

THESIS

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Analysis of DHL Logistics Processes

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ABSTRACT OF THESIS

Thesis title (Analysis of DHL Logistics Processes)

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The objective of this study is to gain insight into the strategic approaches used by DHL, analyses the obstacles encountered, and examine potential avenues for improvement.

Quantitative analysis encompasses the evaluation of essential performance metrics, including delivery timeframes, tracking accuracy, and operational efficiency.

The qualitative methodology includes conducting interviews with key personnel from DHL's logistics department, as well as engaging with customers and external stakeholders.

This report provides a contextual analysis of DHL within the global logistics industry, with a specific focus on new issues like digitalization, sustainability, and supply chain management.

This thesis examines the distinct obstacles encountered by DHL, including regulatory concerns, fluctuations in seasonal demand, and the escalating intricacy of the worldwide supply chain.

Simultaneously, potential avenues for enhancement are recognized, including the integration of artificial intelligence, enhanced transparency in supply chain operations, and the incorporation of sustainable methodologies.

The findings of this investigation will enhance comprehension about the functioning of DHL's logistics process, offering useful insights to both the corporation and the academic community engaged in the study of logistics and supply chain management.

In addition, the objective of this study is to provide actionable suggestions to enhance DHL's operational efficiency and sustain its prominent standing within the worldwide logistics industry.

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1. Introduction

1.1 Background of the Study

Since the 1990s, as borders have become less important, businesses have had to accept that they are in a growth stage that calls for the extensive creation of strategies and solutions for a global market. In this market, businesses had to be fast to respond and adapt, but they also needed to have plans in place to provide high-quality goods and services at competitive costs. (Smith, 1994)

Customers directly demand that goods and services be provided with higher quality; nonetheless, some of them are unwilling to pay for these upgrades. Expenses become into qualifying factors, and service quality becomes a competitive advantage. (Yong-quan, 2005)

In this case, logistics can be characterized as an essential component of the supply chain process that organizes, schedules, and regulates the productive flow that is efficient and effective; stores goods, measures services and related data, and ultimately transports via tariffs (freight) from the point of origin to the consumption location. Constantly striving to satisfy customer needs, logistics is a resource of utmost importance to businesses, giving them a competitive advantage and a bigger boost to their profits. (Manzini, 2008)

As previously said, logistics is essential to an organization's ability to operate profitably and efficiently on a worldwide scale, and DHL stands out in this dynamic situation. In the modern corporate environment, logistics involves more than just the transportation of products, it also includes sophisticated methods for streamlining processes, cutting expenses, and raising customer satisfaction. (Nekutova, 2015)

1.2 Statement of the Problem

The focal point of this endeavor will revolve on ascertaining the major factors contributing to the elevated costs of DHL's routine logistical operations and freight distribution. The negative effects on the profitability of logistics businesses tend to exacerbate when they are not identified and left unaddressed.

DHL is a global leader in logistics and transportation, providing an extensive array of services. But like any business, DHL may run across a variety of logistical management issues. Among the frequent problems that might occur are:

- **Transport delays:** Unfavourable weather, difficulty with customs, strikes, or operational concerns can all cause delays in delivery.

- **Customs Issues:** Owing to DHL's global reach, problems with customs processes might occur and result in delays or retentions.
- **Inventory Control:** Improving storage procedures and preventing issues with product availability require effective inventory control.
- **Safety and Traceability:** Ensuring cargo security and offering precise traceability along the whole logistics chain are essential in today's globalized world.
- **Technology & Information Systems:** Issues with data integration or online tracking might have a negative impact on the effectiveness of an operation.
- **Sustainability:** Increasing demands for more environmentally friendly logistics methods might present difficulties, particularly when it comes to packaging and carbon emissions.
- **Regulations and Compliance:** Modifications to safety, environmental, or customs laws may have an immediate effect on operations and need prompt action.
- **Supply Chain Management:** It can be difficult to efficiently coordinate the supply chain, particularly when there is a lot of demand or when there are disruptions.

It is important to promptly identify these concerns and where possible, address them to mitigate their potential exacerbation.

