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# MASTER THESIS

(EXPLANATORY NOTE)  
OF GRADUATE OF ACADEMIC DEGREE  
«MASTER»

**THEME: «Organization of the logistic mechanism intermediaries in product distribution»**

Speciality 073 «Management»

Educational and Professional Program « Global Logistic and Supply Chain Management»

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Київ 2021

NATIONAL AVIATION UNIVERSITY  
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**TASK**  
**FOR COMPLETION THE MASTER THESIS OF GRADUATE**

Ishimwe Marie Jeanne  
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1. Theme of the master thesis: «Organization of the logistic mechanism intermediaries in product distribution» was approved by the Rector Directive №2051/CT. of September 29, 2021.
2. Term performance of thesis: from October 04, 2021 to January 02, 2022.
3. Date of submission work to graduation department: December 13, 2021.
4. Initial data required for writing the thesis: General and statistical information about intermediaries in the whole process of logistic and supply chain management, intermediaries and international trade matching, information, financial status as well as the mechanism of functioning of DSV as international freight forwarders.
5. Content of the explanatory notes: Introduction, intermediaries in product distribution system, classification and categorization of intermediaries, relationship management, mechanism of intermediaries, intermediaries cost and cost effectiveness, intermediary chain management, application of intermediaries in real distribution chain, calculation of economic effect of the proposed measures, conclusion and appendix.
6. List of obligatory graphic matters: tables, charts, graphs, diagrams illustrating the current state of problems and methods of their solution.

7. Calendar schedule:

№	Assignment	Deadline for completion	Mark on completion
1	2	3	4
1.	Study and analysis of scientific articles, literary sources, normative legal documents, preparation of the first version of the introduction and the theoretical chapter	04.10.21-28.10.21	Done
2.	Collection of statistical data, timing, detection of weaknesses, preparation of the first version of the analytical chapter	29.10.21-15.11.21	Done
3.	Development of project proposals and their organizational and economic substantiation, preparation of the first version of the project chapter and conclusions. Editing the first versions of master thesis	16.11.21-03.12.21	Done
4.	Preparing the final version of the master thesis, checking by standards inspector	04.12.21-09.12.21	Done
5.	Approval for a work with supervisor, getting of the report of the supervisor, getting internal and external reviews, transcript of academic record	10.12.21-12.12.21	Done
6.	Submission work to Logistics Department	13.12.21	Done

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8. Consultants of difference chapters of work:

Chapter	Consultant (position, surname and name)	Date, signature	
		The task was given	The task was accepted
Chapter 1	Associate Professor, Savchenko L.V.	04.10.21	04.10.21
Chapter 2	Associate Professor, Savchenko L.V.	29.10.21	29.10.21
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9. Given date of the task October 04, 2021.

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Task accepted for completion: \_\_\_\_\_ Ishimwe M.J.  
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## **ABSTRACT**

The explanatory notes to the master thesis «Organization of the logistic mechanism intermediaries in product distribution» comprises of 111 pages, 42 figures, 20 tables, 121 references.

**KEY WORDS: INTERMEDIARIES, MECHANISM OF LOGISTIC INTERMEDIARIES, SUPPLY CHAIN MANAGEMENT, PRODUCT DISTRIBUTION CHAIN, OUTSOURCING, 3PLS AND FREIGHT FORWARDERS, CARRIERS.**

The purpose of the research is to study is to find out the clear differences exist between intermediaries, fix what mechanism the intermediaries can be used in Supply chain management and identify the factors associate with raise up of product cost.

The subject of the investigation is an organization of logistic intermediaries' mechanism in product distribution system of «CH Robinson, carrier and DSV».

The objective of this study is to find out the best organized mechanism of different intermediaries to meet the cost reduction as well as cost effectiveness within the product distribution chain.

Methods of research is the combinations of scientific methods such as: the classification and comparative method. Additionally, perspective study carried out and the data will be collected by interviewing on formulated questionnaires.

Materials of the thesis are recommended for use during scientific research, in the educational process and in the practical work of specialists of logistics departments.

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## NOTATION

3PL - Third Party Logistics provider.

4PL -Fourth Party Logistics provider.

5PL - Fifth Party Logistics provider.

e-intermediary - Electronic Intermediaries.

FF -Freight Forwarder.

FIATA - International Federation of Freight Forwarders Association.

ICT -Information and Communication Technologies.

IFF -International Freight Forwarder.

IM - Inventory Management.

IT -Information Technology.

LM -Logistics Management.

LSP -Logistics Service Provider

LTL - Less than Truckload.

SC - Supply Chain.

TPL -Third Party Logistics provider.

WTO - World Trade Organization.

MOA -Mechanism of action



## INTRODUCTION

Among the different businesses around the world Logistic and supply chain management system is the main concerns. Logistic head the other strategic method to satisfy customer's needs. Logistic and supply chain management is applied between the counties, between the companies, between the services. Logistic and supply chain management strategy is the key in international trade, as mater of the fact a value of 1,878 billion dollars of world trade has been reported to be from imports and exports in 2016 and the amount from the export and import increase by 8.1% in 2021. I addition to the increment of import and export net-worth, the sales also has shit from 2654 To 3139, and all the growth is associate with the growth of intermediaries with the supply chain. Despite that, the researchers never ceased talking about the complexity of the of supply chain and distribution system within the national and international trade. Different strategies, methods, innovation are carried out and applied day today to reduce the complexity as well as the cost. However, it still requires more as building the strong bond between the producer and last customer is not easy as many thoughts. While the technical term of Supply chain is governed by customers satisfaction, Logistic is define as overall process of managing how resources are acquired, stored, and transported to their final destination. Supply chain system, product distribution system, intermediaries with support of IT are different strategies introduced and applied to facilitate complexity along the way up to the last consumer. Not only that also the innovative strategies as well increase the operations within the whole chain. Make the process smooth by reducing complexity tend to the reduction of the cost and it allow the satisfaction of the last consumer on affordable price. The whole process is made of different parts or departments, such as department responsible for procurements, Information technology, Transportation storages, manufacturing, information flow, and all of them are included in supply chain and their interact each other , although distribution system as an interconnected group of storage facilities and transportation system, it makes the satisfaction of delivery and provides standard

of living by adding the values within Supply chain. All departments mentioned should work together and collaborate as many as possible so that they can achieve the target to satisfy the last customer on affordable and low possible price. The increase of sales couldn't be reached so easily with the high competitions as well as the increase of demand. Obviously different companies in trading business become difficult for them to manage all activities by themselves, that how outsourcing some activities to the third parties. The usage of the third parties is associated with not less advantages such as; documentation handling, transportation, distribution, storage, meeting the customers' need on time, etc. In scientific name the third also are called the intermediaries, currently, usage of intermediaries as a helper get highly applied everyday. Ever since 1980s the companies tried to use intermediaries within their activities, Though nowadays intermediaries are getting much concerns and they are taking much responsibilities within the SC by the time. Intermediaries take over different roles, starting from the choice of transportation mode, to payment processes as well as the storage and handling of goods. Therefore intermediaries have been classified in different groups based on the role or function they can bring in the whole supply chain. Third-party logistic activities (3PLs), fourth-party logistics (4PLs) and fifth-party logistics (5PLs) and international freight forwarding, in addition of channel intermediaries which consist of agents, brokers, wholesalers, distributors and retailers, Furthermore, electronic intermediaries (e-intermediaries), all these are form of intermediaries exist nowadays, in their form and groups are trying the knot for facilitating trade with minimum risk and affordable cost. They can be also classified based on their mechanism of action and they become logistic or channel intermediaries. Even though the intermediaries present some advantages in Supply chain management, also the other face of the coin alerts the responsible to use them with caution. Disadvantages such as delays, high price, loss of control within the company and others risks have been always present, that make the producer and shippers if using intermediaries is the best option or not. During elaboration of this thesis, some terms have been defined to make more understanding within the theme: Organization Is defined as an organized group of people with a particular purpose, such as a business

or government department, Mechanism as a system of parts working together in a machine; a piece of machinery according to oxford dictionary, Product distribution entails making a product available for purchase by dispersing it through the market. It involves transportation, packaging, and delivery and it is the whole process from the supplier up to the last consumer. Intermediaries: by the world itself intermediary means in between, in the logistic field, the intermediaries An intermediary is a third party that offers intermediation services between two parties, in other world acts as a conduit for goods or services offered by a supplier to a consumer. Supply chain management (SCM) is management of the flow of goods, data, and finances related to a product or service, from the procurement of raw materials to the delivery of the product at its final destination and International trade International trade is the exchange of goods and services between countries. Trading globally gives consumers and countries the opportunity to be exposed to goods and services not available in their own countries, or more expensive domestically. This research is important not only in amelioration of everyday activities, but also academic teaching as well it will be the source of knowledge to the readers. The mechanism of intermediaries in supply chain as well in product distribution, is a complex process however this research will try to break into simple understandable portions, from supplier till the end users. In between brokers, freight forwarders, carriers, 3PLs,4Ls wok together to reach the destination.

With different benefits that the companies expect to attain from the use of an intermediary, the cost reduction is the essential among them and different literature reveals that using intermediaries is among the helpful innovations for decades in one way to another; however, it is not always the positive expected outcomes achieved. Using intermediaries is associated with risks by which the increase of the cost include , the question which can be asked is that how? Can really that cost be higher than to not use intermediaries in our daily activities? even though the intermediaries provide positive out comes as delivery on time, reaching the customers, transportation distribution however they do not do the service for free, always there is a cost they charge the shipper or producers, they do the service on certain commission, which can be the one of the reasons to increase the cost. By increases the concern regarding power,

relationship and organization of intermediaries within the distribution chain, I believe the right mechanism of logistic intermediaries can be worked in can be designed. Regardless of the other negative factors associated on this. The usage of intermediary exist, for instance some know company such as DSV, C.H Robenonson, Delta express are carrying out the intermediaries functions everyday, either as brokers, as freight forwarder or as carrier and they are gaining some profits. intermediaries can work together, can work alone or even the company can decide to not use intermediaries, however the last consumer should receive the quality product/service of low possible price.

The purpose and objectives of the research. The aim of the work is: to find out the possible reasons of using intermediaries in supply chain. how usage of intermediaries can be associated with the price increase based on their categorization and classification. The different intermediaries are classified based on the capacities to provide the services, some can be responsible for transportation, sometime can offer only logistics, sometime can be occupied with documentations only, or it can be for efficacy and effective of manual forces other one can be taking on IT into consideration , this study will clarify work about the possible mechanism intermediaries can be arranged in and work in to meet the intended objective of satisfaction of the market at the lower possible price. For what is real, is that the more the number of intermediaries get increased in the system, the more the price of the final product also increase, sometime there is an hypothesis said that the more intermediaries increase the more it reaches to the large population. Findings, allowed me to categorize the intermediaries of cost reduction and to recognize when and what circumstances the intermediate can be selected in. not only that this thesis will light on the position that the intermediaries can be in, and offer the quality service, with lower price and with larger market .To achieve this goal, it is necessary to conduct study based on questionnaire formed from the previous literatures on both side of intermediary, DSV, CH Robinson as well as the carrier and manufacturing company.

This study is a multiple case study of a qualitative character. Semi-structured interviews are conducted in order to collect data. The data is processed via a qualitative

content analysis. First, the collected data is quoted, in a second step it is coded, categorized and then explained and finally interpreted. In order to establish a categorization model, a technique to assess the categorization is developed by the authors themselves. In formulating and analysing the research problem, the authors used different combinations of scientific methods such as: the classification and comparative method, Additionally Perspective study carried out and the data collected by interviewing on formulated questionnaires, Data collected and analysed from logistic broker, carrier and logistic freight forwarders. During interpretation, some key points were prioritized;

- why the intermediary is getting used in terms of numbers.

- the most common used intermediary in whole supply chain based on cost and service effectiveness.

And the interpretation conclusion, will be gained form the calculation n, as well the comparative responses will be collected in DSV, C.H Robinson and Carrier.

All the above point will allowed the author to provide a schematic means to use intermediaries in and always meet the expected result of possible effective and low price.

The thesis is organized in three chapters. After the Introduction, the first chapter titled, review of logistic intermediaries' position in product distribution chain. It will introduce the concept of intermediaries and their classification in international trade as well as in product distribution system and in the second chapter, is the case study of organization and mechanism of logistic intermediaries within distribution channel related to the product cost effectiveness. will expose the functioning which can lead to the increases or reduces of cost. The third chapter will be the project part of by which we will guide to the conclusion of how strategic we can use intermediaries in supply chain. Within the project the data corrected based on questionnaire. And descriptive and inferential analysis for quantitative analysis applied as well as qualitative analysis, formulas have been used to find the mean value, and coding, no only that standard deviation will be used to chose the best fact influence the selection of used intermediary. This study will help for further researches and also will help to improve

the product distribution channel. The author is strongly recommended to make the continue of the study on the sake of the supply chain improvement.

# **CHAPTER 1**

## **REVIEW AND ANALYSIS OF INTERMEDIARIES IN PRODUCT DISTRIBUTION SYSTEM**

### **1.1 Overview of intermediaries in product distribution chain**

The usage of intermediaries is not only for now, it has started ever since 1890S, as different forms of innovation applied in product distribution, logistic intermediaries take into consideration. This chapter one will clarify the intermediary position in product distribution throughout the whole global trade and also through supply chain management. International trade as the act of exchanging goods and services between countries has become extremely important in Globe trade. International trade develops every day and grows fast, along way it increases the living standard on the globe, where; It involves 230 countries around the globe, with 18,612,240 companies participate in importation and 13985312 are for exportation [1]. In fact 1,878 billion dollars generated from importation and exportation in 2016 around the globe has been reported [2] and the exported intermediates goods have been increased up to 16.3% [3]. The specification of today's markets by the professionals the net worthy gradually increases and it is already valued at \$37.41 billion [4]. As net worth of billions and billions increase every year is the way expertise, innovation, and pragmatism are discovered and get inserted within the whole process. Nowadays, providing lower retail prices, higher service levels with higher qualities, have become the aim of everyone. In fact, there are a growing number of industries in which enormous number of competitors and is hardly try to obtain market [5], and the process to supply a product to the customer become more difficult and complex. Due to the complexity the competitions made the industry's objectives shift to the globalizations, Innovation, expertise, as well as core competencies focus [6]. Logistic and Supply chain management system is ones of the innovative, expertise, competitive and helpful

systems introduced in the field to facilitate, to improve as well reduce the cost. In fact, it has reported that 15% of supply cost can be reduced on business by which maximizes the supply chain management [7]. By definition Supply chain management system is the sequence or system of organizations or operations that work together to design, produce, and deliver a product or service to a market, extending from the extraction of raw materials to the distribution of finished products or services [8].it covers: Logistic, planning and quantification, sourcing, production and inventory management as it is shown on the Figure 1.1.



Figure 1.1 - Supply chain components

Despite all challenges, shifting to Product distribution channel management focus might be the source expected result. Distribution channel is the process products pass



through to reach the last consumer [9]the distribution channel is an essential part of the supply chain with emphasis on transportation of goods, not only that, the distribution channel deals with all good flows from the producer to the last consumer by considering time and quality [10]. Figure 1.2, gives the stand of distribution channels in whole SCS.

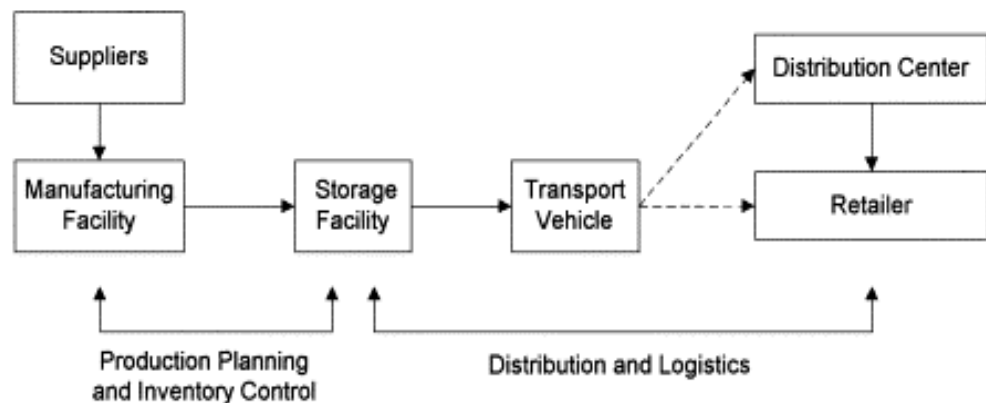


Figure 1.2 - The position of product distribution within the whole supply chain

It has found that the effective management of distribution channels such as Analyse the Consumer, Establish the Channel Objectives, Specify Distribution Tasks ,help the firms to grow their market and sales, as well build strong relations with the clients [11]in addition, the distribution channel can be designed in a way that low cost, fast and quality service should be in all [12].however the literature reveals that the more intermediaries you involve, the higher the product price will be. Distribution channel is distinguished in different types and different levels [2]Although the distribution of a certain products can take more than one intermediary due to geographic condition. weight and height of the cargo, physical-economic and political facts. the distribution channel should be managed with caution [13]. Despite that the channel can be classified into, Direct distribution channels, Indirect distribution channels, selective or Dual Distribution and Reverse distribution channel [14],on the other hand can be categorized in two types, direct and indirect, with different levels as shown in Figure No3. Within indirect channel is the right place where different intermediaries get involved. Agents, brokers, retailers , and others such as 3PLs or 4PLs [2].

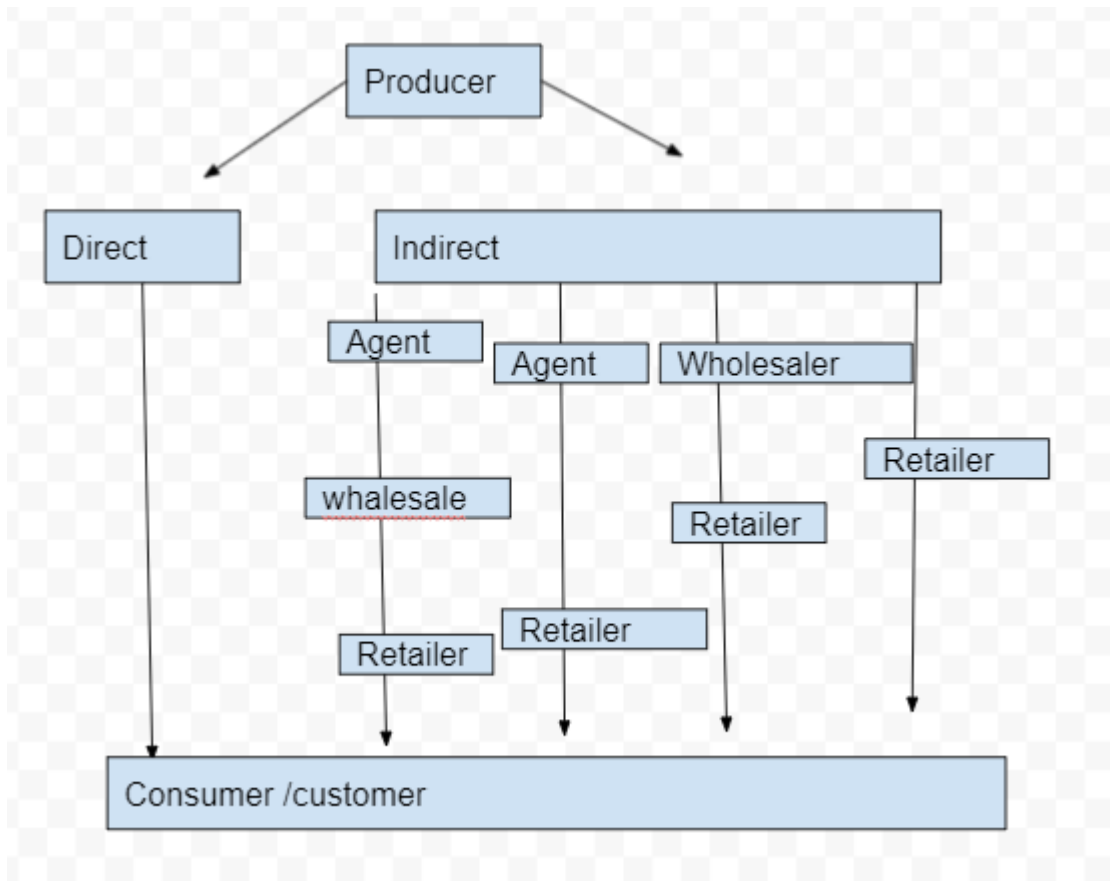


Figure 1.3 - Type of distribution channel

## 1.2 Types of Intermediaries in distribution channel

Within different definitions proposed by literature, the author finds intermediaries are links between the producer and last consumer, intermediaries link both side by providing transportation, storage, IT services, logistics and handling of good. Researches reveal that any form of intermediary involvement in SC is indirect distribution channel itself [9]and it is explained by the Figures no1-3 too. While every day , the SC found to be complicated, it is stated that Supply chain complexity is due to rising customer expectations such as faster delivery times, expanded products and services, competitors, as well as innovation. Matching these facts it requires strong cooperation with the 3rd parties and it gives the responsibilities the 3<sup>rd</sup> parties. Not only

that it improves inventory with suppliers, and serious management of all process. This gives intermediaries now the power to contribute in SC and they contribute in any step of SC. The contribution can be either negotiation, product selling, outsourcing, product distribution, etc [15] [16] and Figure No1-4, explains more. Moreover the intermediaries have expertise, knowledge and skills.

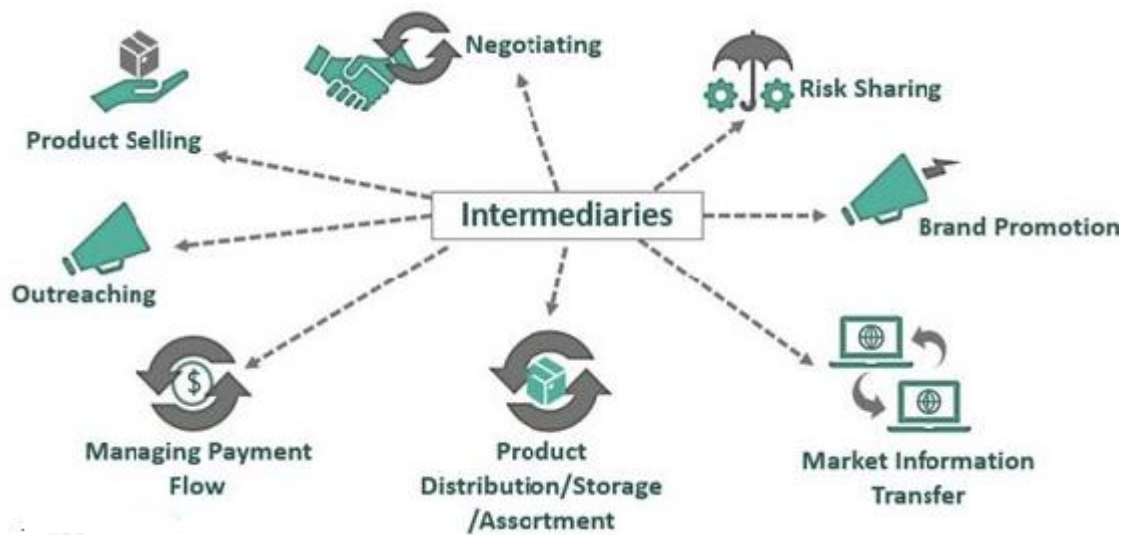


Figure 1.4 - Contribution of intermediaries in SCs

Within distribution ,different roles and functions of intermediaries allow them to be classified into groups, they can be in logistics intermediaries or channel intermediaries or e-intermediaries [2].Channel intermediaries consist of: agents, brokers, wholesalers, distributors and retailers [17]and according to [18] this distribution channel is defined as the groups and individuals who make all in their possibilities for consumers to have access to the products. Whereas logistics intermediaries commonly focus on international freight forwarding in other word they contribute in activities associated with logistic, they are third-party logistic activities (3PLs), fourth-party logistics (4PLs) and fifth-party logistics (5PLs) [19], in addition that it is a category which is specialized in providing transportation and storage in exchange for certain fees of course. Table 1.1, will give us the differences and similarities to both groups of intermediaries.

