. Changing to sustainable packaging materials such as biodegradable or recyclable materials can reduce the amount of packaging needed, reduce waste and cut costs in the long run.

7.2.2 Employees and logistics partners are there for teamwork

They can also encourage employees to turn off equipment and lights when not in use to save on energy costs and reduce carbon emissions. Data analytics might be useful to identify areas of inefficiency in the supply chain and logistics operations. This can help identify opportunities to reduce costs and improve sustainability. Collaboration and innovation can help balance cost-cutting and sustainability. By collaborating with suppliers, customers, and other stakeholders, companies can find ways to reduce waste and optimize processes, to identify opportunities to reduce costs and improve sustainability. They should work with their suppliers to reduce packaging waste, or with their customers to encourage more sustainable product use. While there is a correlation between supply chain cost-cutting and sustainability, it is important to approach the

relationship with care and attention to the specific circumstances of each situation. Companies that are able to balance cost-cutting measures with sustainable practices and stakeholder engagement are likely to be the most successful in the long run.

8. Implications, limitations, and future research

8.1 Implications

There is a growing awareness about sustainability in general and researchers are looking for new trending of sustainability, as well as logistics sustainability but there is a missing puzzle of sustainability of how sustainability can facilitate cost cutting. The studies about green and lean logistics and sustainability are there and studies about logistics cost cutting for specific case companies. However, there were hardly any studies what bought up the practical linkage between logistics sustainability and cost cutting. There were observations made earlier about linkage of sustainability and logistics sustainability with mathematical calculations and there were hardly any studies of the field to truly dig deeper into how business conducted sustainability and whether it affected the cost cutting in logistics.

8.1.1 Practical implications

Practically, the study can help understand how logistics sustainability and cost cutting linked together. Managers at various organizational levels can become clearer on their business' sustainability and make sure the strategies they are conducting bring about long-term results with financial benefits. However, they need to keep in mind that the study focuses on specific cases where general views should be withdrawn and cannot be directly applied to specific cases without reforming strategies which are suitable for companies' needs and values. Managers should have rough ideas and with reference from this study, they can develop further the methods for their practical implications.

8.1.2 Ethical implications

The ethical implications in cost reduction and sustainability within logistics and supply chain management are significant and diverse. Companies often strive to cut costs to remain competitive, but this pursuit should be balanced with ethical considerations and a commitment to sustainable practices. Some key ethical implications to consider are safe labor practices, environmental impacts, social responsibilities, legal compliance, responsible innovation, human rights. Balancing cost reduction with sustainability and ethical considerations requires a comprehensive approach that takes into account environmental, social and economic sustainability. Companies that prioritize ethical supply chain management are more likely to build trust with consumers, enhance their

brand reputation, and contribute positively to global sustainability goals. It is up to companies´ goals and objectives to opt for which dimension to focus deeper ethically.

8.2 Limitations

During the time of conducting my study I had limited ability to connect with specialists in the field and gained access to a larger scope of participants for my interviews. Due to the limited connections and the Covid -19 situation, looking for the right candidates for the interviews was posed challenges from the beginning due to the hardships of online interviews and time schedules. With the limited number of interviewees, the analysis and data depended strongly on specialists' own experience and opinions thus the data collected confined within interviewees. Moreover, lack of previous sufficient studies was also a part of the limitations of this study. Prior studies did not provide my study with deep theoretical foundations for the research questions I am investigating. Relevant studies were limited, and it was an important opportunity to identify gaps in the literature and further development is needed. Moreover, the scope of the companies I interviewed was not diversified enough to see a bigger picture from different angles. Participants are mostly from similar backgrounds, which might differ from the results found from interviews with culture differences.

8.3 Recommendations for future research

It will be interesting so see how companies manage to stay sustainable during, and also after COVID time because during the pandemics time, challenges sometimes were insurmountable for business, but there are possibilities for companies to survive yet stay sustainable. There were limited amounts of available articles and studies for the subject because the on-going situations and results of pandemics affect yet far in the future. How companies can build business resilience through crisis with sustainability and cost cutting, to reach the "new normal" logistics and the impact of COVID 19 on sustainability and cost cutting for businesses. Short-term environmental sustainability gains occur, while long-term effects are still uncertain and require research. Research implications about the COVID-19 crisis is emerging and evolving, and we are not so sure, whether short-term changes and responses will result in a new "normal." Adjustment to current theories or new theoretical developments may be necessary for this specific occasion.

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Appendix 1

JÖNKÖPING UNIVERSITY
Jönköping International Business School

GDPR Thesis Consent Form

Title of the Thesis Project: Navigating the Intersection: Cost Reduction and Sustainability in Logistics Strategies
Researcher/Student: Huong Bäckström
Affiliation: Jönköping University

Introduction: I am conducting a research project as part of my thesis, and I would like to request your voluntary participation. Before you decide to participate, please read the following information carefully and ask any questions you may have.

Purpose of the Research: The purpose of this research is to analyze the supply chain management costs of sustainability, specifically the logistics costs with impact on the efficiency when improving sustainability. Your participation is important in contributing to the knowledge in this field.

Participant Information: Your participation in this research consists of an interview focusing on the topic of supply chain sustainability and will take approximately 1 hour. The data collected will be used solely for the purpose of this research project.

Data Processing: Your data will be treated with confidentiality and will not be disclosed to third parties without your explicit consent. The transcript will not include your name and all data that can be used to identify you will be anonymised.

Voluntary Participation: Participation in this research is entirely voluntary, and you have the right to withdraw at any time without providing a reason.

Consent: I have read and understood the information provided above. I agree to participate in this research project and consent to JIBS processing of my personal data for the stated purposes in accordance with current data protection legislation.

Participant's Full Name: _____

Signature: _____

Date: ____/____/____

Appendix 2

JÖNKÖPING UNIVERSITY
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Interview Questions

Cost Reduction

1. What do you associate with cost reduction?
2. What does your organization think about cost reduction?
3. What is the importance of cost reduction in your company?
4. What do you think are the reasons for cost wasting in your company at the moment?
5. Which process is the most cost-driving area in your department and worth focusing on cost reduction the most?
6. How to save cost in your company for this process/processes?
7. How effective this solution has been?
8. Risks and advantages of each method.

Sustainability

1. How does your organization see sustainability? How important is it in your company?
2. What kind of logistics strategies are your company pursuing?
3. How does your company implementing those strategies and how effective they have been?
4. Are there any future sustainability strategies planning out in your company and why you focus on them?
5. Risks and advantages of each method

Correlation between Cost Reduction and Sustainability

1. How sustainability relates to cost reduction in your company?
2. Does sustainability help with cost reduction so far?