1.3 Research Questions:

- What are the potential methods for implementing route optimization in order to enhance the efficiency of the logistics process?
- What are the potential benefits of using new technologies, such as the Internet of Things (IoT) and blockchain, in enhancing visibility and traceability inside the supply chain?
- In what manner might sustainable logistics methods be used to mitigate environmental consequences?
- What are the potential benefits of using effective inventory management practices in enhancing the agility and responsiveness of the supply chain?
- This inquiry revolves on the influence of disruptive occurrences, such as pandemics or natural disasters, on the resilience of supply chains, as well as potential methods for enhancing this resilience.
- What are the most pertinent key performance indicators (KPIs) in the examination of the logistics process?
- What is the effect of selecting a distribution strategy (centralized vs decentralized) on the efficiency of the logistics process?

1.4 Objectives

The objective of the present study is to analyse the logistical techniques used by DHL. Similar to other logistics organizations, DHL aims to optimize the movement of information and goods along the supply chain.

DHL aims to analyse and manage specific conditions such as these.

- **Operational Efficiency:** Streamlining logistical procedures to guarantee effective cargo transportation. Reduce operational expenses, including those related to handling, storage, and transportation.
- **Enhancing the Supply Chain:** improved openness and visibility across the whole supply chain. shorter wait periods for goods delivery.
- **Service Quality:** Make sure deliveries are made safely and on schedule. Enhance client satisfaction by using trustworthy logistics services.
- **Sustainability:** Reducing the environmental effect of logistics operations by implementing sustainable techniques. Carbon emission reduction and energy efficiency.
- **Technological Innovation:** Using cutting-edge tools like data analysis, process automation, and real-time tracking to increase operational effectiveness.
- **Risk management:** is the process of identifying and reducing hazards in the supply chain, such as product damage, loss, or delays.
- **Adaptation to Market Changes:** Capacity to adjust to shifting consumer needs, legal requirements, and financial circumstances.
- **Cooperation with Clients and Partners:** Establish strategic alliances with clients, vendors, and other supply chain participants.

2. LITERATURE REVIEW

2.1 What is Logistics?

The term "logistics" has its roots in the French language of the seventeenth century, deriving from the verb "logger" that conveys the meaning of "lodging or proving." The origins of this entity may be traced back to military endeavors focused on facilitating wartime efforts, including activities such as the acquisition and conveyance of weaponry. (Roland, Lynn.1993) Logistics, as an integral component of the art of warfare, aims to ensure the provision of essential resources such as sustenance, transportation, accommodation, and medical support to military personnel engaged in active operations. It is evident that the logistics business has seen significant advancements over the years. The origins of the logistics system can be traced back to the military period, whereby it was used for the transportation of weaponry and medical supplies during times of conflict, although executed manually. (Ferris & Keithly. 2001)

2.2 What Is Logistics in Business?

In the context of companies, logistics plays a crucial role in facilitating various operational tasks, including the efficient distribution of materials and timely delivery of completed products. Within this setting, logistics emerges as a very notable and strategic domain, given its overarching responsibility for overseeing information management, data integration, transportation, storage, warehousing, and product management. The composition of this framework consists of four primary operations, namely supply chain management, internal logistics, distribution logistics, and reverse logistics. (Sivakumar, 2019)

2.3 Why Is Logistics Important?

The efficient management of logistics plays a crucial role in determining a company's financial performance. It facilitates the transportation of materials or commodities, the fulfilment of contractual obligations, and the provision of services. Efficient logistics management plays a crucial role in facilitating seamless flow throughout the supply chain, hence potentially offering a competitive edge.

2.4 What Jobs Are Available in the Logistics Industry?

The field of logistics encompasses a wide range of career opportunities, such as truck drivers, customer service representatives, dispatchers, freight agents, supply chain managers, transportation analysts, procurement managers, logisticians, and operations managers, among several other roles. Obtaining a degree in logistics or business administration might be advantageous for those seeking employment in various logistics-related positions, such as that

of a logistician. This field is anticipated to see a much higher growth rate compared to the general job market.

2.5 The Bottom Line

When a corporation engages in the optimization of its logistics operations, it enhances the overall efficiency across various stages of the supply chain. The ability to effectively allocate resources to their intended destinations in a timely manner may serve as a distinguishing factor for a corporation, enhancing customer satisfaction while concurrently reducing expenses and improving financial performance.