Table 1.1 - Common types of intermediaries in SCs

Conditions/similarities	Logistic intermediaries	Channel intermediaries
Support each other to SC and cost effectiveness	Group of third-party logistic activities (3PLs), fourth-party logistics (4PLs) and fifth-party logistics (5PLs)	consist of: agents, brokers, wholesalers, distributors and retailers
All of them, get paid, act on certain fees.	specialized in providing transportation and storage in exchange for certain fees.	groups and individuals who make all in their possibilities for consumers to have access to the products. On certain fees course
All of them are lied on IT/internet. And regards their responsibilities	product distribution, storage and assortment, outsourcing, payment management flow, risk sharing	Negotiations, product selling's, brand promotion, marketing information

Furthermore, electronic intermediaries (e-intermediaries) gain more importance in the whole process, companies use e-intermediaries and therefore getting access to new information and communication technologies' -intermediaries can help to increase the efficiency, for instance provision to buyers as well as sellers with a platform or network for doing business [20]-intermediary is part also of logistic intermediaries and their asset is only the internet and technology, anything is worked out on the internet [2].e-intermediaries can resell, can link the freight forwarders and carries, can link shipper and freight forwarders however their main and all functions are based on internet. During the research, the author finds out the main importance of intermediaries in SC generally as well as in distribution of the product, despite the number in process which can cause the issues in SC however if businesses decide to work with intermediaries, they should provide the good result for the business, the

owner of the business will be expecting reduction of business activities and focus more on core competencies, he will be expecting communication and handling operations [21]. In either way the intermediaries should provide the quality services and maintain the friendship with their clients since they have both expertise and specialized knowledge about specific roles in SC. Intermediaries create values and benefits within the SC. According to Michelson intermediaries decrease barriers between an organization and make the expansion of the products. Intermediaries provide basic operational tasks, for example, order processing, handling or transportation planning. Intermediaries share the risk with their clients within SC. Mostly the intermediary accepts to share the risk with their clients, because of the task and skills specialization benefit and they need to prove their ability to face the work. Intermediaries can also provide transactional benefits such as controlling and holding the inventory capacity on the other hand, informational benefits can be identified [22].

### 1.2.1 Logistics Intermediaries

Logistic intermediaries is the group responsible for transport, storage, packaging and distribution of the goods from the manufacturer up to the last consumer [23]. All logistic intermediaries and their responsibilities are summarised in Figure 1.5.

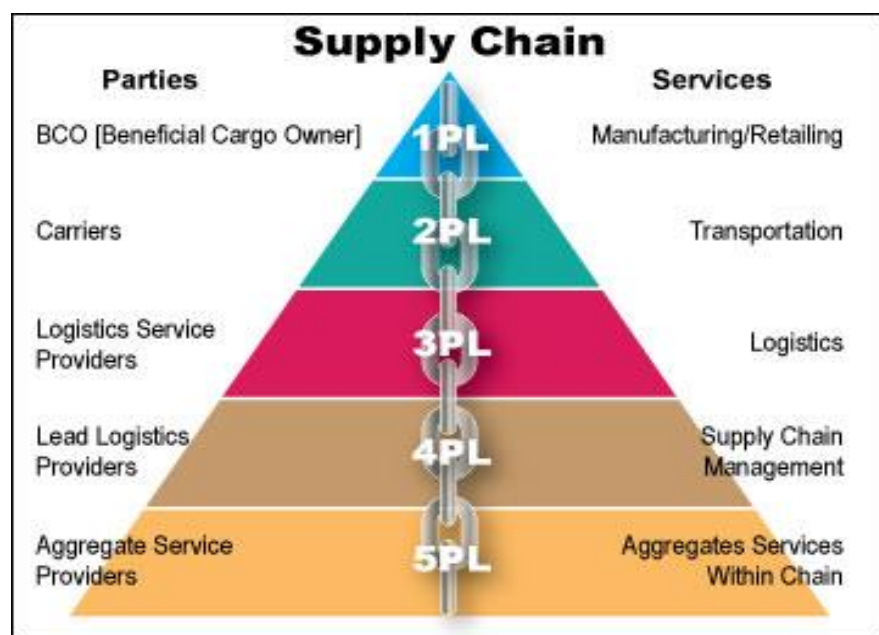


Figure 1.5 - Logistic intermediaries and their roles and responsibilities

#### a) Carrier

A carrier is a type of intermediary in the first place, they are characterised by their own assets. Carriers use their own vessels, aircrafts and trucks whether they are full or half loaded, [24], they offer modes of transportation, which can be air, ocean or land transport. For instant company Delta express Inc based in America, it offers thousand and thousand land transport by a year, during their transport on land they use different trucks tautliner, Frigo trucks , trailer bus, small trucks such as van , curtain, box trucks .not only that DHL, FedEx, UPS and Ukrpotscha and millions of others work around the world. The carrier offers FTL (Full truck load) and LTL (less-than-truckload) solutions based on price [25]. Among the multi modes of transport that exist worldwide, it has shown that land transport is the most used mode [23]. Where On the ground, only DHL can use almost 17,000 vehicles service to a total of 120,000 destinations in all continents.to deliver over 1.5 billion parcels per year [26]. Furthermore, carriers can be classified in the following types: common carriers, private carriers and other types of carriers with special rights and duties: forwarding agents [27] . Choosing a carrier to work with it requires much attention and examine carefully facts, every mode of transport has advantages and disadvantages, in fact also it varies with the price [23]. The following Tables 1-2 will show the comparative data of all possible carries based on the mode transportation.

Different articles have been published regards of how to choose the right carrier to work with, however some criteria have been common: Expertise, experience, financial status, insurance, company status, shares, informatic system and technology, short and long term goals of the company [24].

#### b) Freight forwarder (FF).

Researchers states that FFs are the most active and most common form of logistics intermediaries, [28], international freight forwarders are the company coordinate transportation details between international sellers and buyers so that goods get to where they need to go, [29].

Table 1.2 - Comparative study of transport mode

Mode of transport/Carriers	Usage	advantages	disadvantages
Road/Trucks	-It is ideal to the mixed cargo	-flexible -cheap -door to door - national and international	-Limited once the roads are damaged. -is limited to one continent. -takes longer
Rail	is for national, international and intercontinental transport	-It is environment friendly -Ideal for heavy goods -fair price	-Rail system require much investment -appointments.
Air/ planes	-fast transport -national, international and intercontinental	-Fast and safe	-Expensive -appointments -limited to the size and weight -is limited because it relies on the weather.
sea/ships or boat	-bulk shipment -intercontinental	-bulk shipment -affordable price than air -environment protective	-long lead time -inflexible schedule and routes

It linking international trade as mostly the activities done by IFF are cross borders and it links the shipper and the transporter. The International Federation of Freight Forwarders Associations (FIATA) states several different functions related to FFs which are taking care of goods, storage, packing, handling as well as distribution of goods. not only that they handle also all process starting from the selection of the mode of transportation, the route, requirements and documentation, as well as payment activities [30]. When acting as a transportation intermediary, the forwarder purchases cargo space on specific routes for a fixed price, which is resold to shippers. The greater capacity to provide services that a forwarder has over a custom broker is apparent. In essence, freight forwarders can remove the complexities of international shipping

requirements from their customer while adding value by arranging the most cost-efficient route for transportation as the Figure 6 shows. Freight forwarders can save time and money for their customers by consolidating shipments together. It has found that Negotiating and arranging the best method of transport for product to get to the target market Coordinating the movement of goods to their destination, Preparing the necessary paperwork, Providing advice on packing and labelling and marking of goods to be Freight Forwarder Duties and responsibilities [31]. With all responsibilities, Tones and tones of forwarders exist around the world [32] however the rank given by Armstrong & Associates (A&A) of Top 25 freight forwarders in 2019. DSV after the purchase of Panalpina, making the new entity the world's 3rd largest forwarder by revenue. By now DSV is a rival to Kuehne+Nagel and DHL Global Forwarding in the current marketplace [33]. This ranked list also has classified others like C.H. Robinson and Geodis as it is shown in Table 1.6.

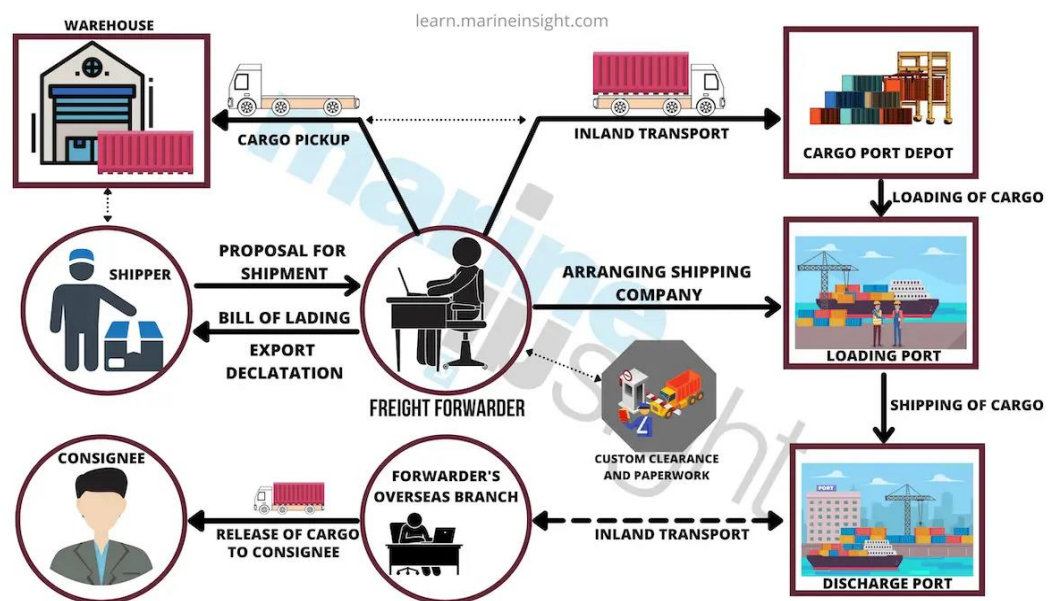


Figure 1.6 - Freight Forwarders

### c) Third party logistics (3PL)

3PLs is a part of Freight forwarders, It links buyers and sellers. It is the most often involved logistic type i.e. FF, it provides logistics services for manufacturers, retailers and as well the customers, and it provides service under contracts with the partners



[34]. The only role and function of this type is to facilitate the flow of goods through transportation, packaging, warehousing activities as well as cross docking actions such as Inventory management. The 3PL also are involve Customs brokerage, Freight audit, Payment, Shipment tracking [35].It has seen that within SC process the price increase due to the number and types of intermediaries you involve in. However 3PLs can provide cost-effectiveness by reducing their clients inventory costs for instant.

Rank	Provider	Gross Revenue (US\$ Millions)*	Ocean (TEUs)	Air (Metric Tons)
1	DHL Supply Chain & Global Forwarding	28,453	2,862,000	1,667,000
1	Kuehne + Nagel	25,787	4,529,000	1,433,000
2	DB Schenker	20,761	2,052,000	1,094,000
2	DSV Panalpina	18,269	2,204,902	1,272,405
3	Sinotrans	12,174	3,750,000	532,300
4	Expeditors	10,116	1,091,380	926,730
5	Nippon Express	19,347	660,152	720,115
6	CEVA Logistics	7,416	**1,081,100	363,300
7	C.H. Robinson	15,490	1,200,000	225,000
7	UPS Supply Chain Solutions	11,048	620,000	988,880
8	Kerry Logistics	6,867	1,019,924	493,903
9	GEODIS	9,135	866,631	290,506
10	Bolloré Logistics	5,265	761,000	574,000
11	Hellmann Worldwide Logistics	2,972	905,100	552,640
12	Kintetsu World Express	5,750	640,063	556,875
13	Agility	4,018	771,000	372,000
14	Yusen Logistics	4,248	764,000	337,000
15	CTS International Logistics	2,160	1,021,007	398,175

Figure 1.7 - Classification of top 15 freight forwarders by A&A, 2019

This confirmed with study of Hanna broker said that the processes up to the final point is not expensive the final product will be out with the affordable price [2]that is why 3PLs providers try hard to minimize the expenses, and regulate the process depending on the task they are assigned to. Using 3PLs will Lower capital investment, Changes fixed costs to variable costs, [34], it has been shown that Amazon can already ship to 72% of US population in one day. More than 40% of the USA population in less than four hours with facilities in key hubs in every state, which explain how using 3PL will Reduced time-to-customer and shipping costs [34] [35],not only that it will

reduce cost per order too. In Fact Same duties as freight forwarder, but provides additional logistics services as well, Additional services include, but are not limited to, storage, cross- docking, and distribution and Track shipments on behalf of customer as big responsibilities to 3PLs, ass addition 3PLs often have established relationships with other supply chain intermediaries, and even other 3PLs, who they may hire to handle their customer's freight [31]. the comparative study have been conducted between differences and similarities between 3PLs and Freight forwarders. And all of them have presented on the table No4.

d) Fourth party logistics provider (4PL).

The fact that there is high demand, innovation, in addition of technology without forgetting the complexity of the whole system, the 3PL has been improved and transformed into 4PLs [36].The comparative study has been conducted and found the similarities and the differences between 3 PLs and 4PLs.3PLs are more strategic,3PL combines operation and management activities of the SC however 4PLs need to manage the whole SC process [37] In order 4PL to be successful, effective and strong partnerships with their customers is the key. the 4PLs are concerned as strategic partners in SC [2].this explains why 4PLs do not own any physical assets. The 4PLs focus more on the technological as well as knowledge-based asset management of other intermediaries involved in the supply chain. The 4PLs role can be identified as a controlling SC as well as network management services. [36].

According to the Council of Supply Chain Management Professionals (CSCMP), a 4PL is defined as “often a separate entity established as a joint venture or long-term contract between a primary client and one or more partners.” By concise, a 4PL is responsible for a supply chain's planning, management, and designing, from start to end, rather than standard delivery, distribution, and transportation functions [1].They are a single interface between multiple logistics service providers and one client and 4PLs usually combine operation and management activities of the SC [2].In fact clients demand activities such as, consultancy, change management, network design and analysis, return logistic, satisfaction and affordability of the price are from 4PLs .4PLs provide and deliver extensive SC solutions by gathering and managing resources,

technology and capabilities [34] According, Prudky the 4PLs should stay neutral while managing the SC, that makes them to be strategic partners rather than SC interactors and Strategic partners share resources to help each other develop their employees [38]. Some importance such as Trusted Advocacy, Customer Connectivity, Improved Core Competencies, have been declared from usage of 4PLs [39](Root, n.d.) for that It is real important to take the business text level by using PLS service [40]

e) Fifth party logistics provider (5PL).

5PLs service is a new level of logistics service provider, with a strong technology focus, that provides data and services beyond what you get from a 3PL or a 4PL. 5PLs focus on providing customers with new collaborative SC services as well with optimization, focus is mainly on technology as it is precise [31] and Those activities are mostly done by the usage of new logistics technologies, including improved IT systems or e-commerce [41]. According to the linked in website, 5PL puts their focus on large, international companies with a high complex SC and they only provide the information and resources for the management models [42].

Table 1. 3 - Comparative study of 3PL,4PL and 5PLs

Criteria	3PLS	4PLS	5PLS
Feature	<ul style="list-style-type: none"> <li>-It links buyers and sellers.</li> <li>-are more strategic manner it combines operation and management activities</li> <li>-one of two points of contact in the supply chain.</li> <li>-Often owns the warehouse or transportation assets</li> </ul>	<ul style="list-style-type: none"> <li>- focus on optimization of SC and more on the technological as well as knowledge-based asset management of other intermediaries involved in the supply chain.</li> <li>- often have no means of transport and warehouses (non-asset-based logistics).</li> <li>-The single point of contact for the full supply chain.</li> </ul>	<ul style="list-style-type: none"> <li>- new logistics technologies, including improved IT systems or e-commerce</li> <li>Other technologies that 5PLs may look to have include robotics, blockchain, artificial intelligence (AI) and Bluetooth beacons.</li> <li>-focusing instead on wider supply networks.</li> </ul>

For that 5PLs do not involved in operations, they get involved only in providing the information and resources for the management models. When looking for a logistics provider, there's a good chance you'll come across the terms 3PL, 4PL and 5PL. Short for third-party logistics, fourth-party logistics and fifth-party logistics respectively.

f) e- intermediaries.

As it is define by the research gate, E-intermediaries are online organizations which facilitate buyers and sellers to trade on the Internet [43]. The everyday development of activities and IT in general and the use of the internet have established new ways of doing business as well as new business forms, e.g. electronic marketplaces (EMPs). EMPs or e-intermediaries facilitate the contact and exchange between the buyer and the seller. These online processes can be named information technology (IT)-centric businesses [2]. Companies using e-intermediaries and therefore getting access to new information and communication technologies, can help to increase the efficiency of the entire value chain [44].

### **1.2.3 Channel intermediaries**

Generally, channel intermediaries are the external group ensuring that the product is available at the right quantities, right quality, at right time and for the right consumer [34]. This category is made by suppliers, Manufacturers,

Wholesalers, Retailer and Broker/agent as it shown in Diagram No 3. In fact there are included by Cross- Docking activities as well as warehousing, but in effect serves a much different purpose. [28] The central function of cross- docking is to decrease inventory by streamlining the flow of goods between supplier and customer. Unlike a warehouse where goods are stored for at least 24 hours, the general rule in cross-docking is that goods are stored for less than one day. The main reason for using cross- docking is to decrease the cost of holding inventory and the overall cost of transportation, usually by consolidation. This function is valuable in many situations. The channel intermediaries serve as a channel of communication between the

consumer and producer and this type creates value within the whole SC, By working in a cost-efficient way, Channel intermediaries provide advanced skills and capabilities are required for the processes [21]We cannot talk logistic intermediaries without say a quick note on channel intermediaries, The channel intermediaries also can support the logistic intermediaries to focus n cost effective of the whole process.

a) Supplier

Suppliers are the ones to provide the raw materials to the manufacturers. Suppliers are often selected according to the database information, which includes the commodity grouping, maturity, geographical location as well as technology [45]. The selection of the supplier to work with , it requires much attention and a lot to take care of, the supplier should have the quality raw materials by which the manufacturer is interested in, the products should be in good condition and with quality part from that studies show that the supplier geographic location goes with price and time [46].In other word if the supplier is far or located in place where there are no transportation means, the raw material will be delayed or difficult to reach the place, which can increase the cost. The suppliers should be competent and identical that is why Supplier's development activities can be categorized into 5 areas which are strategic efforts, knowledge and information sharing, investment, working together with suppliers and involvement of buyer and supplier [24]. However, the study shows that the performance outcomes can be divided into three suppliers' categories of improvement, the first would be supplier performance improvement, and the second buyer's competitive advantage improvement and the last presented as buyer-supplier relationship improvement [47]

b) Manufacturer

Manufacturers provide industrial transformation from the raw material to the finished or semi-finished goods. After production, the manufacturer transports and distributes the products to a retailer or directly to a consumer [48].The manufacturers in SC are aimed to deliver the highest possible value service and products to the end customers. The study has shown that manufacturers approach multiple retailers in order to cover a wide geographic area [49].In addition the manufacturer can use more than

one way to sell their products: They can sell via in-store shopping or online. On the one hand, in-store shopping can help the consumers to see the product before they purchase the goods and customers can also get better information. On the other hand, online offers provide benefits including product varieties, customization or availability [2].

### c) Distributors

Distributors are often under contract with different manufacturer in order to buy and transfer the goods from the factories to the end customer markets . They distribute new products, however and also they can also be responsible for the collection and processing of the returns [2].In additional they should win the Distributor and manufacturer relations to make this work done, according to HRA Global website, the distributor should be Passionate, Focused, Considered, Honest, Open, Persistent and have Good Value [50]and despite that the supplier- and manufacturing relationship should be Be Responsive to Their Needs ,should be Offer Quality Products, should be Showing a Willingness to Collaborate and most importantly should be able to Pay Attention to Details. companies need to be aware of the dependency between each other, especially when certain competencies cannot be replaced easily by other firms. If firms are satisfied with their distributors, this will lead to greater loyalty, which results in higher probability to work closer with this intermediary. Moreover, working together closely can lead to the establishment of mutual goals, which can lead to trust [51]. Distributors function similarly to wholesalers in that they take ownership of the product, store it, and sell it off at a profit to retailers or other intermediaries. However, the key difference is that distributors ally themselves to complementary products. For example, distributors of Coca Cola will not distribute Pepsi products, and vice versa. In this way, they can maintain a closer relationship with their suppliers than wholesalers do [52] .they actor as sales representative for the producers. Distributor is actively independent third-party company that purchase products from manufacturer and resells them, not only that they are actively looks out the orders from various sources in the market, executes them and manage the returns. They are actively involved in product promotion however they charge the service fees. In other word,

they act as sales personnel for the company and thus demand pay in proportion to their efforts for promoting the company products [53]. Distributors work for the producers by being actively involved in the currently promotion and selling in the overall market. Producers are primary clients of the distributors and the distributors work as if they are salaried employees of the producer [54].

d) Wholesalers.

As mentioned by Gadde, all actors in the distribution channel are responsible to deliver the goods from the origin to the final customers. The wholesalers can overcome the barriers and reach large markets Those intermediaries have higher qualified capabilities to access markets, for instance, marketing services agencies; physical distribution companies; and financial institutions, etc [21] [55] and Bernard also agrees that, through intermediaries, especially wholesalers, more products can be shipped to more destinations [30].In addition, wholesalers also provide help for less efficient firms to supply foreign markets. As intermediaries have better access to networks and technologies, they can reduce the fix costs for the companies for a higher marginal cost [8]. Unlike agents, wholesalers take title to the goods and services that they are intermediaries for. They are independently owned, and they own the products that they sell. Wholesalers do not work with small numbers of product: they buy in bulk, and store the products in their own warehouses and storage places until it is time to resell them. Wholesalers rarely sell to the final user; rather, they sell the products to other intermediaries such as retailers, for a higher price than they paid. Thus, they do not operate on a commission system, as agents do. [52].A wholesaler only fulfils orders from retailers and assumes no role other than satisfying retailers demand [53], it involves in promotion of product company and it own revenue is from discount charged on products. They purchase product on bulk at lower price from the producers and sell them to the retailers in small units that attract relatively high prices. The wholesalers view retailers as their key customers and they are mainly concentrating on big retail houses. The wholesalers simply reply on orders from retailers and work with small produces since they are many in the market [11].

e) Retailers.

Retailers are important in supply chain; they hold the whole distribution chain without them the whole chain is missing out as they are the one to get the customer to buy the product. Retailers come in a variety of shapes and sizes: from the corner grocery store, to large chains like Wal-Mart and Target. Whatever their size, retailers purchase products from market intermediaries and sell them directly to the end user for a profit. [52]. The retailers should have the good relationship with both customers and distributors as well as wholesalers. Sometime the wholesalers offer the retailers the discount to hold the relationship. Retailers use various communication methods such as advertising, public relations, personal selling, marketing and visual merchandising to attract customers and generate buying and they do what they can to hold the client for repeat purchase [52]. In order to stay competitive in the worldwide business environment, qualitative products are essential to compete against others. An important activity of retails is the quality insurance from the manufacturers prior to selling them to the consumers. Quality is mostly done by measuring the defective rate, which can be defined as the percentage of defect parts of all products. [56]. Apart from quality assurance, retailers also help companies to negotiate optimal retail prices as well as order quantities. On the one hand, better retail prices can be negotiated due to the consolidation function of the retailer [2].

As retailers purchase their goods in bundles, better marginal costs can be achieved [57]. On the other hand, the order quantity is calculated based on the market demand as well as the contract provided by the distributor. Parallel, the distributor provides quantity according to the demand of the retailers and contracts with the manufacturer. However, Loch und Wu (2008). argue that the relationships and perceptions of fairness between SC actors play a crucial role in the ordering decisions of the retailers. This fairness perception can be influenced by inequitable distribution of profits between the suppliers and the retailers. Apart from that, fairness concerns can have a major impact on SC efficiency and effectiveness [58].

#### f) Broker/agent

Due to the high number of suppliers and buyers and all the information included, often companies struggle to find appropriate partners to complete their transactions



quickly, this is the time where firms can take brokers or agents into consideration. A role of brokers/agents is to match supply and demand for both suppliers and buyers. Leading functions of brokers/agents can be identified as the accumulation of prices and information from both suppliers and buyers as well as obtain information about capacity and demand of the mentioned actors. Firms also benefit, as brokers/agents gather relevant parameter values, and select suppliers according to their coefficient in terms of price, satisfaction and weight of performance. Brokers/agents focus on the relative importance of the objective functions of their suppliers in order to find the perfect match for their companies [59]. The brokers simply arrange import and export documentations relating to Customs clearance, freight forwarders additionally arrange services for transportation and delivery of goods. It has found that Obtaining the release of imports, Payment of applicable duty fees, Obtaining, preparing the necessary documents and information, maintaining records and Responding to any concerns after payment to be responsibilities of Custom Broker [31].

According to the different researches the ranking of logistics services, given by freight brokerage, freight forwarding, warehousing and dedicated contract carriage is based on annual net revenue. For that C.H. Robinson Worldwide has been ranked on first freight brokerage company with \$1,797.4 million of net revenue, \$11,283.7 million of revenue gained from air/expedited, rail intermodal, LTL, dry van truckload, refrigerated, flatbed/heavy haul, bulk/tank types of freight [33].

Intermediaries in SC is not ended by channel or logistic intermediaries, Further researches went on distinction them. For that we get different categorization in product distribution.

Table 1.4 - Similarities and differences of 3PLs, Broker and FF

<p>3PLs:</p> <ul style="list-style-type: none"> <li>-Are companies that provide logistics outsourcing support.</li> <li>-3PL will take on picking, packing, inventory management, order management and processing, reporting, shipping and distribution, as well as return logistics.</li> <li>-3PL also provide domestic transport, international transport, warehousing, customer brokerage, and freight forwarding.</li> <li>- Often 3pls will work directly with carrier to ship good.</li> <li>- storage, direct-to-consumer fulfilment, retail fulfilment, kitting &amp; assembly, freight management and returns, are type of service offered by 3PLs.</li> <li>- PLs can use freight forwarders in case the order is more complex however is rarely to find an inverse case.</li> </ul>
<p>Freight Forwarders:</p> <ul style="list-style-type: none"> <li>-Ocean freight, Land freight, Air freight, Export and import documentation are services provided by Freight forwarders.</li> <li>-Managing the transportation of goods domestically and internationally requires knowing many various shipping regulations, tariffs, and other factors that change often.</li> <li>-They use their relationships and buying power with carriers such including air freighters, trucking companies, rail freighters, and ocean liners and negotiate the best possible price to move their client's products</li> <li>-Sometime a freight forwarder will provide short term warehousing and they work like broker between the shipper and intermediaries well as the</li> </ul>
<p>Brokers:</p> <ul style="list-style-type: none"> <li>-Freight broker never impound of items being shipped.</li> <li>-For their efforts, freight brokers gain commissions.</li> <li>-Freight brokers are simply stated, connect the shippers and the carriers as an intermediary.</li> <li>-For Brokers to work, they need to be registered for instant FMCSA in America and possess the insurance in case of losses.</li> </ul>

#### **1.2.4 Further Categorization of Intermediaries according to the market**

The intermediaries in global trade can be categorized based on the functions, size, abilities and possibilities. In literature, several authors have examined intermediaries with regards to varying characteristics. Hertz and Alfredsson for instance [60] have classified intermediaries with regards to customer adaptation and problem-solving ability as explained in figure 1. According to the website [61], which has shown that the client adaptability allows the control of the situation and define adaptability as a way to satisfy the need of the customers. Here, both factors, ability of customer adaptation and general ability of problem solving, are measured between low and high. Intermediaries with a low customer adaptation ability and a low problem-solving ability can be identified as standard transport firms. However Traditional brokers and warehousing firms fit into the category where customer adaptability is high and problem-solving ability is low. In other words mainly focus on customer satisfaction comfort. They Integrators, like DHL or Fedex have a low ability of customer adaptation and a high problem-solving ability that makes it standard. Intermediaries that score high in both factors are third party logistics providers (TPLs or 3PLs) [2]. Third-party logistics in logistics and supply chain management is an organization which outsource elements of distribution such as warehousing, transportation and fulfilment services as it is shown with researchers [62]. Not only that, the third-party logistics is further divided, based on functions and their high ability. This 3PL provider focuses on advanced value-adding services for different customers while creating economies balance.

It has found that Standard 3PL providers have a relatively high ability of adapting to customers and also a relatively high ability to solve problems according to Hertz, & Alfredsson. The divisions start by standardized services such as pick up, packaging, warehousing and distribution. The service developer as second division has a high problem-solving ability and a relatively high customer adaptation. This type tries to balance both sides based on Hertz and Alfredsson; the customer adapter does have a high customer adaptation ability and a relatively high problem-solving ability.

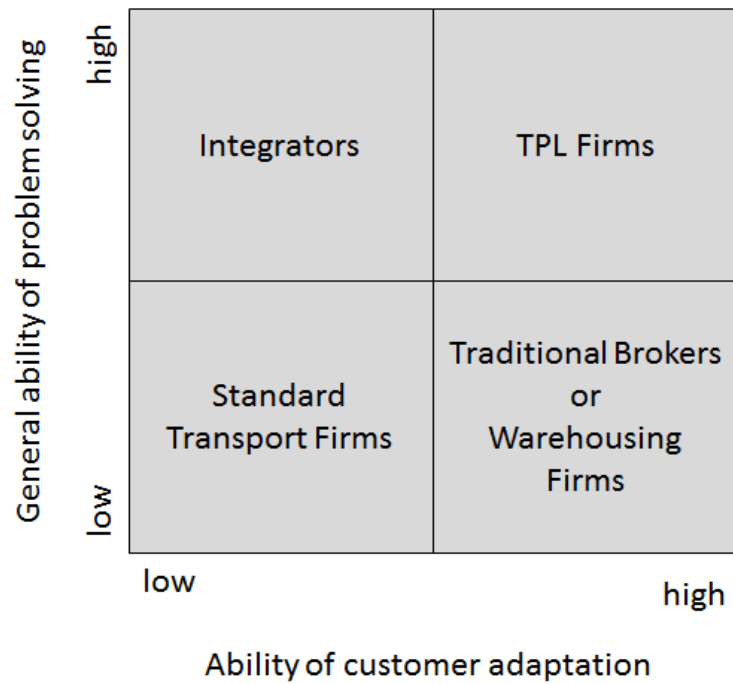


Figure 1.7 - Intermediaries with regards to the customer adaptation and problem-solving ability

The customer adapter focuses completely on a few customers and takes over their logistics activities. The customer developer has high abilities for customer adaptation and problem solving. The TPLs can be replaced by 4PLs once Provider and customer are integrated to a high degree and the provider often takes over the total logistics operation of a customer [2]. It is not only Herts. and Alfredsson who tried to categorize the intermediaries. There is also Stefansson who classified intermediaries with regards to the scope of services that various logistics firms offer and their degree of customization. The Figure 1.8 Will tell us more to

This categorization also is based on how low and high or how low and wide the logistics and satisfaction of the customer as well as the service is handled. Logistics firms/ organizations that have a low degree of customization and a narrow scope of services, are for instance carriers or prime asset providers and are categorized as first category. These providers offer services like transportation and documentation.

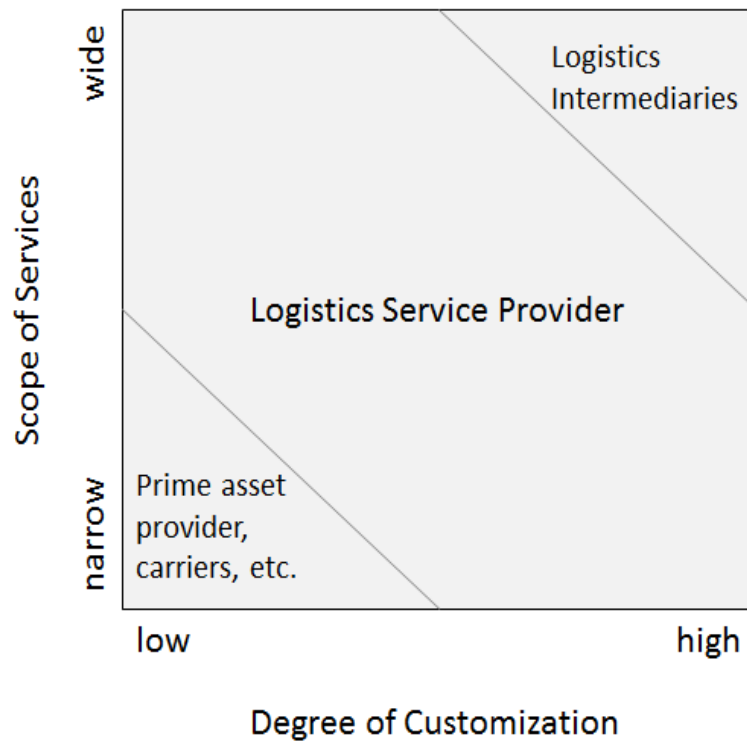


Figure 1.8 - Stefansson model of intermediary's classification in SC

The other categories are, Logistics intermediaries which offer a wide scope of services and have a high degree of customization. They can be equalized to 4PL providers, since they do not possess physical assets and These groups offer services like the design and implementation of logistics, advanced information services or contracting logistics providers. The logistics organizations in the middle of the model are logistics service providers, or 3PLs, and they offer either a wide scope of services and a low degree of customization or a narrow scope of services and a high degree of customization. To their scope belong typical logistics functions such as transportation, warehousing, packaging, manufacturing and cross-docking, and also some administrative tasks like customs or insurance [2]. Apart from Stefan, it cleared that the logistics service provider also can be sprite into parts based on characteristics, asset specificity and complexity of their systems the figure table 6 below will explain. Beside Low asset specificity and a low complexity means that a logistics provider functions rather as a basic logistics operator that offers general services. When the complexity is still low, but assets are high, the provider can be classified as a specialized logistics operator with specialized services. High complexity and low assets are advanced

logistics networks that offer general, but advanced services such as the one of 4-5PLs. A logistics integrator can be defined when both complexity and asset specificity are high. This type offers value added services. Further research goes on fourth party logistics providers in terms of complexity of collaborative distribution and in terms of intensity of collaboration [63]. Based on both criteria 4 categorization have been found which are Problem solving 4PLs, Collaboration specialist, Rational 3pls and transaction 3PLs. And I can be presented in table 1.7. A transactional 3PL fits when both intensity of collaboration as well as complexity of collaborative distribution are low. Relational 3PLs fit when collaboration intensity is low, and complexity is high. When both factors are high, then it can be named a collaboration specialist. Overall, it can be seen that several authors have attempted since 20003 up to 2015 to categorize logistics providers with emphasis on various characteristics. Hertz and Alfredsson focus on problem solving and customer adaptation ability, whereas Stefansson focuses on customization and scope of services offered. Persson and Virum have chosen asset specificity and complexity as characteristics, and Hingley et al. focus on two aspects of collaboration, namely complexity of collaborative distribution and intensity of collaboration. As literature reveals it, some research has been done in order to classify logistics providers in terms of certain characteristics.

### **1.3 Market of logistic intermediaries and their collaboration in SC**

According to the Council of Supply Chain Management Professionals (CSCMP), supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. The CSCMP also stresses that supply chain management should incorporate the collaboration and coordination of all players along the chain: suppliers, intermediaries and customers. Often, for the two endpoints of the supply chain,

intermediaries are the most efficient method for coordination and collaboration to occur and can also be an integral part in their overall cost control functions.

Logisticians are responsible for the management of all domestic and global supply chains. [31]. Supply chain intermediaries at the very basic level are organizations which provide support, using their own assets and resources, on behalf of other companies. Having these intermediaries available is beneficial for shippers, allowing companies to focus on core competencies without having to deal with transportation and logistical issues. Third-party logistics providers (3PL's) are amongst the most common intermediaries in the supply chain [2]. Generally, the SC management to be powerful through the intermediaries. It is not everyone who can allow to touch his own source to maintain health Supply chain activities and strategies. Here, power is defined as the ability to control and own assets in SCs and markets in order to accumulate value for suppliers, customers and competitors. some scientist fund that power can be classified into five types legitimate power, expert power, referent power, coercive power and reward power. The power types mentioned above can only work if one or more parties work together in a SC [8]. Companies often have to decide whether to make or buy their goods and services. In order to do so, the parts need to have an understanding strong relationship. Arm's length relationship is the important relationship. Within this type of relationship, detailed contracts are written in order to prevent parties from making decisions or operate independently. However, especially in road transport, contracts are often only verbal. Arm's length relationships are often characterized with minimal information exchange [64]

#### Cooperative arrangements

The relationship behind those arrangements are based on resource sharing, both tangible and intangible. Similar and complementary activities are managed, in order to achieve joint results. In addition, all parties involved follow similar business goals through the redesign of products and processes. Cooperate arrangements differ from arm's length relationships in terms of degree of power, level of trust and the fact that they are more long-term oriented [64].

## Collaboration

In this kind of relationship, full commitment from parties involved is achieved. Collaborations are identified as durable relationships. Firms share the mission, vision and high levels of trust. To accomplish a mutual understanding comprehensive planning, seeking of synergies and goals as well as well-structured communication channels are necessary. In addition, risk sharing and information exchange strategies are necessary to achieve successful collaborations [64].

## Alliances

These kinds of relationships are intended to be long-term. Moreover, new skills and resources are developed to increase the competitive position in the global market. Major values for successful alliances are commitment and trust between the parties. This is important, as on the one hand, critical strategic information and on the other hand, risk need to be shared [64]. In 2016 for companies to increase their profitability as well as competitiveness of their SC, internal activities and business procedures and processes should be managed and controlled via multiple enterprises [2]. Due to globalization, markets and SCs have become more complex, which as well demands for better contribution of the management in logistics operations. Bigger companies often put their focus on their core competencies in the SC and outsource the non-core business activities to intermediaries. Hence, to achieve competitive advantage, firms need to build long-term relationships with intermediaries [63]. Not all long-term relationships can be long-term oriented. Companies should decide what type of relationship is appropriate for different complexities of SCs and circumstances. In order to establish good relationships both, physical-technical as well as socio-psychological factors have to be taken into consideration. Apart from the aforementioned, risk, power and reward have effects on organizations commitment to cooperate with specific partners [64]. Outsourcing activities can become an organizational strategy in order to stay competitive, however due to many incompatible, or too complex relationships, companies often fear the loss of functional control and uncertainties. These uncertainties arise, if intermediaries fail to provide der service levels [65].



## **1.4 Impacts associated with uses of Intermediaries in product distribution channel**

In contrast to benefits that are brought by intermediaries, several disadvantages are also present. Michelson explain that when making use of intermediaries, the organizations are dependent on them and Cost is another factor that can be influenced negatively by intermediaries, since more parties involved require higher costs Furthermore, do intermediaries lead to less control of the organizations over the quality and safety of the goods [66].and this idea was already supported by Hickson et al. (2013). Especially, with the use of 4PL and 5PL intermediaries, a company can lose the control over the SC and their long-term business relationships [67]. In every market, companies have to face the choice between trading with intermediaries or direct trade. Both methods can have advantages as well as drawbacks to the firms.

When using intermediaries, companies risk losing control within their SC. Intermediaries might focus on their own advantages while making arrangements with customers. It might be more beneficial for themselves as for the company they work for. Furthermore, another potential danger will be the lack of understanding of the customer's needs and bring those to the firms they operate for. In addition to Jensen in 2019, also Chen in 2017 stated that the growing complexity within the distribution processes and the wide range of outsourcing strategies, including intermediaries used can harm the product quality [68]. In order to manage product quality risk, business insurance companies should be taken into consideration, which add additional costs to companies using intermediaries. In addition, the role of power can be a drawback within the SC [2]. Power of intermediaries in the SC can be defined as the ability or the potential of one SC member to influence the decisions of another SC actor. The inappropriate use of this power, for example due to unequal share of values, leads to an overall inefficiency and ineffectiveness in the SC [69] . Some articles suggest for not using intermediaries as it leads to a better control of the activities in a firm and it can also profit from the loyalty of employee, avoiding risks such as disruptions,

inventory or delays[69].Another advantage is that critical and sensitive information does not have to be shared with outside parties anymore. [2]. Furthermore, does insourcing lead to keeping or improvement of skills, innovation and adaptability. Moreover, insourcing contributes to less dependency on third parties and the reduction of the complexity of managing various relationships [60]. Executing tasks in-house can also lead to an increase of quality, according to Kroes and Ghosh. Insourcing can also be seen as a form of protection. Hartman [2] say, when outsourcing, usually, internal information leaves the company to a certain degree. The information can then be transferred to competing firms and the focal company can lose a competitive advantage. In contrast to earlier findings, Hartman state that outsourcing does not per se contribute to cost savings. Some activities can be carried out at lower prices by firms themselves than if the activities were outsourced. Concluding, it can be said that insourcing does possess several advantages in contrast to outsourcing certain tasks. Outsourcing is a widely covered topic in literature and only in recent years. And outsourcing according to different literature, might depend on different facts by include the mechanism of intermediaries activities and cost-effectiveness.

## **1.5 Chapter summary**

Use of Intermediaries in product distribution process as well as in supply chain management is not for now only, it has been started in 1980s, thought by time it is a process which grow, innovate and take the large consideration in international market. Intermediaries in Supply chain are presented in two forms Channel intermediaries and logistic intermediaries. Channel intermediaries are made by group of people responsible for the availability of the product to the last consumers on affordable price for instance, brokers, agents, retailers, carriers, distributors, etc, whereas the logistic intermediaries are responsible logistic activities such as inventory management, transportation, orders, documents, outsourcing, etc. this part is made by 3PLs,4PLs,

freight forwarders, Carriers, Etc. The intermediaries are expected to have positive impact to the businesses such as Save time, save resources, save money, more flexibility, more scalability, Shipping expertise, product promotion, increase of sales with good revenue, etc. However, is not always the ideal stays the same, the literature also reveals that the current outcomes of using intermediaries, are not positive as they are expected, then the final product reach the last consumer with higher price or delays. Some factors associated with that have been explored and they don't have to be ignored. Some facts such as using different intermediaries are associated which increase the price of the system. Literature review has been used to get the chapter data.

## CHAPTER 2

### DSV AND OTHER LOGISTIC INTERMEDIARIES' ANALYSIS AND IDENTIFICATION THROUGHOUT THE SUPPLY CHAIN

#### 2.1 Analysis of logistic intermediary's market

Product distribution channel it starts by the producer and ends by the end user and sometime the returns too, logistics service intermediaries involve anytime, anyhow and in any step within the supply chain as longer as it is needed. it involves suppliers, manufactures, distributors, retailers [30]. It has found that for that big companies got big because they focused on what they did best [11]. In fact, 85% of Fortune 500 companies use third-party logistics providers like freight broker [70]. And 80% of the world's cargo passes through the hands of freight intermediaries [71]. While in 2019, globally, 3PLs outsourcing raised up to 10.2% of total logistics costs [72], in the United States, that figure is even higher at 12.4% of all logistics costs. In Ukraine, this figure 2.1 is more than half the market [73].

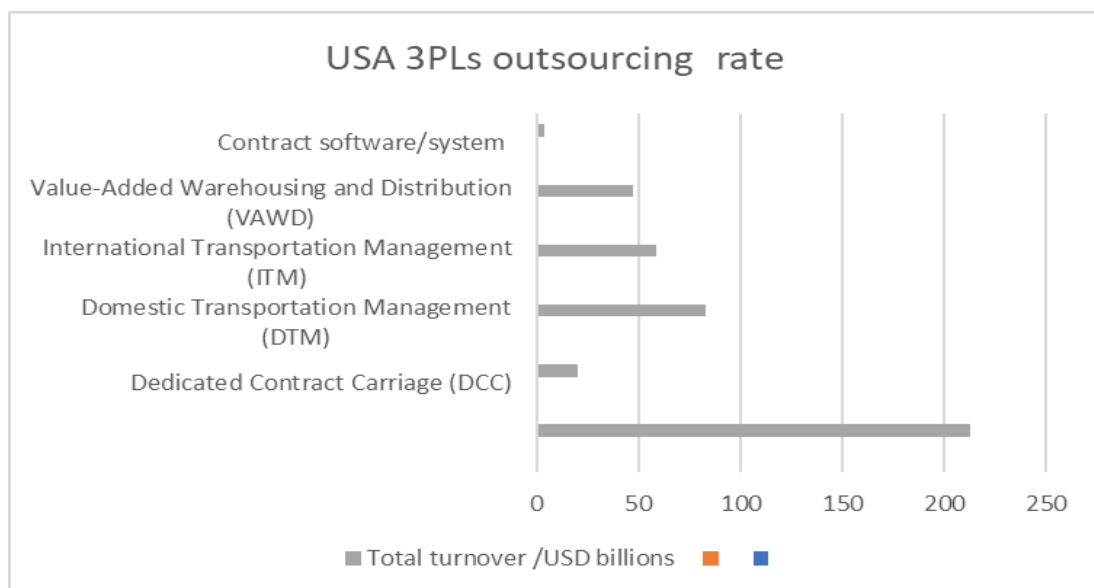


Figure 2.1 - Outsourcing in USA

It has seen that in 2019 alone, U.S. shippers spent \$212.8 billion on outsourcing to 3PLs. and all of them asked though Dedicated Contract Carriage (DCC) at 9.59%, Domestic Transportation Management (DTM) 39.00%, International Transportation Management (ITM) 27.58 % and Value-Added Warehousing and Distribution (VAWD) 1.64% [74]However, in Ukraine PL-providers occupy 15%, 2PL-providers - 74%, 3PL-providers - 9%, 4PLproviders - 2% [73] ad it affect their improvement access to the new innovation.

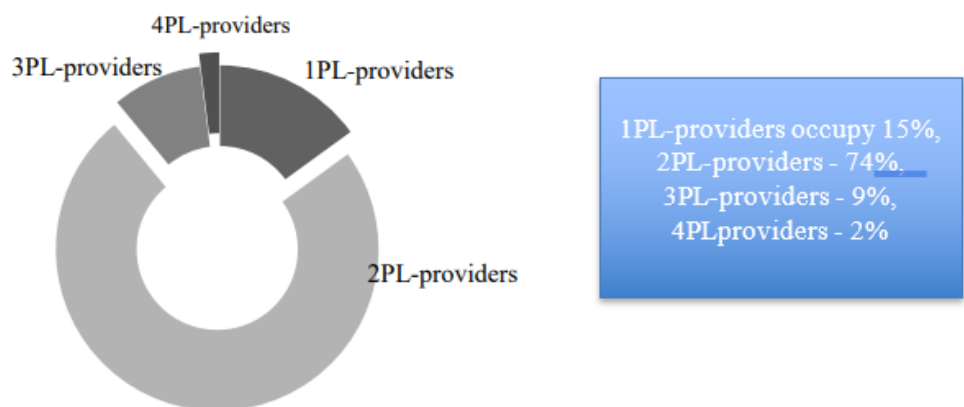


Figure 2.2 - Logistic services provider in Ukraine

Two logistic service provider fluently used in Ukraine, only it offer the transportation services, however to be able to compete and to fit the modern market, advanced methods such as 3PLs should be up to 50 % at least , so that some companies also should get to the access of other form of expertise. Transportation, flow of information, flow of products and flow of money are the essential points and they made the existence of the whole channel [8],transportation is in the middle of all process, without transportation no flow of products, no flow of product no customer satisfaction and without customer satisfaction no flow of money, if there is no money in flow no production [75].It has found that transportation accounts for approximately 62.8% of every dollar spent on logistics in the United State [46].However in Canada Most people spend about \$595 per month, or 15% of their budget, on car payments, insurance, fuel, maintenance, parking, transit passes, and taxi or Uber expenses

[76].Transportation can be done with multimodal ways, on land by cars, by ships in water and air by airplanes. The statistic shows that the percentage of multimodal transportation around the world, it has seen that in 2019, Worldwide, road freight transport accounted for 76.3 % of the total inland freight transport, followed by rail and inland waterways transport (17.6 % and 6.1 % respectively) [77].