2.6 Logistics Process of DHL

2.6.1 About DHL

The global logistics revolution began in 1969 in San Francisco (USA), when Adrian Daley, Larry Hillblom and Robert Lynn jointly decided to create a mail delivery company. Without much creativity to name the company, they chose the simple one, joined the first letter of each surname, and then came DHL (acronym that refers to Daley, Hillblom, and Lynn). The first highlight of DHL was the optimization of deliveries using aircraft. In the 1970s, the use of aerial modules for cargo transport was not very common. Soon, the company's founders visualized an opportunity. (Perenc, 2018)

It all started with the shipment of packages from the west coast of the U.S. to Hawaii (EUA). Previously, this transport was carried out through the aquarium modal, characterized by great bureaucracy and high time in transit. Through this logistical opportunity DHL has achieved significant results and great visibility. (Edstein, 1992)

Despite the visibility, competition did not allow large expansions and considerable growth on the national stage. Thus, DHL has decided to expand its activities to international freight logistics. The brand grew very steadily, and in a short time it expanded across the globe. First, the company secured a strong presence throughout the Pacific region, to later, in 1974, open business in Europe, in 1977 in South America, and finally in 1978, in Africa. (Edmonds, 2009)

Until this point, DHL was already known globally, with presence in more than a hundred countries, thousands of offices, vehicles, and own warehouses. However, something greater was still to happen. In 2002, Deutsche Post, a German post and express company, acquired all the shares of the company's share capital, and together they became the world's largest logistics company. Today, DHL has 380,000 employees in more than 220 countries, working to broaden world connectivity, shorten distances and support human progress. (Edmonds, 2009)

2.6.2 Logistics planning

logistics involves all operations related to planning and control of production, handling of materials, packaging, storage and shipping, physical distribution, transportation, and communication systems that, carried out in a synchronized manner, can make companies add value to the services offered to customers and enabling a competitive differential in front of the competition. (Türkeli, 2010)

The central objective of logistics is to a level of Customer service at the lowest possible total cost seeking to offer alternative logistics capabilities with emphasis on flexibility, agility, operational control, and commitment to achieving a level of performance that implies a perfect service. (Chirimbu, 2016)

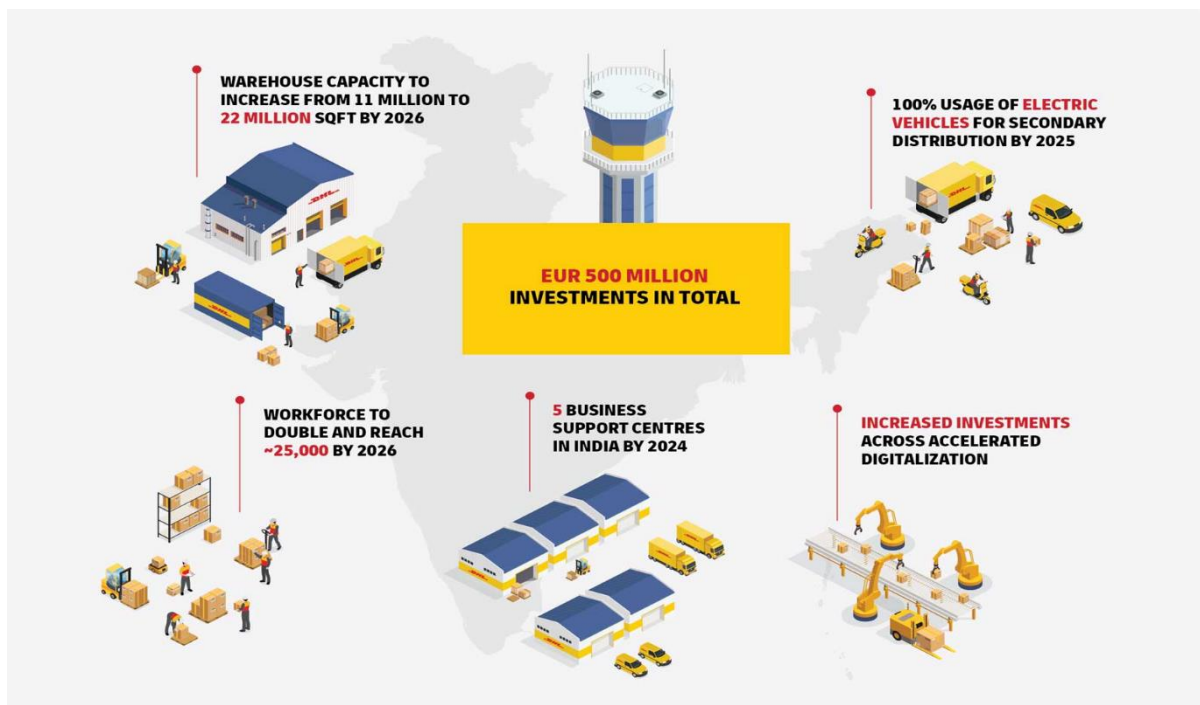


Figure 1 DHL Supply Chain to invest EUR 500 million

DHL Group has made significant progress with the 2020 Strategy. Due to its geographical distribution and wide range of logistics offers, the Group is now better positioned than ever. With the “Strategy 2025 – Delivering Excellence in a Digital World” the company is laying the foundations for continuing its trajectory of successful growth beyond 2020. (Perenc, 2018)