Figure 2.3 - Transportation Rate around the world

In Ukraine it has seen that 78.34 is related to Road freight transportation, 19.28%,1.59%,0.46%,0.33%are for Rail freight transportation, Air freight transportation, sea freight transportation and river freight transportation respectively.

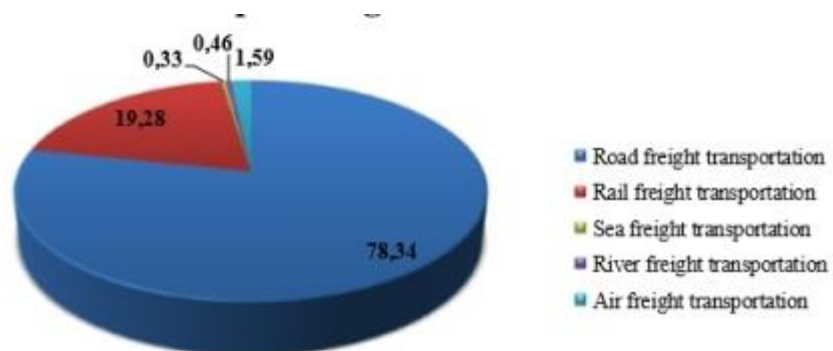


Figure 2.4 - Ukrainian logistic and transport system

Even though the transportation is the essential element in the chain however intermediaries providers offer the services service worldwide and goes to 66%

warehousing,63% international transportation,46% customers brokerage, 34% freight bills and payment, reverse logistic 31%, 29% IT,29% product labelling, [78] and also are presented on the Table 2.1.

Table 2.1 - Other functions of intermediaries

Activities	Percentages
Warehousing	66%
international transportation	63%
Brokerage activities	46%
Bill and payment	31%
Information technology	29%

Intermediaries in supply chain in this Era, it provides more than we can Imagine, and figure 2.5 will show us the services and percentages the services outsourced on.



Figure 2.5 - Outsourced activities

Comparative study around the world found that the shippers full 81% outsource their domestic transportation, while 71% outsource international transportation, outsource warehousing came in at 69%, and freight forwarding outsourcing numbered 50%. Customs brokering was outsourced by 40 % [79]. We cannot continue talking about the intermediaries functions and market size without precisising the intermediary location in the whole supply chain, the intermediary is a middle man, and it located in between the shipper and the receiver as t is shown on figure 2.6.

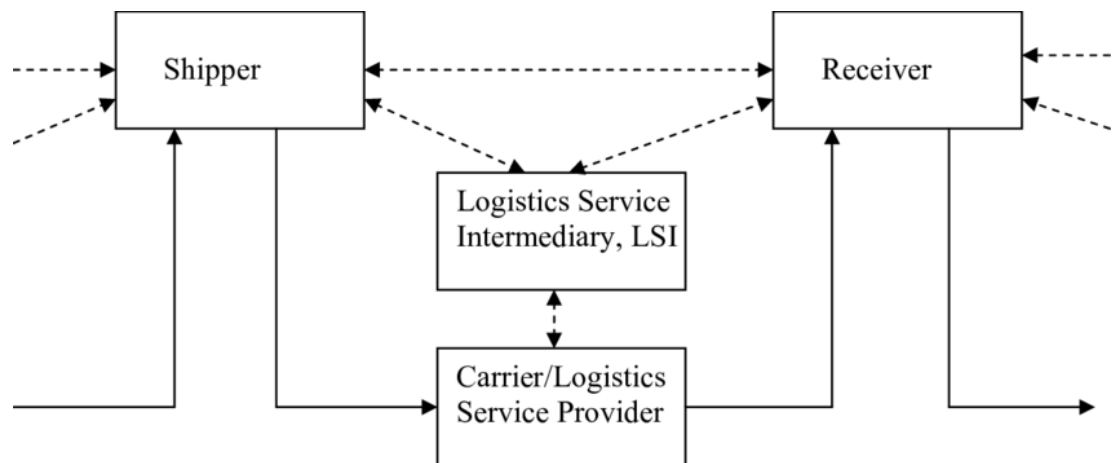


Figure 2.6 - Intervention of intermediaries.

Intermediary in logistic and supply chain management , is located in between of the shipper and the end user. It is located in between to reduce the complex city of supply chain and smoothen the process on specific commission. All innovation process of intermediaries is aimed to satisfy the customer services on lower possible price. Currently known intermediaries are, channel and logistic intermediaries, and logistic intermediaries intended to boost the operations of channel intermediaries, as well as the whole supply chain. The comparative table below show some position and functions of intermediaries. Though channel intermediaries are responsible moving the product from supplier to the last user however the logistic intermediaries are supportive to the channel. They are 3PLs, freight forwarders. Etc.



Table 2.2 - Comparative of current intermediaries

Facts	Channel intermediaries	Logistic intermediaries
Position in supply chain	First line	Second line
Examples	agents, brokers, wholesalers, distributors and retailers e.g.: C.H Robinson	international freight forwarding, third-party logistic activities (3PLs), fourth-party logistics (4PLs) and fifth-party logistics (5PLs). e.g.: DSV
Mechanism	Brokers are stand between the buyer and the seller; they look for the client to the producers/ shippers. And the clients can be would distributors , Distributors also resell the product to the wholesalers, wholesalers to the retailers and retailer to the last consumers. In and otherworld they are responsible for moving the product from supplier to the last consumer.	Logistics intermediaries are parties who on behalf of the companies arrange transportation, warehousing, shipping, distribution of goods and services from the producers to the final consumers and there are supportive functions to the channel intermediaries.
Rate of companies	More than 17,000 are licensed freight brokers in USA.	101,175 Freight Forwarding Brokerages, and increased 16% in 2021 are presented in USA

More than 17000 licensed broker can be found in USA as well as the around the world and more than 101,175 freight forwarders also can be found [80].The blog Statista website is already classified the freight brokers and freight forwarders and is explained by table 2.3 and Table2.4.Where With net revenue of around 1.5 billion U.S. dollars, C.H. Robinson is the largest freight brokerage firm in the world, assisting between a company that needed their freight delivered and a qualified motor carrier, [81], through air/expedited, rail intermodal, LTL, dry van truckload, refrigerated, flatbed/heavy haul, bulk/tank activities [33].

Rank	Company	Net Revenue (Millions)	Gross Revenue (Millions)	Types of Freight
1	<b>C.H. Robinson Worldwide</b>	\$1,797.4	\$11,283.7	air/expedited, rail intermodal, LTL, dry van truckload, refrigerated, flatbed/heavy haul, bulk/tank
2	<b>Total Quality Logistics</b>	\$687.0	\$3,394.0	rail intermodal, LTL, dry van truckload, refrigerated, flatbed/heavy haul, bulk/tank
3	<b>XPO Logistics</b>	\$485.0	\$2,500.0	air/expedited, rail intermodal, LTL, dry van truckload, refrigerated, flatbed/heavy haul
4	<b>Coyote Logistics</b>	\$465.0 <sup>est</sup>	\$3,600.0 <sup>est</sup>	rail intermodal, LTL, dry van truckload, refrigerated, flatbed/heavy haul

Figure 2.7 - List associated of the top Freight brokers

Rank	Provider	Gross Revenue (US\$ Millions)*	Ocean (TEUs)	Air (Metric Tons)
1	DHL Supply Chain & Global Forwarding	28,453	2,862,000	1,667,000
1	Kuehne + Nagel	25,787	4,529,000	1,433,000
2	DB Schenker	20,761	2,052,000	1,094,000
2	DSV Panalpina	18,269	2,204,902	1,272,405
3	Sinotrans	12,174	3,750,000	532,300
4	Expeditors	10,116	1,091,380	926,730
5	Nippon Express	19,347	660,152	720,115

Figure 2.8 - List associated with top five freight forwarders

The intermediaries offer is supportive and helpful. However, is no always like that, an intermediary itself, there is a time intermediary also outsources activities to third parties or other intermediaries. For instance, according to the website Statistical [82], it has seen that C.H. Robinson is the largest freight brokerage firm in the world, it is with net revenue of around 1.5 billion U.S. dollar. C.H. Robinson is an example of Brokerage company, addition this company have other main functioning department, it is a large company around the world with 14,888 workers worldwide in 2020 [82] and it offers brokerage services, freight transportation, transportation management, and warehousing. In fact, truckload, less than truckload, air freight, intermodal, and ocean transportation [33].

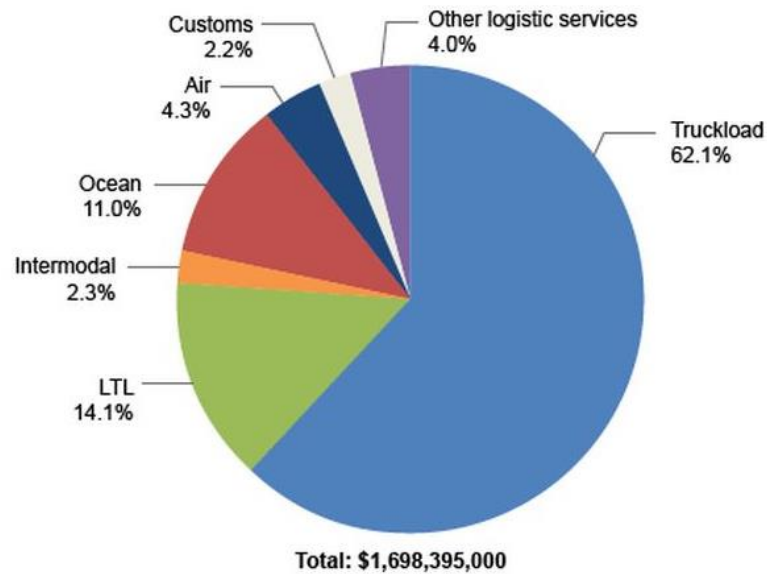


Figure 2.9 - Robinson market size

C.H Robinson founder, Charles Henry Robinson, in 1905 and it has evolved from a wholesale produce brokerage house into one of the largest third-party logistics (3PL) companies in the world [33]. Freight broker companies specialize in moving freight that includes truck loads, air freight, and even rail. Freight brokers are responsible for finding truck load carriers to haul freight for their client's [79]. C.H Robinson, offer 62.1 truck load services, 14.1% LTL, 11% ocean transportation. 4.2% of air transportation. 2.8% of intermodal, 2.2% custom related services and 4% logistic services. The C.H Robinson manage to serve 105 000 customers around the world through logistic system, through 73000 contract carriers [53].

Further example would go to the Freight's forwarders. By taking DSV as an example, it is a Danish transport and logistics company offering transport services globally by road, air, sea and train with addition of logistic solutions. Since its foundation in 1976 by nine independent Danish hauliers, from then up to now the company have grown up, With headquarters in Hedehusene (near Copenhagen), Denmark, and offices in more than 80 countries, DSV employs more than 56,000 people and collaborates with partners and agents around the world. The company is structured in three divisions, Road, Air & Sea, and Solutions. Its main activities lie within road transport (trucking) networks in Europe, North America and South Africa,

and its global air and sea freight forwarding business. The group also has a growing contract logistics business. In 2020, the company reported a net revenue of DKKm 115,932 [83]. They actually take care of everything; selection of the mode of transport, the route, the payments, international shipping requirements and documentation. The bigger the company is the tendency to collaborate with other intermediaries. And it is explained in figure 2.10.



Figure 2.10 - Activities of DSV as freight forwarders

The figure 2.10 explain the collaboration intermediaries, DSV provide logistic and freight forwarding services with addition of transportation through subcontracting. That why it can be classified as freight brokerage company, freight forwarders company, as well as 3PLs [83]. DSV is worldwide company, in Ukraine, 10% of DSV services is customs brokerage [84], the other one go to warehousing, transportation and logistic activities. When DSV and CH Robinson are deeply compared, they all of them offers Brokerage services at different level and as addition DSV is a freight forwarder

than Robinson. DSV works in three main departments which are Sea and Air, Road and solution. Adjusted for exchange rate fluctuations, growth for the nine-month period was 41.1%. the activities of freight forwarding are carried out with Air and sea department at 69% and Road activities as well as solution occupied 21% and 20% respectively [85]. Based on general revenue of DKK 121,004 million, compared to DKK 84,216 million last year.

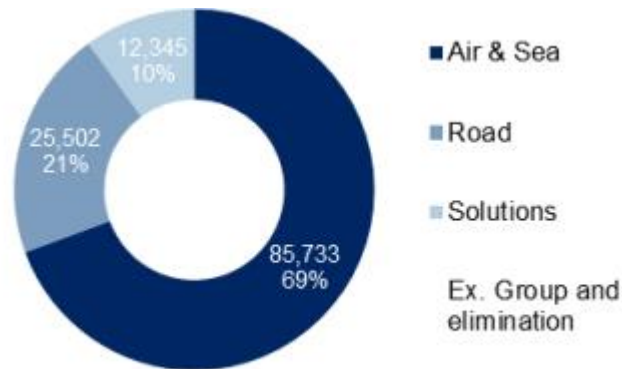


Figure 2.11 - DSV working division around the world

With the combination of our multimodal transportation management system and expertise, we use our information advantage to deliver smarter solutions for our 105,000 customers and 73,000 contract carriers [86]. DSV Road is one of the leading road freight operators in Europe with distribution networks in North America and Africa. Annually, we handle more than 30 million shipments and every day more than 20,000 trucks are ready to carry your goods in a fast, efficient, flexible and environmentally-friendly manner, and they show how good or bad the market of intermediaries is in these days [85].

Even though DSV is wide logistic service provider company around the world, however the organization structure still the same within over 80 countries by which it can be found in. The administration and operation structure of DSV:



Figure 2.12 - DSV General Organisation and operation structure

In comparison of their structure and the one with Freight brokers C.H Robinson presented on Figure 2.12 the DSV is made by directing board and managing board after the Chairman position and the managing board with connection of finance department, they manage the operation department, which is responsible of transportation from the manufactures to the end consumers.

According to the website Statistica, it has seen that the fact of supply chain is facing different challenging by which that 52% is associated with hiring and retaining qualified workers, 42% difficulties in forecasting , 47% higher customer demand with lower price , 47% high customer demand with delivery on time, 43% rising customer expectation and 13% of supply disruption due to the pandemic [87].

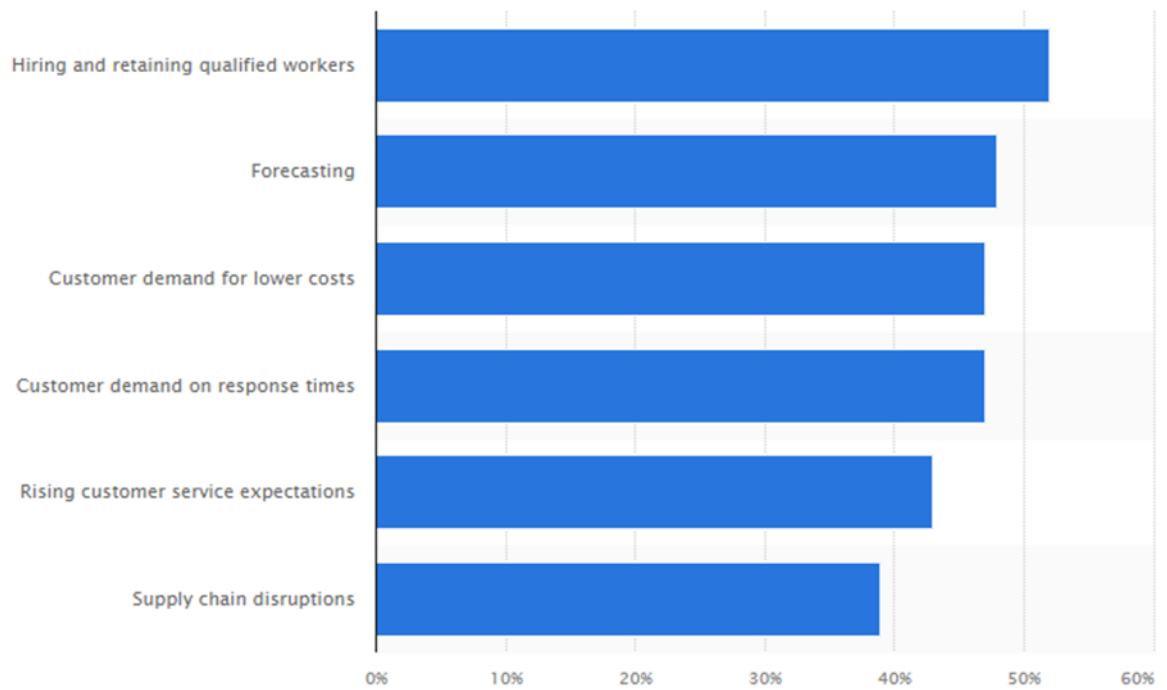


Figure 2.13 - Highlighting the change facing the S.C industry

The usage of intermediaries have been proven to be the best way to face these challenges and survive within the innovative and competitive system.

Despite the challenges, it has seen that only shippers of USA spent \$212.8 billion on outsourcing to 3PLs, and they only outsource basic services such as domestic transportation, international transportation. Warehousing. Freight forwarding activities etc [88].around the globe Statics f how shippers outsource the 3PLs activities have been revelled, still the strategy is the same around the world, the most important get outsourced and the Less frequently outsourced activities continue to be those that are more strategic and customer-facing, though the less outsourced can even be handled inhouse and as it is shown in Figure 2.14 [89].

Some logistic services are considered to be vital, without them can negatively and deeply affect the company performance, these are transportation, warehousing, inventory management, IT solution.

They affect the company performance, at the rate more than 50%if they are not well performed.





Figure 2.14 - Reasons associated with outsourcing

By concluding, the aim of the study is to pride the clear difference between intermediaries in suply chain management, based of the this anysis we have loagistic intermediaries which inclde freight brokers, freight forwarders and are to operate the other types of intermediaries such as carriers, distributors, wholesalers to suplier the product with the low price.

## **2.2 Intermediaries mechanism of action and the cost balance within Supply chain**

While the existing supply chain system show that the way to improve the sales, usage of intermediaries will be the best, some studies conduct around have some the world, proves some contradictories [90].it has seen that intermediaries' mechanism of action, is determined by the actions or services that can be offer. Intermediaries in supply chain management offer:

- Coordinate carriers,
- logistics intermediary firms
- handling procurements and associated documents,
- Information technology and information flow
- Transportation nationally and international transportation
- Storages and warehousing,



- Manufacturing.
- Customers brokerage
- Freight bills and payment
- Reverse logistic management

With all the offers provided by intermediaries, explain where, when and how intermediary can intervene in supply chain. The intermediary can intervene at any stage of supply chain as long as needed [91]. Though all of them support each other and they work together to satisfy the customer need. The mechanism of action, is the process by which intermediaries interact to offer the impeccable services. Moreover the intermediaries intervene under commission fees, Since 2016, some studies indicate that as the number of intermediaries get increased within the supply chain as also the profit tend to increase, this is explained more by the blog Statistical, were it has shown that the sales increase globally parallel to the increase of the sales of delivery intermediaries. Compared to 2019, sales of delivery intermediaries worldwide were up by 73 billion U.S. dollars, amounting to 227 billion U.S. dollars in 2020. It is forecast that the upward trend in global sales up to a sales value of 547 billion U.S. dollars by 2025. This will constitute 10.4 percent of total global e-commerce sales. [92] figure 2.13. below is a good shows how the grow of sales increases verses the increase of delivery.

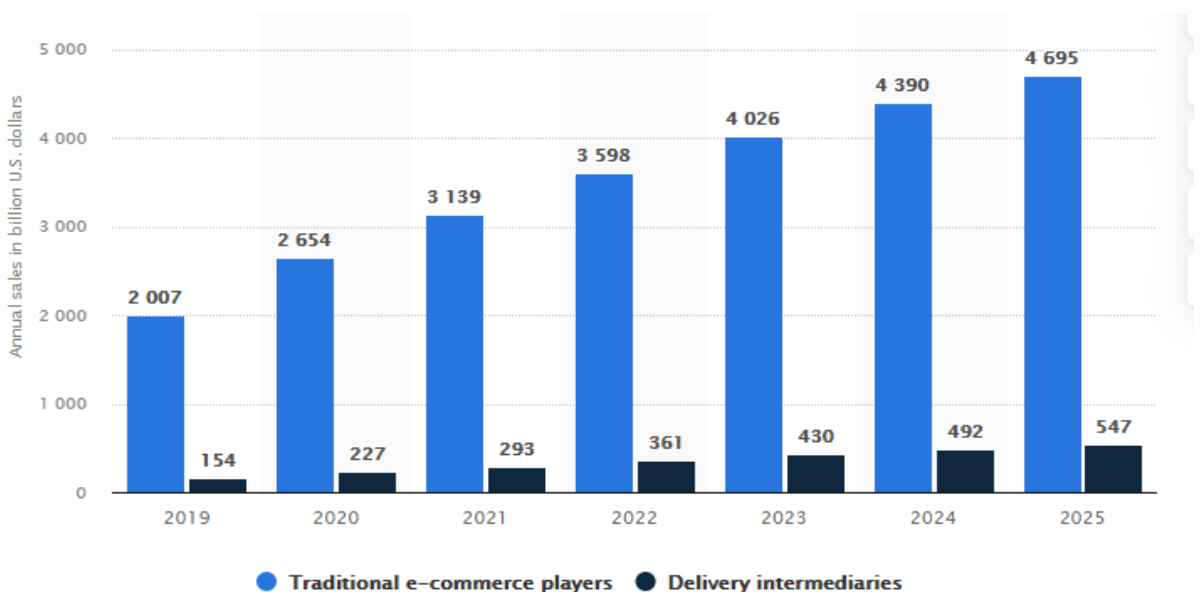


Figure 2.15 - Increase of sales compare the increase of Intermediary delivery

The study showed the increase of the sales is parallel to the increase of intermediaries however it did not show anything about the cost of investment, however the report provided by DSV showed that DS company invested in 20 automated warehouse to improve the sales , income as well as reducing the cost of final services. The figure 2.16 shows the investment rate of DSV.

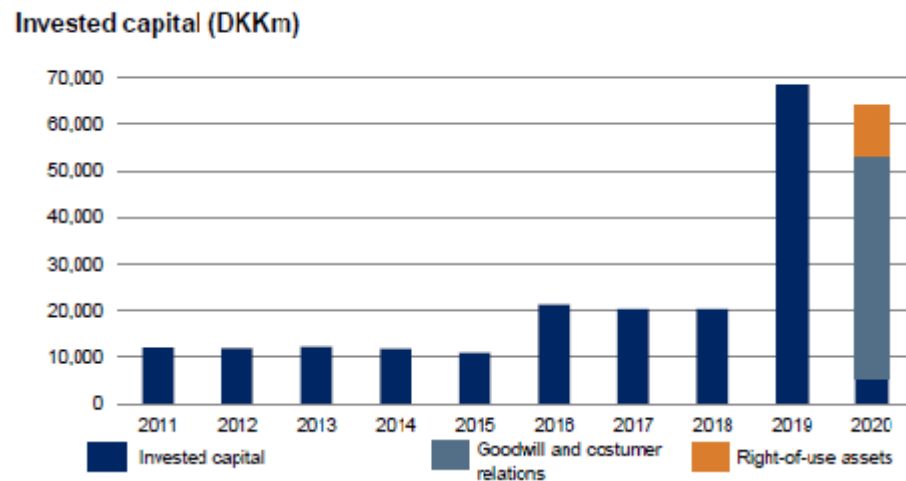


Figure 2.16 - Investment rate of DSV in 2020

The cost and performance balance within supply chain management should be taking into consideration, for instance DSV invested in 20 automated warehousing, fulfilment factories across Europe, North America and APAC in aim of balancing the cost of their services [85]. The study conducted in Africa, conclude that despite of the importance of intermediaries, importance and transaction cost govern the decision to transfer the activities to the 3<sup>rd</sup> or to perform it inhouse [90]. In addition transaction fees govern the end user cost. The study carried out in Africa, in food and beverages manufacturing companies on 101 participants. Transactional cost the majority of the respondents (40%) indicated moderate that cost for processing documents neither nor affected the performance food and beverages manufacturing companies. This is because average number of food and beverages manufacturing companies believe that the cost of processing documents is not a major issue as companies can handle on their own and other companies felt that it is an important issue and thus, they can be outsourced hence affecting performance. Likewise, 35% disagreed that cost for

processing documents was not regarded as important when outsourcing logistics services by food and beverages manufacturing companies. This is because most food and beverages manufacturing companies might incur the cost of processing documents on their own and hence cost of processing documents does not affect performance of companies when outsourcing logistics services. However, 25% agreed that cost for processing documents affected performance of food and beverages manufacturing companies. Therefore, these companies felt that cost of processing documents was important and could be a major determinant when outsourcing logistics services. With regard to freight forwarding cost, 35% of the respondents agreed that freight forwarding cost affected performance of food and beverages manufacturing companies, 35% indicated moderate and 30% disagreed that freight forwarding cost affected food and beverages manufacturing companies. On customs clearance cost, 47% of the respondents agreed that customs clearance cost affected performance of food and beverages manufacturing companies, 8% indicated moderate and 25% disagreed that customs clearance cost affected performance of food and beverages manufacturing companies. Concerning transportation and distribution cost, 50% of the respondents agreed that transportation and distribution cost affected performance of food and beverages manufacturing companies, while 45% indicated moderate and 6% disagreed that transportation and distribution cost affected performance of food and beverages manufacturing companies. Regarding tracking and tracing cost, 34% of respondents agreed that tracking, and tracing cost affected performance of food and beverages manufacturing companies, 37% indicated moderate and 28% disagreed that tracking and tracing cost affected performance of food and beverages man.

Transportation, warehousing, and custom clearance are the main activities in logistic which can affect the whole company, their outsourcing is important and can boost the profit of the company. The survey by the European Commission in 2017 proves it, it found that the percentage of EU manufacturers selling direct is as high as 85% in clothing and shoes, and above 50% in cosmetics and other product categories [24].

Table 2.3 - Transaction cost

Statements	Not at all (%)	Small extent (%)	Moderate (%)	Large extent (%)	Very large extent (%)
Document processing	4	31	40	20	5
Freight forwarding cost	17	17	35	33	2
Custom clearance	11	14	28	37	10
Transportation and distribution	0	6	45	34	16
Tracking and tracing	7	23	36	27	7
Warehousing	14	14	37	23	11

The fact associated with commissions of intermediaries, the producers try to reduce them by selling direct [93]. Not only that the researchers have found that for the shippers, their profit increases with number of intermediaries if the intermediaries are able to provided necessary services with professionalism, with also the strict management activities [20]. By designing the model and analysing of logistic and supply chain management, as the figure 2.17.

For intermediary to be more profitable, is to get more clients to serve and serving more clients means to have capacity to provide wide range of activities. Covering wide range of activities requires the capitals and necessary investment. Investment to stay stand and compete on the market, in spite of providing the quality service at lower cost.

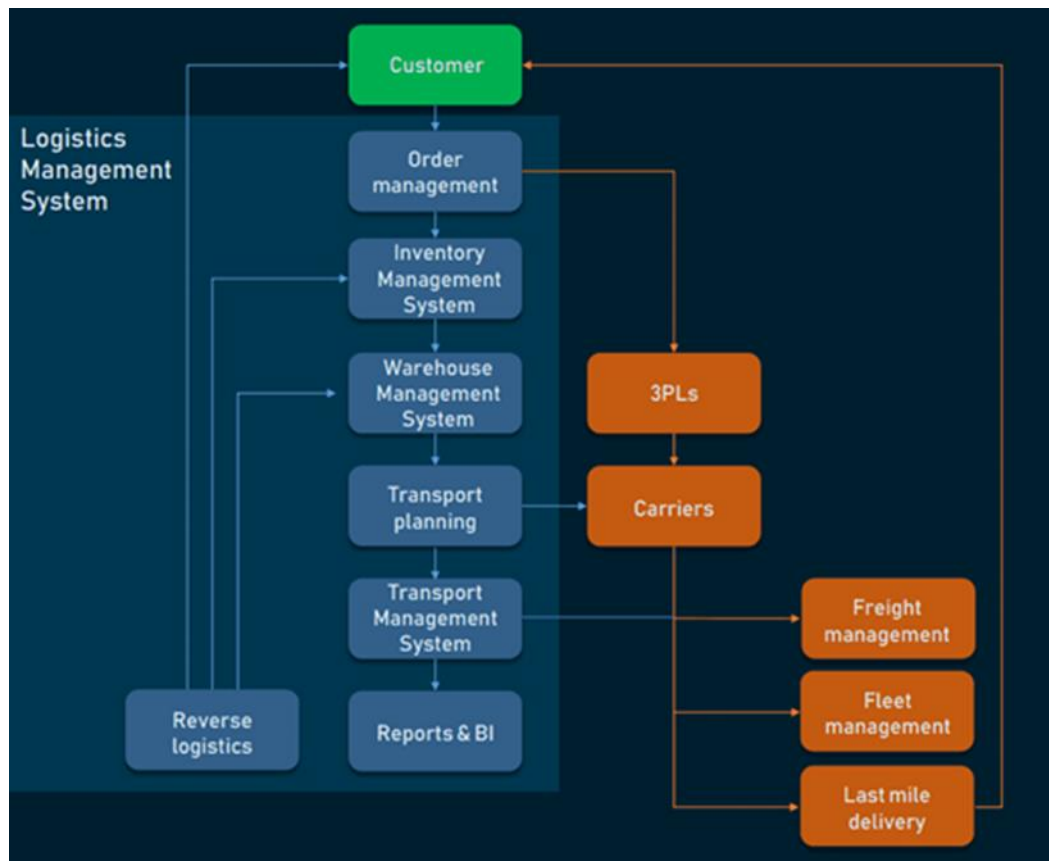


Figure 2.17 - Intermediaries and Supply chain model

While the study of Copacino, William C. showed conducted, showed that the increase of intermediaries in product distribution will lead to the increase of the product of the final product cost and different chaos within the whole channel such delays without forgetting the unsatisfaction of the client, since most agents work on a commission basis, the cost of sales drops when the level of sales drops, which provides small businesses with some measure of protection against economic downturns. While 9.1 trillion goes as logistic cost worldwide in 2020 [94], compare to 9.3 trillion in 2019 and 9.04 in 2018, it gets increased every day in exception of 2019. While researchers and specialist try hard to ends the SC with the intended objective of quality services with lower price, physically, the price has been raised up 3.4% worldwide till September 2021 [95], In USA the customer is paying 0.4% extra on anything thing bought, which makes 5.4% increase in prices [96], In Ukraine, prices increased at the rate of 5-10 % per year as Voxcheck Ukraine announced [97], not only that in UK the increase of 4.2% [98] and increment of 10.8% in Africa [99].

Table 2.4 - Increase of the price

Countries	Percentages
USA	5.4%
UK	4.2%
Ukraine	5-10 %
Africa	10%

Several reasons have been revealed to be associated with this increment; global pandemic which cut off the economic activities, shortages of some basic materials such as medicines, fuels, [95], not only that supply chain system also met not less of challenges such as packing, high client demand, country restrictions, digital transformation, logistic and transportation issues. Furthermore, usage of intermediaries comes to the fact that cause the escalation of the price within the whole process [66]. But DSV tried to minimize the cost of the activities as well as DSV tried to balance every activity within the supply chain, analysing the cash flow an account statement.

Generally among the most important logistic activities offered by intermediaries DSV covers almost all, transportation, warehousing, data management, and other logistic solutions. The transportation offered by DSV is performed by outsourcing the carriers [85].

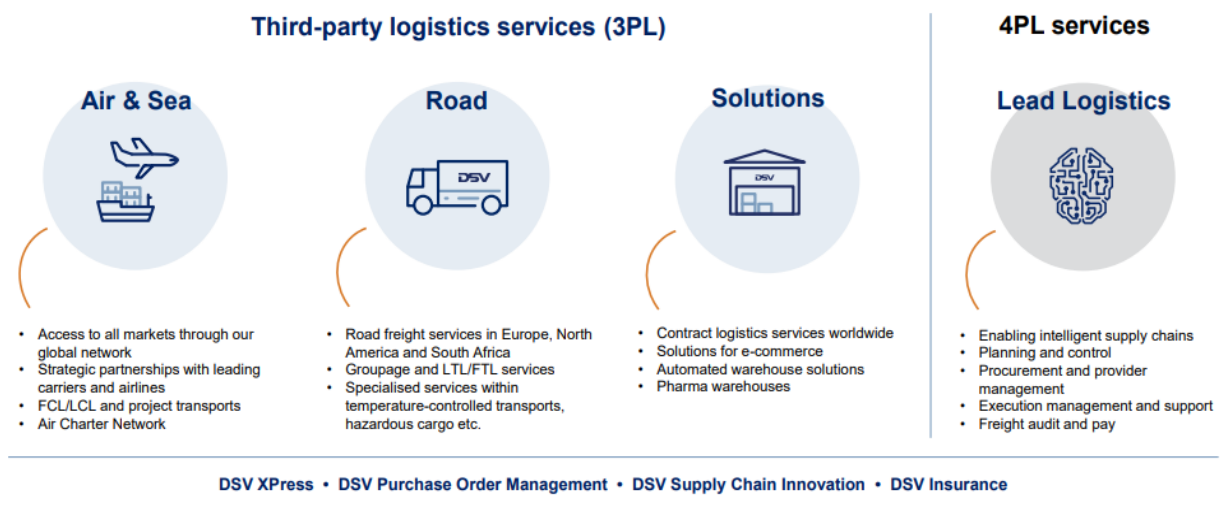


Figure 2.18 - Logistic activities offered by DSV

According to DSV report, DSV has been invested in automated warehousing system, still DSV still using other intermediaries to coverup the activities of transportation. By help of other intermediaries, DSV manage to cover up the full logistic and supply chain management system and provide solutions, for that the clients get increased and the income also get increased and this is explained by the status of income statement of DSV [85]. The Group achieved a gross profit of DKK 16,118 million for the first six months of 2021, a growth of 18.0% compared to the same period last year.

(DKKm)	YTD 2021	YTD 2020
Cash flow from operating activities	4,491	4,373
Cash flow from investing activities	(711)	(417)
<b>Free cash flow</b>	<b>3,780</b>	<b>3,956</b>
Cash flow from financing activities	(5,692)	(3,764)
<b>Cash flow for the period</b>	<b>(1,912)</b>	<b>192</b>
Free cash flow	3,780	3,956
Repayment of lease liabilities (IFRS 16 impact reversed)	(1,481)	(1,564)
Net acquisition of subsidiaries and activities	193	-
Special items (restructuring costs)	325	964
<b>Adjusted free cash flow</b>	<b>2,817</b>	<b>3,356</b>

Figure 2.19 - DSV cash flow

The Air & Sea division operates a global network specialising in transportation of cargo by air and sea. The division offers both conventional freight forwarding services and tailored project cargo solutions.

The division achieved 21.3% growth in gross profit and 69.0% growth in EBIT before special items for H1 2021. The strong growth in earnings was driven by growth in transported volumes and high gross profit per unit and was further supported by the full-year effect of Panalpina synergies and cost savings [85].

(DKKm)	Q2 2021	Q2 2020	YTD 2021	YTD 2020
Divisional revenue	25,948	19,144	48,872	35,818
Direct costs	20,806	14,481	38,942	27,280
<b>Gross profit</b>	<b>5,142</b>	<b>4,663</b>	<b>9,930</b>	<b>8,538</b>
Other external expenses	663	736	1,416	1,533
Staff costs	1,435	1,530	2,880	3,209
<b>EBITDA before special items</b>	<b>3,044</b>	<b>2,397</b>	<b>5,634</b>	<b>3,796</b>
Amortisation and depreciation	201	285	398	554
<b>EBIT before special items</b>	<b>2,843</b>	<b>2,112</b>	<b>5,236</b>	<b>3,242</b>

Figure 2.20 - Air and sea division income statement

Due to the investment made in warehousing, this year market size DSV sea and air transportation has increase on 13% and 18% respectively. the freight size by sea increase from 573,385 in 2020 up to 1,154,404 tons in 2021 .Thugh the fright by air, it shift from 349,210 up to 685,517 tons in 2021. [85]

The Road division is among the market leaders in Europe and furthermore has operations in North America and South Africa. The division offers full load, part load and groupage services through a network of more than 200 terminals and operates approximately 20,000 trucks. For H1 2021, the Road division achieved 69.7% growth in EBIT before special items. The strong growth in earnings was driven by higher activity with 15.9% growth in gross profit and an improved conversion ratio.

(DKKm)	Q2 2021	Q2 2020	YTD 2021	YTD 2020
Divisional revenue	8,663	6,987	16,719	14,908
Direct costs	6,895	5,556	13,294	11,942
<b>Gross profit</b>	<b>1,768</b>	<b>1,431</b>	<b>3,425</b>	<b>2,966</b>
Other external expenses	272	242	530	529
Staff costs	779	686	1,521	1,443
<b>EBITDA before special items</b>	<b>717</b>	<b>503</b>	<b>1,374</b>	<b>994</b>
Amortisation and depreciation	241	240	495	472
<b>EBIT before special items</b>	<b>476</b>	<b>263</b>	<b>879</b>	<b>522</b>

Figure 2.21 - DSV Road division income statement

The result have been achieved while the number of employees have been increase from 13,408 in 2020 to 15,503 in 2021.



The last division in logistic solutions, the Solutions division offers warehousing and logistics services globally and controls more than 400 logistics facilities. The service portfolio includes freight management, customs clearance, order management and e-commerce solutions. For H1 2021, the Solutions division achieved 9.9% growth in gross profit which was translated to 37.0% growth in EBIT before special items.

(DKKm)	Q2 2021	Q2 2020	YTD 2021	YTD 2020
Divisional revenue	3,997	3,256	7,606	6,697
Direct costs	2,620	1,985	4,881	4,170
<b>Gross profit</b>	<b>1,377</b>	<b>1,271</b>	<b>2,725</b>	<b>2,527</b>
Other external expenses	297	244	578	533
Staff costs	377	365	754	750
<b>EBITDA before special items</b>	<b>703</b>	<b>662</b>	<b>1,393</b>	<b>1,244</b>
Amortisation and depreciation	425	428	852	851
<b>EBIT before special items</b>	<b>278</b>	<b>234</b>	<b>541</b>	<b>393</b>

	Q2 2021	Q2 2020	YTD 2021	YTD 2020
Gross margin (%)	34.5	39.0	35.8	37.7
Operating margin (%)	7.0	7.2	7.1	5.9
Conversion ratio (%)	20.2	18.4	19.9	15.6
Number of full-time employees			22,814	18,428
Total invested capital (DKKm)			11,969	11,560
Net working capital (DKKm)			1,145	807
ROIC before tax (%)			11.1	9.7

Figure 2.22 - DSV solutions income statement

To achieve the result, the DSV has first invest in automated warehousing, apart from that, the number of qualified employees raised up to 22841 from 18428 with difference of 409dkkm of investment. By analysing the cash flow and income statement of DSV as freight forwarders or as logistic service provider, we sum up on the following points:

- DSV use other intermediaries to satisfy the customers need, for instance the carries to carry out the transportations.

- Due to the investment, in automated warehousing , the income also have been increased, not only that the automated services also came up with their expensive, for that the investment also has been extended up to the employees, the new technologies and innovations go with qualified employees and increase of employees number.

- the coverup of wide range of activities and managing the cost of activities, by focusing on costumers need and balancing the transaction fees, result for DSV to win over the other competitors within the supply chain system.

	<b>Benefits</b>	<b>Risks/Problems</b>
Strategic	<ul style="list-style-type: none"> <li>● Focus on core competence</li> <li>● Gaining access to external logistics expertise</li> <li>● Gaining access to new markets</li> <li>● Access to international logistics networks</li> <li>● Improve customer satisfaction</li> <li>● Flexibility in relation to market changes</li> </ul>	<ul style="list-style-type: none"> <li>● Loss of control over the logistics function</li> <li>● Loss of customer contact</li> <li>● Loss of in-house logistics capability</li> <li>● Leakage of sensitive information</li> <li>● Lack of responsiveness to customer needs</li> <li>● Employee resistance to change</li> </ul>
Financial	<ul style="list-style-type: none"> <li>● Economies of scale</li> <li>● Reduction in capital investment</li> <li>● Reduction in equipment maintenance costs</li> <li>● Reduction of financial risk</li> <li>● Turning fixed costs to variable</li> <li>● Reducing labour costs</li> <li>● Sharing development costs</li> <li>● Providing external benchmark for logistics costs/logistics cost awareness</li> </ul>	<ul style="list-style-type: none"> <li>● Unrealistic fee structure and financial loss</li> <li>● Cost reduction offset by provider margin</li> <li>● Dependence on service provider/opportunism</li> <li>● Cost saving assessment difficulties</li> </ul>
Operational	<ul style="list-style-type: none"> <li>● Better capacity utilisation</li> <li>● Volume flexibility</li> <li>● Inventory reduction</li> <li>● Order cycle reduction</li> <li>● Lead-time reduction</li> <li>● Access to logistics information systems</li> </ul>	<ul style="list-style-type: none"> <li>● Poor IT capabilities</li> <li>● Poor personnel quality</li> <li>● Poor customer service</li> <li>● Time and effort put on logistics is the same</li> <li>● Inadequate expertise</li> <li>● Inability to handle special product needs</li> <li>● Disruption to operations</li> <li>● Loss of customer feedback</li> </ul>

Figure 2.23 - Comparison of advantage and disadvantage of intermediaries' usage

Intermediaries are independent organizations and whenever they do is not for free, they do provide services on a specific commission [96], it might be that he intermediaries company can pass their interested first and this one risk to escalate the price not only that, it is obvious that they do have expertise, knowledge's, kills and all necessary time to take care of some of the responsibilities however they can make the owner to lose the control of the company due to much dependence on intermediaries, [100] not only that the intermediaries might not give you the full concertation which

can cause also to increase the price [8]. Intermediaries might focus on their own advantages while making arrangements with customers. It might be more beneficial for themselves as for the company they work for. Some company reveals that working with intermediaries boost the system as well as the company however the other one prefers insource as the way to take over the control of the business. The following has been the comparative study of advantages and disadvantage of using intermediaries in SC [101].

## 2.4 Intermediaries management

Like the Shippers and suppliers use intermediaries to meet the customers ‘demand, it seems like the intermediaries can use or can be supported by another intermediary to accomplish their responsibilities toward the customer [102], it is only intermediaries , ass also different software participate in management. And these software that are TMS( transportation management system ), WMSERP, and BI tools [103], and anticipate to manage he flow as well as the relationships within the whole chain. Figure 2.24 will show us the way intermediaries can work together till the end users through the freight management flow.

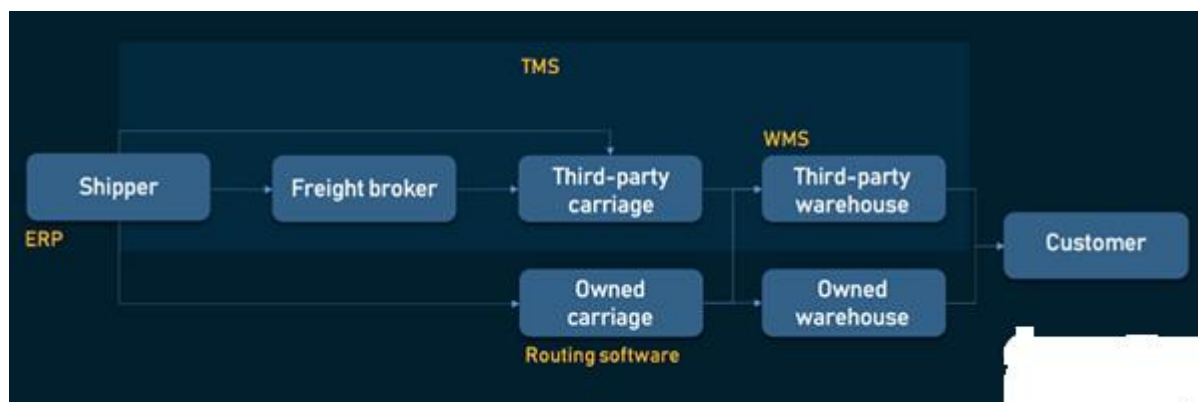


Figure 2.7 - Freight management flow

In fact, it is seeming that also based on the figure 14, DSV decide to use other intermediaries' carriers to meet the expected services from the clients [85]. The DSV might be having their own trucks however not enough to satisfy the market.

According to the studies, the management of model is almost general around the world, though the selection of intermediary to involve in requires not less than 5 points [104], While logistic key performance indicators and metrics showed that:

Shipping Time: deals with Spot potential issues in your order fulfillment process

Order Accuracy: deals with Monitor the degree of incidents.

Picking Accuracy: : deals with orders which are picked without errors.

Delivery Time: : deals with Track your average delivery time in detail.

Pick & Pack Cycle Time: Track the time it takes to pick and pack your orders.

Equipment Utilization Rate: : deals with the equipment for workforce.

Transportation Costs: Analyze all costs from the order placement to delivery

Warehousing Costs: Optimize the expenses of your warehouse.

Pick & Pack Costs: Monitor all costs related to your pick & pack process.

Use of Packing Material: Optimize your materials usage.

Number of Shipments: Understand how many orders are shipped.

Inventory Accuracy: Avoid problems because of inaccurate inventory.

Inventory Turnover: Track how many times your entire inventory is sold.

Inventory to Sales Ratio: Identify a potential overstock, the more all these criteria are taking inconsideration an move higher is the way the intermediary get more responsibilities and functions [105].

According to the study done it has seen thank among the sample size of intermediaries of 622. 87% Ships on Time:9505% the order to intermediary is accurate. Measure the picking accuracy based on your returned products but also do random checks of picks to ensure no mistakes are made. 98% no errors showed up. The normal range of equipment enough for workforce is between 70-90%, the statistic study show that especially DSV has at least 86%.

The selection of intermediary y to involve in product distribution channel, it requires:

### 1. Economic Factors:

The economic conditions prevailing in the country on one hand, and the world on the other, have bearing on channel selection decisions.

Apart from the transaction cost or fees, it has found that. At least to any type of transaction that involving intermediaries it should be prioritized based on logistic key performance indicators and metrics, where atlase the transportation cost should be 43%, where using at 23% and others at 440%.