According to (Sandelands, 1994) logistical planning aims to develop strategies that can solve the problems of four main areas in transport companies which are:

- **Level of services offered to customers.**
- **Location of the facilities of distribution centres.**
- **Stock-level decisions.**
- **Transport decisions.**

All four areas illustrated are of fundamental importance for the company, their functions and activities should be planned in an integrated way, seeking to offer an operational result within the needs that the market demands of its participants. (Sandelands, 1994)

2.6.3 Level of services offered to customers.

Service levels of customer refer to the quality of service a company provides to its clients or customers. There can be many different levels of customer service ranging from unsatisfactory, and the ways the levels are defined will vary from one industry to another. However, the core components of what constitutes great customer service remain the same across industries. Being mindful of the level of service you or your company provides can help your business make strategic decisions to provide better experiences for your customers. (Sirajudeen, 2012)

Origin Country/Region	Destination Country/Region					
	Hong Kong ¹ & China	Australia & New Zealand ³	Rest of Asia ²	Europe	Americas	Rest of World
China	0.90	2.50	0.90	1.50	2.50	1.50
Hong Kong¹	0.90	2.50	0.90	1.50	2.50	1.50
Rest of Asia²	0.90	2.50	0.90	1.25	1.25	1.25
South Asia⁴	0.90	2.50	0.90	0.90	0.90	0.90
Europe⁵	0.20	2.00	0.20	0.20	0.30	0.20
Americas⁶	0.20	2.00	0.20	0.20	0.20	0.20
Rest of World	0.20	2.00	0.20	0.20	0.20	0.20

Table 1 DHL Express Emergency Situation Surcharge as of April 10th, 2022.

The competitive advantage of a company that is client-oriented is the quality of service. Therefore, one of the most important processes within a company is the creation of a system of service standards and their further development. Uniform standards will guarantee customers a high level of service, as they imply common rules of conduct for all employees. Well-designed corporate rules form a positive brand image. Hence, it contributes to winning customer loyalty. (Lengnick-Hall, 1996)

Despite being the world's largest logistics company, DHL is constantly developing solutions that meet customers' needs. In this way, we can highlight some logistical solutions of the company that are very successful:

2.6.3.1 DHL Express – DHL express is the DHL cargo and package logistics service on national territory. The strength of the service is loading formation logistics. The company can combine in one transport different cargoes with nearby destinations. In this way, it significantly reduces the costs of transportation and increasing agility in deliveries. (Park, 2009)

2.6.3.2 DHL Global Forwarding – Unlike DHL Express, DHL global forwarding represents international freight and parcel transportation. In addition to agility, safety and quality in the service provided, DHL is responsible for the entire transport bureaucracy. International freight transport is characterized by the need for a large volume of documents and processes required for sending and receiving cargoes. With DHL, the freight forwarder has only the job of sending and/or receiving the goods. (Karp, 2008)

Well known for its agility in delivery via air modal, DHL is also present in international logistics via water modal. DHL is a reference in terms of shipping freight, being the company that offers the most shipping routes and services from all over the world. (Bagalwadi, 2015)

2.6.3.3 DHL Supply Chain – In addition to freight transport, DHL also offers supply chain management service. DHL Supply Chain is the world's leading contract logistics provider. Integration is the key element of DHL Supply Chain, in which the company aggregates all its services to carry out the safe and effective handling of its customers' products. All distribution centres, under the responsibility of the company, are equipped with the most modern and technological ensuring maximum reliability in the processes. (Prabhir K. Bagchi, 2003)

2.6.3.4 DHL Global Mail – DHL is ranked as the global mail service. So, let's imagine that we want to send a letter from Brazil to the United States. Each country has its own postal service, in Brazil the Post and in the USA the United States Postal Service (USPS). Thus, DHL Global Mail is the service that makes the connection between the postal service of the two countries. In other words, DHL carries the cargo between the two countries. (Lind, 2018)