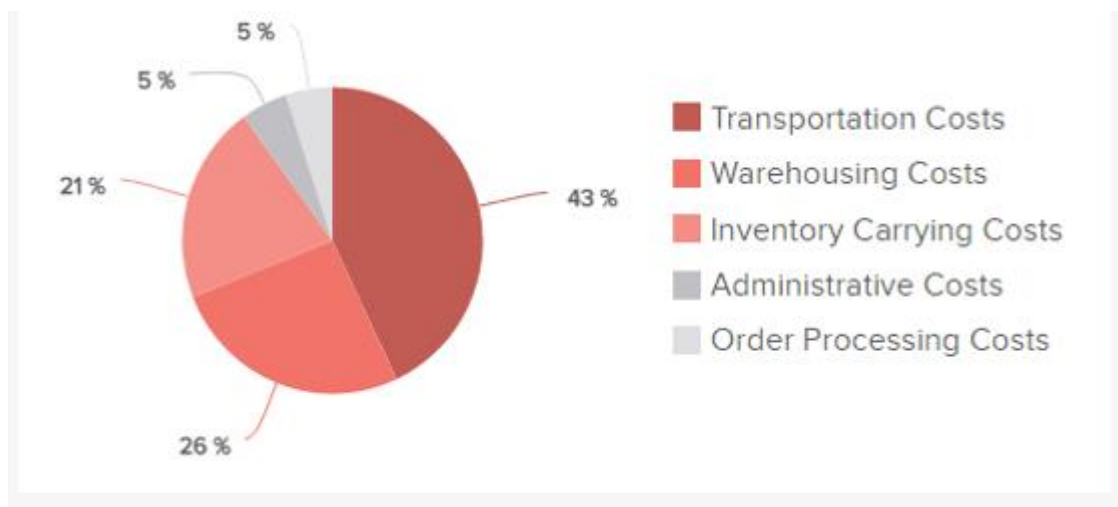


Figure 2.25 - Logistic key performance indicators

### 2. The Legal Restrictions:

The legislative restrictions imposed by the governments, both State and Central have impact of giving final shape to channels of distribution

### 3. Fiscal Policies:

As a part of fiscal policy, one instance of sales-tax is enough to highlight this point. Sales-tax rates vary from state to state as it is a state fiscal matter.

### 4. The financial position:

After all, the financial position of the intermediary is of much significance while selecting. An intermediary who is financially very strong is sure to buy on cash, carry more inventories at a time, sell on credit and help the channel commander at times of adversity and needs.

### 5. The facilities available:

In addition to the above specific requirements of sound dealer commander relations, one must take into account the additional facilities that the dealer or the intermediary is going to extend.

Thus, an intermediary equipped with operational facilities like godowns, delivery vans, parking lots, after-sale service equipment and the like make him better qualified for selection. To that extent, the channel commander is relieved from those additional arrangements on which either he are to work or make others to work for a price.

## **2.5 Chapter summary**

The logistic and supply chain management system is the processes happened between the producers and the last customers: in each way the producer should meet the customers' need, or they should create the customers need. it will not be easy to the producers producing without consumers that is the reason the 3<sup>rd</sup> parties are getting involved and getting concerned in SCs. He third parties who might be the freight brokers, agents , distributors, 3PLs,4PLs Freight forwarders, carriers are playing the useful role around the world and getting a lot of benefit within it, intermediaries are providing administrative and processing handling support, IT support, logistic, transportation and distribution services , etc on o specific cost and all these services allow the mother companies to survive among this high competitive world by focusing on the core and innovative way to reach around the world. Within all advantages of intermediaries also there is a dark side on them and for that it direct the shippers and suppliers to select and use intermediaries with high caution. The management of the product distribution within the supply chain is no short r easy process although the management of all operations are important point, while the shipper, the producers can use more than one intermediary to reach the customer on time is the way intermediaries can collaborate each other to full the responsibilities they are assigned for. Not only that cause IT also intervein in 50%of the whole set up. The most important thing the

whole process is governed by the cost. anything done and any decision taken is based on the theory of delivering the s quality service to the customer with the low possible cost.

## **CHAPTER 3**

### **VALUE ADDITION OF INTERMEDIARIES IN PRODUCT DISTRIBUTION SYSTEM IN DSV COMPANY**

#### **3.1 Importance of intermediaries**

By analysing the whole supply and the previous chapters, the doubts regarding whether using intermediaries or not, should be taken away because some importance of intermediaries are:

- help to handle the complex of supply chain systems,
- Improve supply chain
- Control the whole channel
- Commitment and
- handling the communication

The combination of this thesis and the second data of the other logistic and supply chain management companies, a the roles and responsibilities of the intermediaries are found out, where out of 8 interviews conducted, 6 companies are convinced that intermediaries are reducing the complexity of their SC, shown in Table 3.1. The companies argue that investing into an intermediary can help to handle the complex systems. Intermediaries can add support to understand the problems and take over non-core competencies. Moreover, all, except 1 company, agree that their intermediaries used are improving the company's SC in some way. The interviews confirm that the SC is improved due to cost and times savings. Manpower could be reduced due to outsourcing. In addition, also IT tools provided by the intermediaries facilitate the SC processes. Moreover, also the lack of physical assets can be balanced with the utilization of intermediaries. Similar to SC improvement, communication is an important point for all companies reported. On the one hand, the interviews agree that good communication between the partners in the SC is important to be successful. On



the other hand, intermediaries can be seen as communication facilitators between the companies and the end-users or the suppliers of the products.

Table 3.1- Comparison of roles of intermediaries in Supply chain

	DSV	C.H.Robinson	DB Schenker	W	X	Z	Rhenus Logistics
complexity	X	X	X		x	x	x
SC improvement	X	X	X	X	x	x	x
Control	X		X	X	x	x	x
Commitment	X				x	x	x
Communication	X	X	x	X	x	x	x

Apart from communication, control is an important factor for almost all the participants from the interviews. Regular feedback conversations and reporting sessions are done through different types of media. Several companies communicate with their intermediaries on a regular basis, via phone, e-mails or face to face.

Regarding commitment, the opinions of the participants seem to be diverse. Rhenus Logistics tries to establish commitment with its intermediaries through good relationships, fairness and trust, whereas Company X does not focus on commitment, as they can switch the carriers easily. Always assurance of responsibilities goes with the categorization in power, the categories for power include capacity, dependency, decision-making, information sharing and trust. 5 out of 8 participants reviewed were talking about capacity when involving an intermediary. For the winery DSV capacity is crucial, as without the intermediary's physical assets, the amount of goods could not be transported. This is also the case for DSV, DB Schenker, Rhenus Logistics and company Z. All companies agree, that they can offer or receive better capacities, than it would be possible without intermediaries. In contrast to capacity, all companies mention the categories dependency and decision-making. The power of intermediaries also are based on capacity, dependency, decision-making, information sharing and

trust. The more the intermediary provide the quality service, the more the supplier tend to depend on it and some decisions get transferred to them. The performance perfectly the roles and responsibilities of the intermediaries another word the mechanism of action, goes parallel with power of the intermediary. Generally comparative of DSV power with other intermediaries has been shown on Table 3.2.

Table 3.2 – Comparative of DSV and other intermediary’s power

	DSV	C.HRobinson	DB Schenker	Rhenus Logistics	X	Z
Capacity	X	x	X	x	X	X
Dependency	X		X	X		
Decision- making	X	X	X	X		X
Information sharing	X		X		X	x
Trust	X	X	X	x		

The power of DSV is still high compare with other intermediaries, I can say the performance of it duties properly has provide the company to exercise that power and with the power goes with the increase of income regardless the increase of investments and technologies the power also is associate with the number of the services can be offered by the intermediary. DSV is a freight forwarder logistic company, it offers:

- warehousing, by to day it does have the automated warehousing.
- transportation handling, either by sea, by air, and by road, it offers full truck load, part load, tracking.
- other logistic solution such IT, and data management as well as handling.

Regarding the roles and interested bring by an intermediary, the logistic intermediaries should be used in supply chin management however by selecting the type of intermediary to work with , the capacity or power of the intermediary should be taken into consideration. The powerful intermediary is higher the intermediary is

committed, the higher of the capacity in term of expertise and knowledge, the quality of the service is.

### **3.2 Classification of intermediaries and mechanism of action within the supply chain**

Even if using intermediary in supply chain is interesting and important, the clear difference between them should be always present to be able to recognize what will be the best type of intermediary to be used. Obviously, the intermediaries work as in-between man, this in between man comes with specific offers, and especially targeted the solution both side, either the last user or the shipper or supplier. In order to decide which intermediaries are the highest and lowest involved in the companies' SCs or what best type to be used and weather use intermediaries or not, some key points should be taking into consideration, involvement of intermediary in supply chain and power should be measure an in addition also mechanism of action should be taken into consideration as well as the transaction cost. The power of intermediary is defined in terms of capacity, ability of decision making and dependency. The involvement criteria are the roles and responsibilities of the intermediaries and intervals from 0 to 5 are chosen. The intervals represent the points that are awarded to an intermediary, depending on where in the scale it scores. Therefore, if an intermediary fit into the first interval, it receives 0 points, if it fits to the last interval, it receives 5 points.

#### **1. Calculation of scale value for one firm**

$$S = s_1 + s_2 + s_3 + s_4 + s_5 , \quad (3.1)$$

where S represents the scale value and  $s_i$  are the values for each category for one firm.

## 2. Calculation of value for each factor

$$M_s = \sum_{i=1}^n \frac{S_i}{n} \quad (3.2)$$

The final equation can be summed up as the following

$$M_s = \frac{\sum_{i=1}^n \sum_{j=i}^c S_{ij}}{n} \quad (3.3)$$

All scale values  $S_1, S_2, S_3, \dots, S_n$  are added up and divided by  $n$ , where  $n$  represents the number of all firms of one intermediary type.  $M$  represents the mean value.

The involvement and power will be measured against the scale, the known intermediaries will be dispatched into the output to determine the mechanism of actions as well as the cost-effectiveness involvement. The outputs of some data reviews are assessed of each category as seen on the table 3.2. Communication and control are divided in the same way. The frequency of contact between intermediaries and firms is counted in order to choose the right position on the scale. Complexity structured from no changes up to investments for new systems. In-between factors including the understanding of the problems, improvement in non-core competences as well as taking over laws and regulations are taken into consideration. In addition, SC involvement is categorized starting with the improvement of non-core competencies up to a way faster and cheaper SC involving the intermediaries. Furthermore, commitment is measured through a scale starting with no commitment, through short- as well as long-term relationships, up to the same goals, for both, intermediaries and companies. The scale for the power criteria starts with the division of capacity into 5 intervals. Capacity includes also transport possibilities and organizational abilities. The first interval 0 means no capacity, the interval with the highest points is granted when an intermediary has unlimited capacity.

Dependency begins with when no intermediary is needed and therefore, no dependency can be established. The second and third interval means when an easy or

moderate switching between intermediaries is possible. The fourth interval applies when the intermediary has extended knowledge and expertise and therefore, make switching difficult between different intermediaries.

Table 3.2 - Involvement of intermediaries

	0	1	2	3	4	5
Complexity	No changes in complexity	first conversations about complexity	Understanding of problems	Improvement in non-core competencies	Taking over laws and regulations	Investment in new systems
SC Improvement	no SC improvement	Improvement of non-core competencies	Assisting in legal matters	Reduction of complexity	more efficient or effective	more efficient and effective
Control	no control	quarterly	monthly	1-2 per week	3-6 per week	daily
Commitment	no commitment	only project-based commitment	Short term relationship	High degree of fairness, trust	Long term relationship	Same goals
Communication	no communication	quarterly	monthly	1-2 per week	3-6 per week	daily

The highest part is the case when a firm is completely dependent on a certain intermediary. Decision-making is also divided into different segments and starts with the interval where an intermediary is not at all allowed to make decisions by themselves, followed by the segment where intermediaries can decide about basic processes like the time of shipment or the chosen route. Higher points are assigned, if the intermediary can decide over chosen business partners and networking or if the intermediary is not limited to any decision-making.

For information sharing, the lowest points are granted to intermediaries that do not receive any information from companies that they work with. The next interval

applies when only the most necessary information is shared, for instance time and points of pick-up and delivery, transportation requirements or other information needed for the service. The next step is when information is shared with the help of the same IT platforms, followed by a shared IT platform that provides access to firm's information. The last segment applies when an intermediary has unlimited access to internal information of the firm.

The first interval of the trust category is defined by the fact that no investment into trust is made. The second interval applies when the firm invests into trust building, followed by the segment when a partnership between firm and intermediary is established. The last two intervals apply when the aim is to reach a long-term partnership or a strategic partnership between firm and intermediaries. The mechanism are defined by the capability to offer services. For instance carriers they have their own trucks they 100% offer transportation, however the carriers functions will be different to 3PLs providers such as DSV, where it will offering transportation by sea, by air, by road, in addition provide warehousing, distribution, storages, data records as well as he logistic services. Nether less DSV will not be looking like C.H Robinson which plays the role of the interconnection of carriers and Suppliers, in otherworld mobile agents. The more the intermediary provide more services the more it get classified as essential, and the more it covers a lot of activities. By covering activities, the experiences increases too. as the experience increase as the more clients trust you and once the client trust you, the more income get in the company. By the help of the study conducted on different intermediaries, out of 10 intermediaries, their frequencies are scared in Figure 3.1 by comparing the involvement as power of each other.

	NVOCC	Carrier	FF	3PL	Wholesaler	Distributor	Broker/ Agent	Supplier
<b>Involvement</b>								
Complexity	6	8	12	9	1	1	1	3
SC Improvement	6	16	15	8	2	2	9	4
Control	2	8	9	8	1	1	2	0
Commitment	2	4	2	2	0	0	3	0
Communication	18	32	40	24	5	5	9	7
<b>Power</b>								
Capacity	1	12	9	3	0	0	1	0
Dependency	4	12	12	5	1	1	2	3
Decision-making	3	6	7	4	2	2	4	2
Information sharing	6	12	17	11	2	2	4	2
Trust	5	7	6	6	2	2	4	0

Figure 3.1 - Frequency intermediaries categories

By analysis the review of most FFs or work with FFs, indicate that that the complexity is reduced through influence of the FFs . Here, the companies can focus on core task and eliminate non-value adding activities. One interviewee states that complexity is increased through the fact that an additional party has to be managed.

This can be linked to literatures state that FFs generally take care about the whole processes in the SC, including the selection of the mode of transportation, requirements of documentation, the route and the payment terms.SC improvement is seen very differently by the FFs, one firm does not mention it, for DB Schenker it is related to regulations and legal matters, for Rhenus Logistics increase effectiveness and efficiency. Control is also different among FFs. Two of the intermediaries are controlled quarterly, one is controlled on a monthly basis and LCAC ensures a daily control with its FFs. Commitment for DB Schenker and DSV is rather low. Rhenus Logistics seeks commitment through fairness and trust in a relationship and LCAC creates commitment through partnerships that are reinforced through events or special offers.

As FF are utilized in the day to day business their importance for firms is high. DB Schenker communicates with partners once or twice per week and also have weekly meetings, they also make use of communication tools. The other two interviewees indicate that communication with FFs happens on a monthly basis. The familiar way to classify and to use intermediaries with the supply chain, is to use them as channel intermediaries or as logistic intermediaries, channel intermediaries with distributors, wholesalers, retailers however the logistic intermediaries are carriers, freight brokers and freight forwarders, 3PLs, the classification and use them of this way cannot help in one way to another however by mixing their roles and responsibilities will boost the supply chain to reach the target of satisfy the last consumer with quality service, quality product on right price.

Carriers can have different impacts on the complexity of firms' SCs. One interviewee states that the intermediary does not contribute to a change in the complexity. Company X says that the carrier is aware of complexity aspects of the SC. Same applies to company Z, which is convinced that complexity can be reduced. Only one carrier reduces complexity within SCs through dealing with laws and regulations. All carriers lead to improvements in the SC through the increase of efficiency and effectiveness. carriers can offer both services, full truck load as well as less than truckload services for their clients. This means, several shipments can be consolidated and transported 3PLs reduce the companies' complexity by for example taking over non-core competencies. The goal of those intermediaries is, to get a better understanding of problems that might occur in the company's SC. This can also be linked to the SC improvement. Those SC improvements can be improvements in several tasks, including transportation, warehousing activities or packaging describes five major dimensions where the SC can be improved, this dimension can be understood as

- Strategic planning,
- Inventory management,
- Transportation,
- Capacity planning and



-Information technology.

Problems are analysed and ways of improvement are identified in the same time. Those SC improvements can be on the one hand, legal matters where the 3PLs assist and on the other hand, providing physical assets for the companies. In addition, especially with lower quantities, 3PLs can achieve better prices and help the companies to reduce their costs. This can be linked to the reduction of the lead times and less workload for the own manpower of the firms. To sum up, 3PLs can improve both, efficiency and effectiveness of the customer's SC. Control is based on an average scale, 3PLs have regular feedback conversations with firms, depending on their volume size of the company. In addition, also regular reports are exchanged between the intermediaries and firms, however there is no special investment or focus put on controlling each other.

Communication of the 3PLs is done in several ways. One 3PL focuses on systems and technologies, whereas the other one focuses on relationships. The 3PL interviewed for example, focusing on systems and technological tools in order to facilitate the communication processes with the firms continually establishes new platforms as a communication basis. Those customer service tools and value-adding services can be identified as e-tracking or e-booking systems. In addition, weekly and monthly meetings are held with the customers. The other 3PL focuses on relationships. Depending on the size or if they are relatively new customers, the communication intervals are different. The focus is put on new and big companies which are contacted regularly via phone and e-mail in order to establish long term relationships. This is also the way how this 3PL develops commitment. An open book policy is used, which leads to the same goals of both, intermediary and company. This can be achieved with fairness and good services, and about the power, Capacities for the companies can be improved by 3PLs, as they can achieve a better buying power at the shippers or partners used than individual firms. Moreover, it is easier for them to use space as 3PLs prepare and decide about the mode of transportation, manage pick-up times at the factory, send the goods via diverse mode of transportation as well as deliver to the end destination.

This can be done through consolidation of more than one firm, which means 3PLs have better options to deal with capacity.

All the 3PLs interviewed create dependency on contractual as well as interpersonal relationships. Those contracts are negotiated with both, their customers and partners. The contracts are mostly valid for a certain period of time and are renegotiated when they are over. The 3PLs participating in this study are not only similar in terms of dependency, but also in the activities of decision-making. All decision, including, the partners used, the mode of transportation and the route are made by the 3PLs. Firms using those services only give time indications about pick up of the goods and the delivery at the destination. Information sharing between the 3PL and the companies is mostly done about the volumes and quantities. This includes information about production forecasts and the delivery time of the goods. In the case of the 3PLs interviewed, no sensible information is shared between the partners. Trust between the 3PLs and customers is achieved through fairness and good services. Good services and practical examples are used to convince customers to trust the 3PL. However, in some cases clients decided not to work with the intermediaries anymore due to mistakes made.

The popular intermediaries classification are: channel intermediaries and logistic intermediaries, where channel intermediaries is made by:

- Supplier
- Manufacturers
- Distributors
- Wholesalers
- Retailers

And logistic intermediaries are:

- Carriers
- Freight brokers/ agents such as C.H Robinson
- Freight forwarders such DSV
- 3PLs such DSV
- 4PLs and 5PLs

- E-intermediaries.

Beyond the popular classification, also there are classification by facing the mechanism of action of the intermediaries. The mechanism of action of intermediary is the ability and possibility to serve , the intermediary express in supply chain. Within different activities offered by intermediaries such as Table 3.3.

Table 3.3 – Different offers of intermediaries in product distribution

Intermediaries offers	
<ul style="list-style-type: none"> <li>✓ Obtaining the release of imports</li> <li>✓ Payment of applicable duty fees</li> <li>✓ Obtaining, preparing the necessary documents and information</li> <li>✓ Maintaining records</li> <li>✓ Responding to any concerns after Payment</li> <li>✓ storage, cross- docking, and distribution.</li> <li>✓ Track shipments on behalf of customer.</li> <li>✓ Utilizes technologies to manage the supply chain and implement logistics solutions</li> <li>✓ Strategic supply chain management focus</li> </ul>	<ul style="list-style-type: none"> <li>✓ Negotiating and arranging the best method of transport for product to get to the target market.</li> <li>✓ Coordinating the movement of goods to their destination.</li> <li>✓ Preparing the necessary paperwork.</li> <li>✓ Providing advice on packing, labelling and marking of goods management and improvement of customer’s supply chain.</li> </ul>

The intermediary can offer one or more activities mentioned in 3.3 table, the activity provided define the capacity as well as the mechanism of action of an intermediary, Based on the mechanism of actions of intermediaries, the intermediaries should be classified as:

1. Narrow spectrum intermediaries: these types of intermediaries intervene in product distribution with the minimum number of offers: examples: Carriers, freight agents, retailers. This class also is the first or basic line within supply chain /product distributions. All carriers lead to improvements in the SC through the increase of efficiency and effectiveness., for them they ride transportation.

2. Medium Spectrum intermediaries: this category are the interment, that provide a wide range of activities compare to the narrow spectrum activities. Most of the time, intermediaries are between the supplier and the customer. It is different to Medium spectrum intermediaries since for them , there are between the suppliers and the transportation company, in otherward they are between supplier and carries. They offers mostly Providing clients with shipping quotes, Booking orders with carriers. Finding the most efficient shipping routes Tracking shipment status, Communicating with shippers, carriers, and dispatchers throughout the supply chain process. Ensuring that government regulations, banking policies, and documentation requirements are followed in the shipping process, Tracking data about goods and carriers in databases. Examples: inside this group we have freight brokers, agents, wholesalers.

3. Broad spectrum: the broad spectrum activities cover many activities at the same times, cover and offer transportation, warehousing , logistic and control management system, inventory management, distribution, information management , returns management, data records and keeping, ordering. The examples in this category would be DSV as freight forwarders, 3PLS, 4PLs and 5PLs. on the order hand the more the intermediary covers more activities the more the investment should be made and the more also technic of innovation and creativity should be introduced to remain competent and service in this high speed developing world. Also the cost get increased due different reasons. Figure 3.2 show the intervention of intermediaries with different mechanism of actions with their services to provide, goes with the cost as all intermediaries work under commissions.

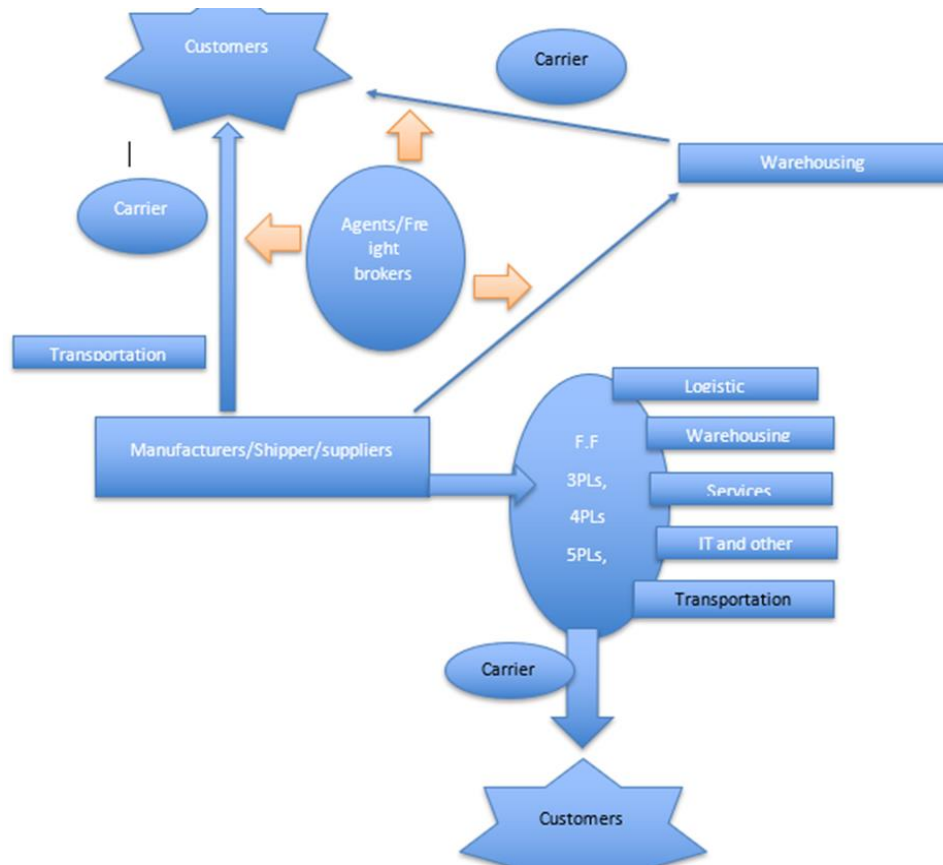


Figure 3.2 - Mechanism of action of intermediaries in Supply chain

The fact of involving one intermediaries with wide range of activity will be more preferable than anything else because of they offer the best price, also cover all needs of the shipper or suppliers at once. The following Table 3.4 will show the summary of new classification of intermediaries in supply chain based on mechanism of actions.

However, for the intermediaries to cover wide ranges of activities is not something easy. It is not something easy because it requires not only concentration and serious managerial capacity also it requires the investment. Any investments to reduce the cost of activity and increate the income as well increase the cells. Through the analysis of this thesis, some activities in supply chain system are considered to be vital, without them the supply chain system is dead.

The vital logistic activities are:

- Transportation,
- Warehousing,
- Information flow, information system management.

Table 3.4 - Classification of intermediaries based on mechanism of action

Classes	Narrow spectrum	Medium spectrum	Broad spectrum:
MOA	Type of intermediary that cover up small range logistic activities	Type of intermediary that cover up medium range logistic activities	Type of intermediary that cover up as much of logistic activities
Examples	-Supplier -Manufacturers -Distributors -Wholesalers -Retailers	C.H Robinson as freight agent	DSV as freight forwarders, 3PLS, 4PLs and 5PLs.

By comparing with the reviews 43% of the cost of logistic activities goes with transportation and 26% with the warehousing worldwide, on the other side transportation is outsourced on the rate of 83% and 63% national and internal transportation respectively worldwide. Outsourcing is the process of delegating a company's business process to third parties or external agencies, The high level of outsourcing either transport or warehousing is due to the companies do not possess the possibilities to handle all of them by themselves , they want to concentrate more of core competent, also leveraging benefits ranging from low cost labor, improved quality to product and service innovation. Is not only that as the third parties possess the expertise and knowledge.

For DSV offers the main activities needed around the world, DSV offers transportation. By sea, by air, by road, it offers warehousing as well as the logistic solutions too.it is possession of knowledge, expertise and power. 10% of it activities go with logistic solutions, 86% with the sea and air transport management , the rest of 25% occupy the management f the road.

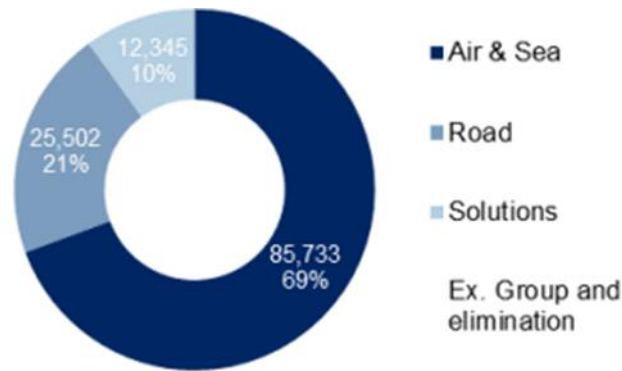


Figure 3.2 - DSV offers

By the size it occupy more that 90 countries around the world and deliver smarter solutions for our 105,000 customers and 73,000 contract carriers , annually, they handle more than 30 million shipments and every day more than 20,000 trucks are ready to carry your goods in a fast, efficient, flexible and environmentally-friendly manner.is not only that , the company also has invested in 20 automated warehousing, in aim of providing quality services an reduction of the Cost. As the intermediary work o commissions, DSV also has his own profit from the service provided, by analysing the cash flow of this company, the figure 3.3 will give us the more details.

	Q2 2021	Q2 2020	YTD 2021	YTD 2020
<b>Results (DKKm)</b>				
Revenue	37,831	28,782	71,447	56,091
Gross profit	8,333	7,386	16,118	14,070
Operating profit before amortisation and depreciation (EBITDA) before special items	4,545	3,666	8,561	6,270
Operating profit (EBIT) before special items	3,571	2,613	6,638	4,179
Special items, costs	-	515	-	1,026
Net financial expenses	253	222	274	819
Profit for the period	2,527	1,390	4,856	1,721
Adjusted earnings for the period	2,580	1,838	4,970	2,593
<b>Cash flows (DKKm)</b>				
Operating activities			4,491	4,373
Investing activities			(711)	(417)
Free cash flow			3,780	3,956
Adjusted free cash flow			2,817	3,356
Share buyback			(8,603)	(3,030)
Dividends distributed			(920)	(588)
Cash flow for the period			(1,912)	192

Figure 3.3 - DSV Cash flow

The operation activity, performed by DSV, takes the budget of 4491 DDK, either transport, either logistic, any activity. Also some investments are made, for instance, recently, the company invested in warehousing, by now DSV has 20 automated warehouses, the investment is not made only for price reduction also for development, so that the company can stay standing with the world of competition. Above all the activities also bring the revenues, as it is shown in figure 3.3, for instance this year the revenue was up to 37821 DDK. All of them are the results of involvement, in supply chain, commitment and trust from the client which make the company to grow day and night. By concluding I will have to advise to use the intermediaries with a broad spectrum of activities such as DSV, it offers a wide range of activities around the world, so that the risk will be shared, getting a fair price with long safety.

### **3.3 Intermediaries and cost-effectiveness method**

Cost effectiveness is the method the quality services with quality products are offered to the customers with low and affordable price. Always the quality goes with the price, as the quality increase will be as the price increase, intermediaries involve in this process of provide quality services at the lowest price. The application of principles of supply chain management always is not easy, especially it comes to the satisfaction of customers needs with quality at the lowest possible price. In addition of the outside competitors, it requires the spirit to handle the request as well as the solutions on lower price, many of intermediaries try to raise up the price or to give up on principles and it is contrary to the broad spectrum of activity logistic companies such as DSV. However is not always the intermediaries offers the best options, intermediaries are associated with risk of increasing the final product price. For instance using channel intermediaries only, it ended up with the higher price at the level of last consumers. The questions to be asked is how? Like this: let say that the product should come from the producer/supplier A and goes to be delivered to the consumer B.



As each intermediary will have to take some commission, for the channel intermediaries bought the product and resell it o higher rice, for instance addition of 10% on unity price and for the logistic intermediaries the commission validated up to 25%. By considering the channel intermediaries, producer buy raw material to the suppliers, and assembly them and make the final product, the producer sell the product to the distributor, the distributor to the wholesalers and the wholesaler to the retailers.

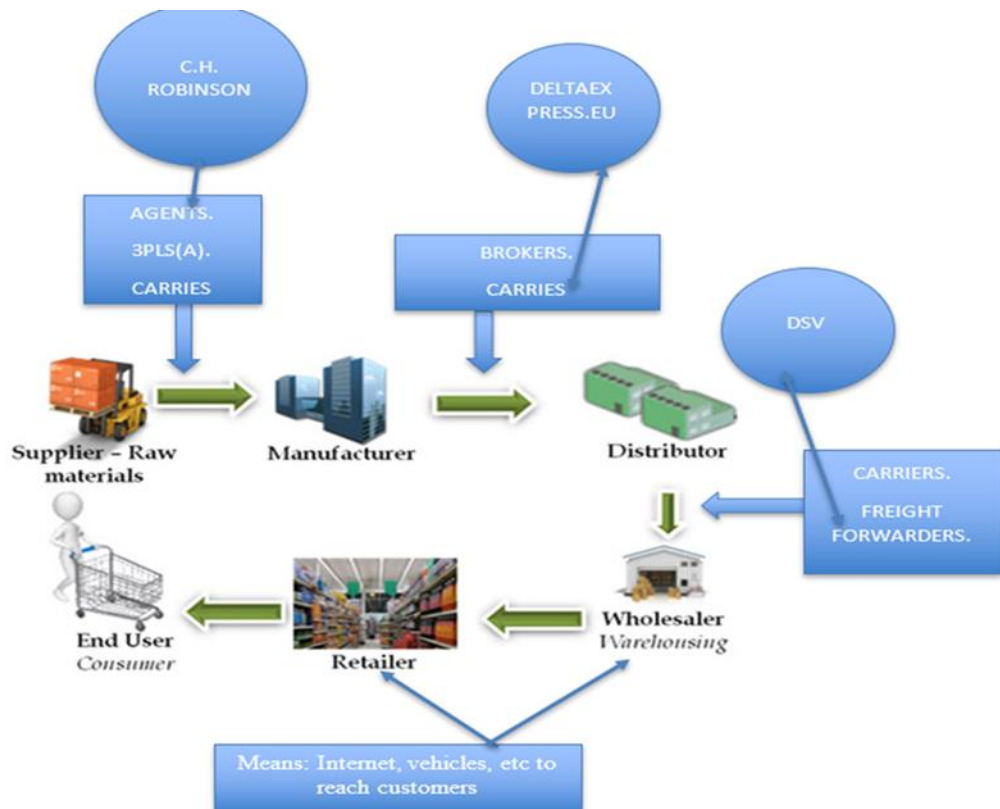


Figure 3.4 - Increase of the price based on intermediary's number

Table 3.5 - Channel intermediaries with the price

Price/ channel intermediaries	Action	distributors	Wholesaler	Retailer	Last consumer
Initial price X	Sell/reselling	+10%	+10	+10%	Higher price of +30%

By using the channel intermediaries, but the time of reselling, the responsible will fix the price which include his/ her own profit, but taking the example of table 3.1 the final customer get the product on +30% price. This method will help the owner to sell the product fast at lower price and get min profit however it does not help the last consumer, in fact, the price will be higher compare to what the client can get by buying direct to the producer. Moreover, using more than one logistic intermediaries, result in super raising the product.

Logistic intermediaries, contains: carriers, freight brokers, freight forwarders, 3PLs, 4PLs, 5PLs and e -intermediaries. By using one by one, the commissions will be higher make the final product to be expensive. However by taking the intermediary like 3PLs or DSV, the risk, and stress will be shared, and the logistic company will be handling almost everything, transportation, warehousing , management, etc. The methods which can help and save the interested of the last use is to use the intermediary with broad spectrum of actives 3PLs and freight forwarders. The last consumer will get the cheaper price associated with the quality services.

Table 3.6 - Quality service on affordable price provided by Logistic intermediaries

	Action	Intermediary one	Carrier	Last consumer
Initially price Y1	Freight broke Y1+25%	-Freight broker (CH Robinson). Y1-50%	Y1-50%	Y1-50%
Initially price Y1	Y1+12.5%	Warehousing Y1+12.5%	Carrier Y1+12.5%	Y1+12.5% +
Initially price Y1	Y+50%	-Freight forwarders, (DSV) - 3PLs-5PLS. Y1-75%	Y1-75%	Y1-75%

Moreover, using more than one logistic intermediaries, result in super raising price of the product. Like it is shown in the table 3.4. et say that the shipper will use himself the intermediary to store the load and use the carriers to carry the loads.

For the price the first intermediary will request will be added on some percentages by adding commission let say 12.5% and by also taking carriers, carries will be adding some extra amount for their commission, if the product will have to pass to the retailers , retailers also will add also some percentage for their profit , then at the end of the day, the client will add the super expensive price. Logistic intermediaries, contains: carriers, freight brokers, freight forwarders,3PLs,4PLs, 5PLs and e -intermediaries. By using one by one, the commissions will be higher make the final product to be expensive. However by taking the intermediary like 3PLs or DSV, the risk, and stress and risks will be shared. The 3PLs logistic company will be handling almost everything, transportation, warehousing , management, etc. this is explained with the above example in 3.4 table data.by taking the example of DSV,DSV can be classified as freight forwarders, as well as 3PLs,it provides and manages supply chain solutions for thousands of companies every day.it provide transportation, road transportation, sea and air transportation, and other logistic activities. The mechanism of actions of logistic intermediaries, the apply the method of reselling. By taking example of table 3.4 the by the product at the shipper with addition of the profit and resell them on lower price so that they can accumulate the profit and the product reach the client with lower price.

Intermediaries in supply chain system is an excellent innovative methods introduced so far, even thought it is associated with some disadvantages, they can be manageable depend on the target. My recommendation goes to the further researchers, intermediaries and cost effectiveness subject needed to be developed more. The challenge. During elaboration of this study, the second data have been used at high level, and this is associated with the impact of COVID -19. For further researches I pledge to use primary data. Practically, shippers/ suppliers , I would advise them to use broad spectrum intermediaries such as DSV to be sure.

The advantages of broad spectrum intermediaries such FF or 3PLs or generally the logistic intermediaries:

- complexity of supply chain is reduced through influence of the FFs and the companies can focus on core task and eliminate non-value adding activities.

- take care about the whole processes in the SC, including the selection of the mode of transportation, requirements of documentation, the route and the payment terms

- Ability to provide the capacity quickly needed.

- broad spectrum intermediaries get involved in the process through contractual agreements

- the broad-spectrum intermediaries.

- help with warehouse management, pick and packing,

- shipping the goods and handling returns,

- inventory reporting, forecasting.

- Risks sharing

Decision-making ,most of decision making can be taken by themselves or over basic processes like specific times of shipment, vehicles used, or the routes chosen. Information sharing is for all intermediaries on a necessity level. Most firms only share necessary and no sensitive information. One respondent shares information with FFs through an IT tool that facilitates the sharing process. but only two invest into trust building or have the aim of establishing a partnership with FFs, with which mutual profitability can be reached. For that I would add the other classification of intermediaries, as further classification of intermediaries n existed one. After identifying the factors, a topic guide is established that is suitable for conducting research reviews, since the data are second data. This topic guide assists the researcher to guide the revies and to find out necessary information that contributes to the model. reviews should be conducted with a wide range of participants in order to get diverse views and opinions about the specific topic. Each it should provide answers to the same topic guide in order to make comparisons possible.

DSV provide logistic services needed with the entire supply chain, for the transportation use subcontractors and manage to cover up 573 385 tons,349 210 tons by air, by sea and gain the income from 16719DDK,25948 DDK,70606 DDK road,

sea, air and logistic solutions respectively. The investment goes with currently automated warehousing, this one has provided the result of 46,431 DDK in 2021 and working capital in sea & air department reaches to 55,820 DDK, 9,407 DDK of Road department, 11,450 from logistic solutions, by analysis the market and functions of intermediaries, I would recommend DSV to invest also in transportation and possess their own tracks this will save the capital to invest in transportation and the revenue will increase and the last consumer will be receiving the product on a fair price than today.

Table 3.7 - Comparison of investment and the feedback of DSV

	Sea and air	Road	Solutions
Investment	46,431 DDK	9,407 DDK	11,969 DDK
Res	55,820+9,407 DDK	16,719 DDK	46,431 DDK

The Road division of DSV is among the market leaders in Europe and furthermore has operations in North America and South Africa. The division offers full load, part load and groupage services through a network of more than 200 terminals and operates approximately 20,000 trucks. For H1 2021, the Road division achieved 69.7% growth in EBIT before special items. The strong growth in earnings was driven by higher activity with 15.9% growth in gross profit and an improved conversion ratio, while The Air & Sea division operates a global network specialising in transportation of cargo by air and sea. The division offers both conventional freight forwarding services and tailored project cargo solutions. The division achieved 21.3% growth in gross profit and 69.0% growth in EBIT before special items for H1 2021. The strong growth in earnings was driven by growth in transported volumes and high gross profit per unit and was further supported by the full-year effect of Panalpina synergies and cost savings and lastly The Solutions division offers warehousing and logistics services globally and controls more than 400 logistics facilities. The service portfolio includes freight management, customs clearance, order management and e-commerce solutions.

For H1 2021, the Solutions division achieved 9.9% growth in gross profit which was translated to 37.0% growth in EBIT before special items.

Generally, the group achieved a gross profit of DKK 16,118 million for the first six months of 2021, a growth of 18.0% compared to the same period last year. The growth was driven by higher activity and extraordinary market conditions following COVID-19. EBIT before special items for H1 2021 came to DKK 6,638 million, up by 64.7%. The growth was attributable to the growth in gross profit and a higher productivity, reflected in a record-high conversion ratio of 41.2% for the Group. For the rolling 12-month period ended 30 June 2021, the Group achieved 78.4% growth in diluted and adjusted earnings per share. The more the investments get in the more the company should expect the new result and the growth. By increasing the growth of the company, also the more cover different activity the capacity increase, the trust increase from the client as well as the employees, and the points of the owe also increase.

In second part when the shipper decide to use himself intermediary based needs, the price of last consumer will be higher. And by following the last part when the shipper will use the intermediary with broad spectrum of activities as DSV freight forwarders or 3PLs , the client will receive the product on small price .I addition, the shippers will transfer almost everything to the 3rd parties so that they can mage to his behalf, the stress will less as 3<sup>rd</sup> part will be controlling on his behalf , and he will get his profit. Based on the calculation made above they are two ways that the Price of the last consumer can be increased in: when the shippers used one that one intermediaries and when using only channel intermediaries however there ways too that reduce ethe price for the last consumer, that is due to usage of the intermediaries with broad spectrum of activities. Withing the market competitions, to win over the market also requires to invest, by analysis of this thesis , the investment goes with the increase of income, any investment to reduce the cost of activity such transportation, warehousing, logistic solutions, employees related also result in increment in income and it will help to cover up the wide range of activities.

### 3.4. Chapter summary

The data used to make up the application are second data types, and the author used the analysis of the events during the two previous chapters to design a scheme way the logistic and channel intermediaries can be used in.

After analysis the application of the mechanism of intermediaries, the intermediaries can be used based on three important facts:

1. Intermediary mechanism of action. the mechanism of action is determined by the number of the services can be provided by an intermediary. For instance:

Narrow spectrum intermediaries: offer one and only one service with the whole channel, I can say carries: they have their own trucks only thing they do is to realize the transportation. I can say channel intermediaries, each in channel distribution chain, offer only one function such as distribution only, storage only and availability of product y retailing them. From that Medium intermediaries: they do have more than one functions C.H Robison as freight broker, they apply themselves with the carries, transportations also they deal with the orders, and documents management, they are also the 3<sup>rd</sup> class which is on Broad spectrum activities, for instant 3PLs or Freight forwards as DSV. they offer Industry solution, Air freight, Sea freight and Road freight, Transportation, Logistic solution as well as the warehousing.

2. The intermediary transaction cost. Transaction fees is the only judge to transfer any activity to the 3rd parties, whenever the transaction fees is higher than profit, the outsourcing will be done inhouse or in other way if the transaction fees is lower than the profit, the intermediaries will be adding the values on supply chain. Therefore, the study recommends that it would be appropriate for management to consider cost as criteria of outsourcing 3PL providers for improving performance Also, the study recommends that companies should only perform in-house logistics activities where the cost is lower than outsourcing from 3PL providers because cost directly affects the overall performance of the company.

3. Experience and reputations. The more experience intermediary, the more the company is financially stable

4. Investment activities

## CONCLUSIONS AND RECOMMENDATION

Logistic and supply chain management is the process started by assembling raw materials to the final product other word called production, and it ends with the last consumer , moreover it also concerned with the returns. The whole process is made by:

- production
- distribution
- transportation
- documents managements
- Storage and warehousing
- Procurement and Purchasing

The supply chains system has been introduced in Trade because it was very hard to the client to get the products, not only that the producers also couldn't get the client easily, then supply chain management system brought different facilities, price reduction the pillars of whole process are: suppliers, producers, distributors, wholesalers and retailers. The flow of product is from, raw materials from the suppliers, the final products from the produces, transported on behalf of the producer and get to the distributors, the distributors to the wholesalers and from the wholesalers to the retailers and from the retailers to the last consumers. By considering the pillars we dive in Channel type of intermediaries through the supplier and the consumers . Even though channel intermediaries facilitate somehow the supplier of the product to reach the last customer, however the complexity of the channel did not go anywhere, due to innovation, development and other factors logistic intermediaries also get introduced into the system. Logistic intermediaries Logistics intermediaries are parties who on behalf of the companies arrange transportation, warehousing, shipping, distribution of goods and services from the producers to the final consumers. Logistics service providers (LSPs) add value to company's products and are get used almost at the rate of 83% around the world. They Work as a supporter to the channel intermediaries and



boost the their involvement of the whole process. Logistic intermediary contained carriers' people with their own trucks, vessels or airplanes, freight forwarders ,3PLs ,4PLs and 5PLs.Freight forwarders are a persons or companies that organizes shipments for individuals or corporations to get goods from the manufacturer or producer to a market, customer or final point of distribution, whereas refers to the outsourcing of ecommerce logistics processes to a third-party business, including inventory management, warehousing, and fulfilment. 3PL providers allow ecommerce merchants to accomplish more, with the tools and infrastructure to automate retail order fulfilment.4<sup>th</sup> and 5<sup>th</sup> PLs are more technologic and innovative e form of 3PLs and they are not common used like the 3PLs,for instance DSV as freight forwarders or as 3pls provider and C.H Robinson as freight broker , the intermediaries offer the benefits such as Accurate Information, Cost Advantages, Shared Risks, Improved Profitability, regardless the benefit of them, the intermediaries also are associate the risk such as dependence, loss of control, an the most important at are associated with escalation of the price. escalate of the price is cause of the commission. Any type of intermediary in the chain to be used is associated with the commissions fees , however With only channel intermediaries the product tend to be higher. The top objective of supply chain management is rely on the aim of satisfaction of the last consumer, with quality service and product on low possible price for that the transaction cost guid everything . since the third parties / intermediaries offers good option to boost supply chain, different companies/ shippers tend to outsourced activities, however always transaction fees come first. After analysing the mechanism of action of intermediaries, as result, In using intermediaries, I would recommend:

- Classification of intermediaries based on their mechanism of actions: the intermediary with narrow spectrum, medium and large spectrum of activities.
- Balancing the transition fees
- The logistic intermediary with large spectrum of activities tends to offer large spectrum of activities and for the price and risk management is a safe option.
- Depend on how the intermediaries are arranged, they can be the best way to take the product to the large group of population and this one is associated with more profit

to the shippers. Or they can be good way to reduce the price.it is associated with investment as well as a kind of stress of management of all of them. the other side, one intermediary with large spectrum of activities, can be the all in one to the shipper/producer, otherwise will be the losses.

This study has the goal of contributing, not only on a theoretical, but also on a practical level. In the theoretical sense, this study contributes to the literature of logistics strategies. Not only were intermediaries classified with new factors, namely power and involvement, also a classification technique is developed in order to make the steps of developing a classification and a model visible. Such a technique is not existing in literature since only the final result is shown. This strategy of measuring different factors while using the categorization technique can be applied to other different factors and can build the starting point of a new study. Therefore, this study contributes to literature by visualizing the black box – the development of categorizations – so it can be used for further studies. Furthermore, does this study contribute to the logistics strategy literature since it validates the current SC structure of horizontal integration. As indicated earlier, in some literature it is assumed that intermediaries are not needed anymore within SCs and firms can carry out tasks by themselves. Even though companies might have the ability to perform tasks in-house, this study proves that intermediaries are still used widely and are even involved within SCs on a medium to high level.