2.6.4 Location of the facilities of distribution centres

The problem of location of distribution and collection centres is included in the study of location facilities. In the case of distribution centres, this can be regarded as a problem of direct logistics, and for collection centres, it is the reverse logistics. Although these two approaches have different operational characteristics, both have as one of the objectives to seek a location that minimizes transport costs. (Tari, 2014)



Figure 2 DHL GLOBAL CAPABILITY

Direct logistics presupposes the location of the distribution centres from where the products go to customers distributed within a geographical space with different possibilities of routes. In relation to reverse logistics there is the reverse process, that is, the products are collected from customers after their use, for recycling or disposal. (Monteiro, 2029)

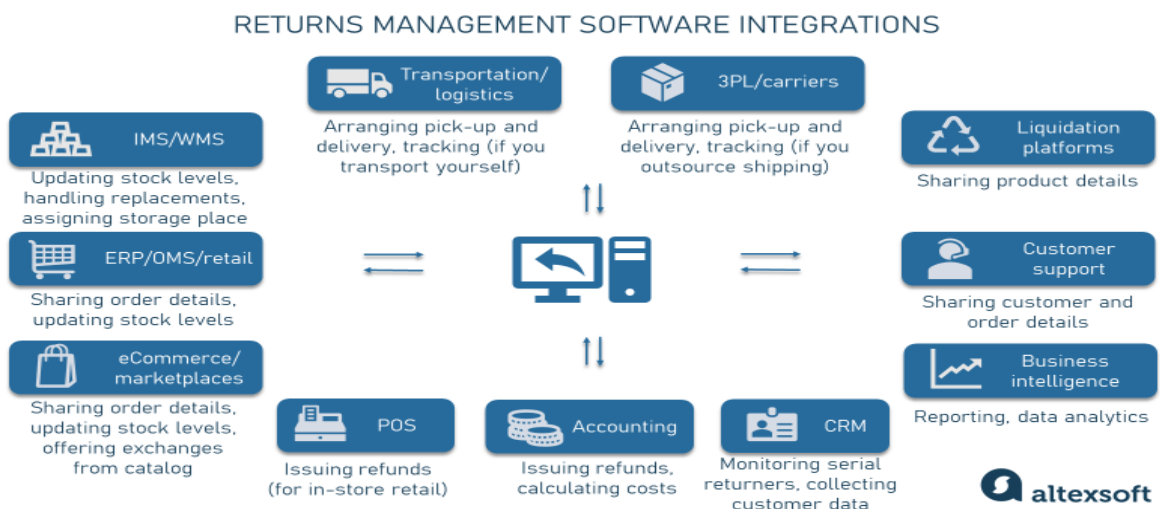


Figure 3 Reverse Logistics: The Role of Software in Returns Management

Considers that the issue of localising facilities concerns the choice of one or more one or more locations from a series of other possible locations, which will serve as points of supply for certain types of certain types of "services" to meet the demand of another set of points, considered "demand" points, seeking the location that maximises the result, obeying the restrictions of the specific problem under study. (Marianov, 2003)

According to McCann, P. to transport costs and transport distance have been the most widely used most used parameters in studies on the selection of facility locations, especially distribution centres. This type of study, the subject of which has become began in 1909 with Alfred Weber's theory of the Locational Triangle, where transport costs predominated. (McCann, 1998)

According to (Dupont, 2008), the basic elements for location model's facilities are:

- **Number of facilities to be located.**
- **Size of each facility.**
- **Number of existing facilities.**
- **Objective of the decision-maker.**
- **Demand (distribution, current demand, variation).**
- **Candidate locations for facilities (distribution, number).**
- **User behaviour of the facility.**
- **Capacity limits of facilities.**

The elements mentioned above can be used to classify the various models of location of facilities, in this case distribution centres, in three categories:

- **Continuous Model:** in which the facility can be located anywhere on the plane or subset of the same, having an infinite number of candidates places.
- **Models in Graphs:** and Networks, where the facility can only be allocated to the nodes or connections of the network and users can move only within the network. This model also has an infinite number of candidates locations.
- **Discreet models:** that consider a finite number of candidate locations, and location optimum is determined using the location of candidate points, and the predefined costs of demand nodes for candidate locations. (Dupont, 2008)

2.6.5 Geographical Diversification Unlocks New Opportunities

The early years of DHL's history are characterized by large-scale international expansion. The company was quick to understand that there was a need for an air courier service that delivered shipments to different countries. In the international arena, this gap in the market had not been addressed by anyone until DHL decided to set up its international office in Brussels. (Leung, 2000)