Implications on a practical and managerial level apply on different instances. First, companies that look for intermediaries that fit the company's views with regards to power and involvement can take the created model and choose a best-fit intermediary. This applies to different industries and firms since this study was not limited to only a certain industry and it also included firms of all sizes.

Second, logistic or SC firms and other intermediaries can see with the help of the model what their general level of power and involvement is. This can be helpful in case the intermediary wants to either increase or decrease the level. This can be done when taking a look at the categories of power and involvement in order to identify improvement potentials for change, e.g. increasing decision-making power.

A third implication is that a firm can use the developed categorization technique and apply it to other applicable factors. Different kinds of factors can be identified and measured the same way following the steps of the categorization technique. Hence, the technique is not only applicable to the factors involvement and power, but also to other factors. In addition, the technique is also not limited to examining only two factors, more factors can be included in a research.

Concluding, the authors believe, that the result of this thesis is a valuable contribution that can be used by a variety of different organizations and institutions, for theoretical and practical reasons. Further theoretical use is displayed in the following chapter.

Further Research, suggestions for further research are partly according to the aforementioned limitations of this study. Since not all types of intermediaries have been studied, potential for further research emerges. Either a study containing all intermediaries or a study with the missing intermediary types is possible. Such a research also contributes to validating this study conducted.

In addition, with the developed categorization technique, other factors regarding intermediaries can be examined. The categorization technique can be used for different factors that are to be examined. This is also not limited to 2 factors only, the categorization technique can be extended with more factors. Moreover, all factors identified can consist of more than 5 categories, which build the base for the analysis.

Apart from that, not only interviews can be used for data collection. Questionnaires, observations or focus groups can build the basis information when pursuing further research for this categorization technique.

In addition, this outcome is not in line with some literature, where it is stated that e.g. 3PLs can have higher power within SCs. A further research suggestion might be to find out why e.g. a 3PL does not have as much power as literature indicated.

## REFERENCES

1. Trade atlas, qualified importers and exporters are just a click away: 19 11 2021. [online].  
[https://www.tradeatlas.com/en?gclid=cj0kcqjwtrslbhclarisach6rmiurhestgmt1qai8ompyr-39sxxvws1go2cpf37t28q-a2kgglvktk8aaqq2ealw\\_wcb](https://www.tradeatlas.com/en?gclid=cj0kcqjwtrslbhclarisach6rmiurhestgmt1qai8ompyr-39sxxvws1go2cpf37t28q-a2kgglvktk8aaqq2ealw_wcb). [accessed 19 10 2021].
2. Савченко Л.В., Сауляк Л.В. Формування логістичних ланцюгів доставки товарів. Вісник. Збірник наукових праць Національного транспортного університету та Транспортної академії України. К.: НТУ, 2012. Вип. 26. С. 277–282. Режим доступу:  
[http://nbuv.gov.ua/UJRN/Vntu\\_2012\\_26%282%29\\_\\_56](http://nbuv.gov.ua/UJRN/Vntu_2012_26%282%29__56).
3. WTO, world trade statistical review 2021, switzerland: wto, 2021.
4. E. T. ,the five components of supply chain management: 10 08 2021. [online]. available: <https://blog.procureport.com/components-of-supply-chain-management/>. [accessed 01 11 2021].
5. Савченко Л.В. Задача вибору виду транспорту для вантажоперевезення. Вісник. Збірник наукових праць Національного транспортного університету та Транспортної академії України. К.: НТУ, 2012. Вип. 26. С. 267–272. Режим доступу:  
[http://publications.ntu.edu.ua/visnyk/26\\_2\\_2013/267-272.pdf](http://publications.ntu.edu.ua/visnyk/26_2_2013/267-272.pdf).
6. M. S. U. gain a competitive advantage with your supply chain, 2019.
7. Innovecs@, “successful global supply chain management,” 08 07 2020. [online]. available: <https://innovecs.com/blog/global-supply-chain-management/>. [accessed 27 10 2021].
8. B. P. T. W. and T. W, what is supply chain management? mastering logistics end to end : supply chain management software,:

- [www.cio.com/article/2439493/what-is-supply-chain-management-mastering-logistics-end-to-end.html](http://www.cio.com/article/2439493/what-is-supply-chain-management-mastering-logistics-end-to-end.html), 26 08 2021.
9. P. D. strategy, “types of distribution channels,” product distribution strategy, 2021.
  10. P. J. logistics - an integral component of supply chain management: [online]. available: <https://www.managementstudyguide.com/logistics-and-supply-chain-management.htm>. [accessed 03 11 2021].
  11. D.I.Kristo and M.H.K, the logistics and management of distribution channels: the case of kosovo iliria international review, vol. 6, no. vol. 6 no. 1 (2016), 27 07 2016.
  12. S. Ellis, and P. V. P. S. C. S, the path to a thinking supply chain, idc technology spotlight, p. 2, 1 08 2020.
  13. S. P. expanding distribution channels,: business.com, 06 08 2021.
  14. H. Pavlic Skender, A. Host and M. Nuhanovie, role of logistic service provider in international trade in university events,: university of rejeja,croatia, 2016, p. 21.
  15. M.V what is causing supply chain complexity? : 26 07 2017. [online]. available: <https://blog.mpo.com/what-is-causing-supply-chain-complexity>.
  16. Янчук М.Б., Соловйова О.О., Савченко Л.В. Взаємодія видів транспорту в мультимодальних системах. Підручник для здобувачів ОС «Бакалавр» спеціальності «Транспортні технології». К.: НАУ, 2021. – 220 с.
  17. C. & R. F. Rossignoli, Emerging business models in B2B research: virtual organization and e-intermediaries. in cecilia rossignoli & f. ricciardi (eds.),, ” inter-organizational relationships: towards a dynamic model for understanding business network performance, pp. 75-95, 2015.
  18. M. U. L. who are channel intermediaries?: mcb up ltd, vols. vol. 18 no. 2/3,, no. <https://doi.org/10.1108/eb014679>, pp. 30-32.

19. S. H. H. A. & N. M. the role of logistics service providers in international trade : business logistics in modern management,, pp. 21-34, 2016.
20. Inter-organizational relationships, II edition, 75-75 ed., springer, 2015.
21. Distribution network dynamics and the consequences for intermediaries., industrial marketing management, 2014.
22. Michelson,H., Boucher, S, Cheng, X., Huang, J, & Jia,X, : connecting supermarkets and farms: the role of intermediaries in walmart china’s fresh produce supply chains.,” cambridge university press,, pp. 33,22-27, 2017.
23. I. D. S. A. and C.J Distribution and transportation network design : research gate, no. 978-3-319-24215-6, p. 232, 01 01 2017.
24. Michael B. ,Supply chain management: horizontal carrier coordination through cooperative governance structures, international journal of production economics,, vol. 194, p. 59–72., 2016.
25. Deltaexresseu 2021. [online]. available: <https://deltaexpressinc.com/>.
26. D. G. B. S. team, touchpoints vehicles, 2021. [online]. available: <https://www.dpdhl-brands.com/dhl/en/guides/touchpoints/vehicles.html>.
27. types of carrier of goods, 2021.
28. A. P. 1. and L. S. , “transformation of distribution logistics management in the digitalization of the economy,” mdpi,journal of open innovation: technology, market, and complexity, vol. 7, no. <https://www.mdpi.com/journal/joitmc>, p. 7.58, 06 february 2021.
29. Teresa chapman, what is an international freight forwarder?, 10 09 2020. [online]. available: <https://blog.anderinger.com/blog/what-is-international-freight-forwarding>. [accessed 2021].
30. B. A. G. M.and . T. C. intermediaries in international trade: products and destinations., 97, 916–920. ed., vol. 97, the review of economics and statistics,, 2015.

31. A. Hickson, Ph. D., CFAB. Wirth, B. Comm. (Hons)G. Morales, B. Comm. (Hons): supply chain intermediaries study prepared for: manitoba infrastructure and transportation, university of manitoba transport institut.
32. Patrick Burnson , top 25 freight forwarders in 2018: blending art and science, suply chain 24/7, 2019.
33. Ronard Armstrong, : A&A's top 25 global freight forwarders list, Armstrong & associates (A&A), 2020.
34. B. Barry, how companies save money using third-party logistics (3pl): [online]. available: <https://www.fcbco.com/blog/save-money-using-3pl>. [accessed 13 november 2021].
35. K. Arabe, : good question: will the supply chain management function be obsolete in 10 years? why or why not?, inbound logistic thomas company, p. 1, 31 01 2020.
36. Understanding fourth party logistics ( 4pl) completely,: [online]. available: <http://www.navata.com/cms/fourth-party-logistics-4pl/>. [accessed 2021].
37. Team Cleo, 3PLs (third-party logistics) pros, cons, use cases: 2021. [online]. available: <https://www.cleo.com/blog/knowledge-base-3pl-third-party-logistics>.
38. Helga Pavlić Skender, Petra Adelajda Mirković, Ivan Prudky, the role of the 4pl model in a contemporary supply chain: scientific journal of maritime research,, vol. 31, p. 96–101., 2017.
39. George N. Root III, roles of strategic partnership : [online]. available: <https://smallbusiness.chron.com/roles-strategic-partnership-10038.html>. [accessed 13 november 2021].
40. 5 major advantages of 4pl logistics: 28 may 2019. [online]. available: <https://expaklogistics.com/5-major-advantages-of-4pl-logistics/>. [accessed 13 november 2021].
41. Cengiz KahramanSezi Çevik Onar, intelligent techniques in engineering management,” sage, vol. 87, 2015.

42. 5PL the future of logistics?,: 17 july 2020. [online]. available: <https://www.linkedin.com/pulse/5pl-future-logistics-steve-huntley>. [accessed 13 november 2021].
43. Sergey Yablonsky e- intermediaries,: research gate.
44. M.S “measuring the performance of electronic marketplaces: an external goal approach study.,” decision support systems,, vol. 54, p. 1065–1075., 2021.
45. Supplier selection in agile supply chains: an information-processing model and an illustration,” journal of purchasing and supply management, vol. 14, pp. 249-262, 2009.
46. Keith Roberts , key factors and t ors and trends in t ends in transportation mode and carrier tation mode and carrier selection,: in trace tennessee research and exchange, university of tennessee, knoxville, 2012.
47. Manojkumar Vithalrao Dalvi, Ravi Kant ,effect of supplier development activities on performance outcomes: an empirical study.: benchmarking: an international journal,, vol. 25, p. 489–516..
48. Yossi Sheffi, along with Dr. Madhav Durbha manufacturing a product in a supply chain: 18 november 2019. [online]. available: <https://www.elmhurst.edu/blog/manufacturing-a-product/>. [accessed 14 november 2021].
49. K. Matsui, when and what wholesale and retail prices should be set in multi-channel supply chains?,: european journal of operational research,, pp. 50-554, 2017.
50. R. Evans, the 7 traits of great distributors | news, :9 may 2016. [online]. available: <https://hra-global.com/news/the-7-traits-of-great-distributors/>. [accessed 14 november 2021].
51. Tage Koed Madsen, Øystein Moen, Randi Hammervold the role of independent intermediaries: the case of small and medium-sized exporters., international business review,, 2012.



52. Lumen, channel intermediaries, lumen boundless markt, 2017. [online]. available: [ourses.lumenlearning.com/boundless-marketing/chapter/channel-intermediaries/](https://courses.lumenlearning.com/boundless-marketing/chapter/channel-intermediaries/).
53. chroncontributor, how do market intermediaries affect business?: 16 06 2020. [online]. available: <https://smallbusiness.chron.com/market-intermediaries-affect-business-10402.html>.
54. World trade organizatio, what is the wto role in international trade?,: 18 october 2021. [online]. available: [https://www.wto.org/english/tratop\\_e/tratop\\_e.htm](https://www.wto.org/english/tratop_e/tratop_e.htm). [accessed 18 october 2021].
55. S. lavenduski, most important qualities in distributor-supplier relationship,: 25 july 2016. [online]. available: <https://www.asicentral.com/news/web-exclusive/july-2016/most-important-qualities-in-distributor-supplier-relationship/>. [accessed 14 november 2021].
56. Leng, M, Li, z, & Liang, L., implications for the role of retailers in quality assurance,” in production and operations management,, 2016, pp. 777-790.
57. Arya, A, Mittendorf, B, Löffler, C, & Pfeiffer, T, the middleman as a panacea for supply chain coordination problems: european journal of operational research,, pp. 353-340, 2015.
58. Kirshner, S., & Shao,, “internal and external reference effects in a two-tier supply chain.,” european journal of operational research,, pp. 267, 944–957., 2018.
59. Xu Zhang, Yuan, Xu-Mei, Yuan, Ji-Ge, Hu, Hai-Ju ,multi-objective approach for broker dominant supply-demand matching decision.: journal of interdisciplinary mathematics,, pp. 20, 1139–1152., 2017.
60. Monica Alfredsson, Susanne Hertz , strategic development of third party logistics providers, :2015. [online]. [accessed 2021].

61. O. Van Dijk, adaptability: is this the golden ticket of customer service?,: 15 may 2017. [online]. available: <https://www.aq-services.com/adaptability-ticket-customer-service/>. [accessed 15 november 2021].
62. What services do third-party logistics providers offer?: 2 october 2019. [online]. available: <https://www.blumeglobal.com/learning/services-third-party-logistics-providers-offer/>. [accessed 14 november 2021].
63. Martin Hingley, Adam Lindgreen, David B. Grant, Charles Kane “using fourth-party logistics management to improve horizontal collaboration among grocery retailers.,” *supply chain management: an international journal*, pp. 16 (5), 316–327., 2011.
64. Ferrer, M, Santa, R, Hyland, P, & Bretherton, P, relational factors that explain supply chain relationships, pp. 22, 419–440., 2010.
65. Narkhede, B, Raut, R, Gardas, B, Luong, H, & JHA, MA., Selection and evaluation of third party logistics service provider (3PLs) by using an interpretive ranking process: benchmarking: an international journal,, pp. 1597-1648, 2017.
66. Michelson, H., Boucher, S., Cheng, X., Huang, J, & Jia, x., connecting supermarkets and farms: the role of intermediaries in walmart china’s fresh produce supply chains.: cambridge university press,, pp. 33(47-59), 2017.
67. Hickson, A., Wirth, B., & Morales, G, supply chain intermediaries study. university of manitoba transport institute. 2013.
68. Bernhard Fleischmann distribution supply chain and transport..
69. Xhoxhi, O, Pedersen, S, Lind, K., & Yazar, A., the determinants of intermediaries’ power over farmers’ margin-related activities: evidence from adana, turkey,: *world development*,, pp. 64, 815–827., 2014.
70. Partnership, five important reasons you should be using a freight broker,: 2017. [online]. available: <https://www.partnership.com/blog/post/five-important-reasons-you-should-be-using-a-freight-broker>.

71. Mr. Khan Salehin, gfp un trade facilitation network , no. <http://www.gfptt.org/>, 2015.
72. Evan Armstrong, what is outsourced logistics? everything you need to know about using 3PLs,” coyote, no. <https://resources.coyote.com/source/outsourced-logistics> , 2020.
73. K. M. Kostenyuk Y, logistic outsourcing in ukraine: status and features,,: vasyly`stus donetsk national university, no. udc 33:005.591.43(477), 2019.
74. A. team, global pls analysis, Armstrong & associate inc, no. <https://resources.coyote.com/source/outsourced-logistics> , 2020.
75. S. Serdarasan, dealing with complexity in the supply chain: the effect of supply chain management initiatives,” ssrn electronic journal, p. 25, may 2012.
76. Adriana Molina, how much money you should spend on monthly expenses, 06 08 2021. [online]. available: <https://www.creditcanada.com/blog/how-much-money-you-should-spend-on-monthly-expenses>.
77. Bacian, Izabela, freight transport statistics - modal split: 11 2021. [online]. available: [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=freight\\_transport\\_statistics\\_-\\_modal\\_split&oldid=535693](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=freight_transport_statistics_-_modal_split&oldid=535693).
78. OECD\_stat, international trade statistics: trends in second quarter 2021,” G20 international trade statistics, vol. interactive oecd data, no. interactive oecd data, pp. 1-7, 24 08 2021.
79. Admin, statistics for 3rd party logistics companies, 3PL worldwide , no. <https://www.3plworldwide.com/statistics-for-3rd-party-logistics-companies/>, 2020.
80. I.W 50, freight forwarding brokerages & agencies in the us - number of businesses 2002–2027, ibis world 50, no. <https://www.ibisworld.com/industry-statistics/number-of-businesses/freight-forwarding-brokerages-agencies-united-states/>, 2020.

81. E. Mazareanu, the leading freight brokerage firms 2020, 06 04 2021. [online]. available: <https://www.statista.com/statistics/184545/25-leading-global-freight-brokerage-firms/>. [accessed 11 2021].
82. E. Mazareanu, “the leading freight brokerage firms in 2020, based on net revenue (in million u.s. dollars),” statistica, 2021.
83. DSV, first quarter 2017 results, DSV , no. <https://investor.dsv.com/static-files/bb0a2f51-9465-4f86-9000-b3f92e4d70b6>, 2017.
84. Cleo. team, clutch firms that deliver, no. <https://clutch.co/ua/logistics/3pls>, 2021.
85. DSV, Interim financial report,Q3 2021,” DSV , no. company announcement no. 924, 2021.
86. M. Eden Prairie, C.H. Robinson announces carrier of the year award winners with celebration and donation in their honor,” c.h.robinso global news, no. [https://www.chrobinson.com/en-us/newsroom/press-releases/2021/10\\_12\\_21\\_carrier\\_of\\_the\\_year\\_award/](https://www.chrobinson.com/en-us/newsroom/press-releases/2021/10_12_21_carrier_of_the_year_award/) , 2021.
87. E. Mazareanu , supply chain challenges 2020,: Statistica, no. <https://www.statista.com/statistics/1182057/global-supply-chain-challenges/>, 2021.
88. Dr. Jean-Paul Rodrigue, global logistics costs by function and mode, 2018: in cover transportation and economics as they relate to logistics and global freight distribution, ny, hofstra university., 2020, p. 465.
89. Keith Biondo,Felecia Stratton,Sandra Beckwith, the state of logistics outsourcing,: ©2021 thomas publishing company, no. <https://www.inboundlogistics.com/cms/authors/>, 2021.
90. Julius Wambua,Elegwa Mukulu,Esther Waiganjo, Cost as a factor of outsourcing third-party logistics,: international journal of academic research in business and social scienc, vols. doi: 10.6007/ijarbss/v7-i2/2644, no. <http://dx.doi.org/10.6007/ijarbss/v7-i2/2644>, 2017.

91. Савченко Л.В. , “analysis of business models and strategies of innovation development of logistics service providers,” no. <https://doi.org/10.15587/2312-8372.2016.65948.>, 2016.
92. S. Chevalier, global sales of traditional e-commerce players and delivery intermediaries from 2019 to 2020, with a forecast up to 2025: statistica, 2020.
93. A. Rhodes, multiproduct intermediaries,: yale universit, no. [https://www.tse-fr.eu/sites/default/files/tse/documents/doc/wp/2017/wp\\_tse\\_857.pdf](https://www.tse-fr.eu/sites/default/files/tse/documents/doc/wp/2017/wp_tse_857.pdf), 2020.
94. E. Mazareanu, logistics industry costs worldwide from 2010 to 2020(in trillion u.s. dollars): 20 08 2021. [online]. available: <https://www.statista.com/statistics/943500/logistics-industry-costs-worldwide/>.
95. Aaron O'Neill ,Global inflation rate from 2016 to 2026(compared to previous year): 16 06 2021. [online]. available: <https://www.statista.com/statistics/256598/global-inflation-rate-compared-to-previous-year/>. [accessed 07 11 2021].
96. Alicia Adamczyk ,prices continue to rise—here’s what’s getting the most expensive: CNBC makeit, 2021.
97. Allison Morrow, why do prices soar, who is at fault and what should we do : 25 01 2020. [online]. available: <https://voxukraine.org/en>. [accessed 11 2022].
98. T. Wyatt, uk-inflation rate 2021 - live: price rises at highest in a decade at 4.2% amid fears over covid recovery, independednt news paper, 2021.
99. A. O'Neill, sub-saharan africa: inflation rate from 2016 to 2026(compared to the previous year): 16 06 2021.
- 100 J. Doble, are freight forwarders and customs brokers the same?,: PCB freight managemnet, 2017.
- 101 Kostas selviaridis.george n botzoris,vassilios profillidis, “benefits, risks, selection criteria and success factors for third-party logistics services,” research gate , no. [https://www.researchgate.net/figure/benefits-and-risks-of-logistics-outsourcing\\_tb11\\_23779538#:~:text=vassilios%20profillidis](https://www.researchgate.net/figure/benefits-and-risks-of-logistics-outsourcing_tb11_23779538#:~:text=vassilios%20profillidis), 2018.

- 102 Chopra, S, & Sodhi, M,S, managing risk to avoid supply-chain breakdown. mit sloan management review: pp. 46(1)53-61, 2014.
- 103 Altexsoft team , “freight management and how it works: main processes and software,” altexsoft company , 27 11 2020. [online]. available: <https://www.altexsoft.com/blog/freight-management-overview/>. [accessed 05 12 2021].
- 104 Григорак М.Ю., Карпунь О.В. Логістичне обслуговування. К.: Вид-во Нац. авіац. ун-ту «НАУдрук, 2010. 152 с.
- 105 Савченко Л.В. Оптимізація рішень в логістике: теорія і практика. Київ: РІО НТУ, 2007. 248 с.
- 106 Григорак, М. Analysis of business models and strategies of innovation development of logistics service providers. Technology audit and production reserves. 2016. 2. 29. Режим доступу: <https://doi.org/10.15587/2312-8372.2016.65948>.
- 107 Т. J. B.international trade: [online]. available: [/www.britannica.com/topic/international-trade](http://www.britannica.com/topic/international-trade).
- 108 Types of distribution channels: product distribution strategy, no <https://productdistributionstrategy.com/types-of-distribution-channels/>, 19 09 2019.
- 109 3PL service improvement opportunities in transport companies: 10th international scientific conference transbaltica 2017: transportation science and technology, vol. 189, no. <https://doi.org/10.1016/j.proeng.2017.04.351>, pp. 67-76, 07 2017.
- 110 J. Burnett, channel intermediaries | boundless marketing: [online]. available: <https://courses.lumenlearning.com/boundless-marketing/chapter/channel-intermediaries/>. [accessed 13 november 2021].
- 111 J. A. H. M. the the oxford english dictionar.
- 112 P. Rogers, Procurement glossary: SCM portal, 2021.

- 113 Jake Rheude, what is the difference between 3PL & freight forwarding?: forwarders magazine, 18 08 2019.
- 114 Hadleigh Reid, understanding the differences between a 3PL and a freight forwarder: Dcl, 2021.
- 115 Persson, G. & Virum,H. Growth strategies for logistics service providers: a case study: international journal of logistics management, pp. 12(1), 53–64., 2011.
- 116 Stefansson, G, Collaborative logistics management and the role of third-party service providers: international journal of physical distribution & logistics management,, pp. 76-96, 2006.
- 117 Zhilong Chen,Hancheng Cao,Fengli Xu,Mengjie Cheng,Tao Wang, understanding the role of intermediaries in online social: 16 8 2020.
- 118 h. h. m. & b. p. roy, “trust in local food networks: the role of trust among tourism stakeholders and their impacts in purchasing decisions.,” journal of destination marketing and management,, pp. 6(309-319), 2017.
- 119 Ireland, D, &B.P Roy,a multi-theoretic perspective on trust and power in strategic supply chains: journal of operations management,, pp. 25482-497), 2017.
- 120 M. J. S. A.M &S.D.G.Schniederjans, outsourcing and insourcing in an international context: routledge, 2015.
- 121 Sylogist, reasons for outsourcing your it services: pavliks.com, 2021. [online].  
· available: <https://www.pavliks.com/top-reasons-for-outsourcing>. [accessed 2021].