Within five years, the company was flying to destinations in the Far East, Europe, Middle East, Latin America, and Africa. DHL's initial geographical diversification strategy became the steppingstone to bigger opportunities. Since the company had a courier network spread across multiple countries, it was able to sign a mutually beneficial agreement with Hilton International Co. to transport documents from Hilton hotels. Hilton got to offer its guests a world-class delivery service, and DHL got a new outlet for its service. (Leung, 2000)

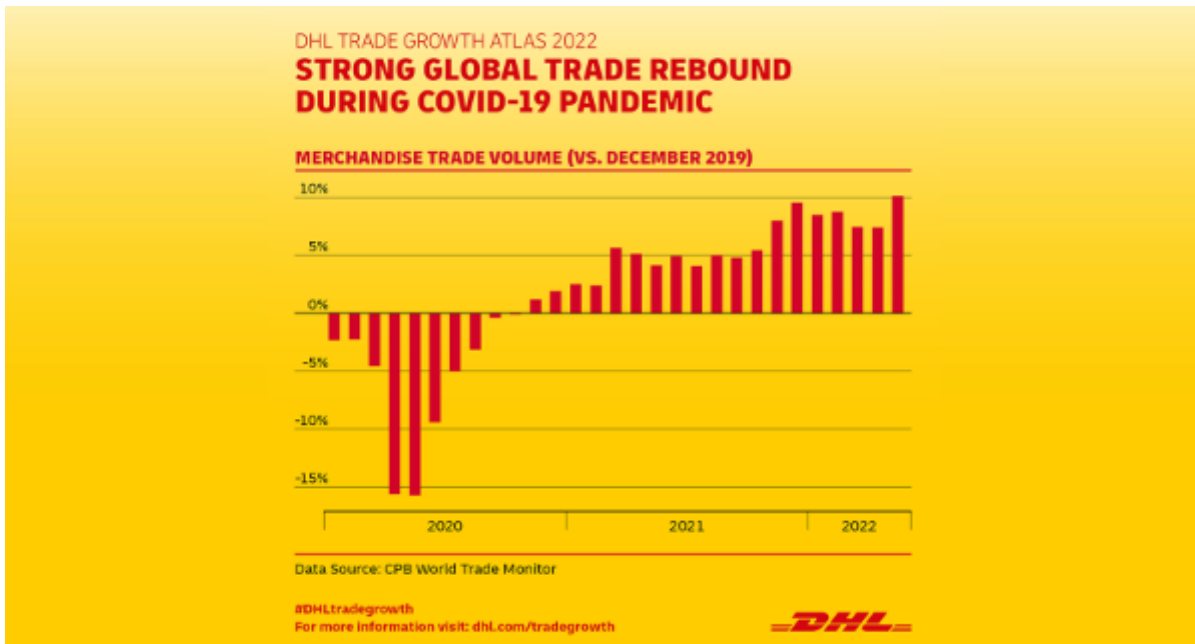


Figure 4 The DHL Trade Growth Atlas: A deep dive on trade in goods

2.6.6 How Did DHL Expands Its International Network?

In 2008, DHL opened a new hub for air freight at Germany's Leipzig/Halle Airport. The company picked the airport because it was close to Eastern European growth areas. It also got permission to run planes at night, which cut down on supply times. Also, the new hub made it easy for air, road, and train companies to work together. This improved DHL's customer service and helped it grow its network in Europe. (Malighetti, 2019)

The Leipzig hub was also the first DHL building that got all its own energy. It was the first building to use 1000 square meters of solar energy cells to power itself. The hub also had two fake underground pools that could hold 3000 cubic meters of rainwater every year. Instead of using valuable drinking water, DHL washed its planes with rainwater that had been saved. (Valančius, 2015)

The Group's attitude changed because of the new sustainable projects. In response to rising worries about climate change, the Deutsche Post Group started a program to protect the environment. The goal of the Go Green program was to cut the carbon footprint of the Group by 30% for each document and box that DHL moved. The company knew that the only way to reach this goal was to build energy-efficient buildings and stores and make the most of its air and ground teams to cut down on fuel waste. (Hemp, 2003)

The Group changed its name to Deutsche Post DHL in 2009 to better reflect how it had changed internally. The new company arrangement would make leadership more open and make planning easier. The Group also came up with a detailed plan for the years 2010–2015, which included paying more attention than ever to how customers' needs change. In 2012, DHL opened a brand-new site at the Shanghai Pudong International Airport in China as part of another international growth plan. (Jereb, 2010)

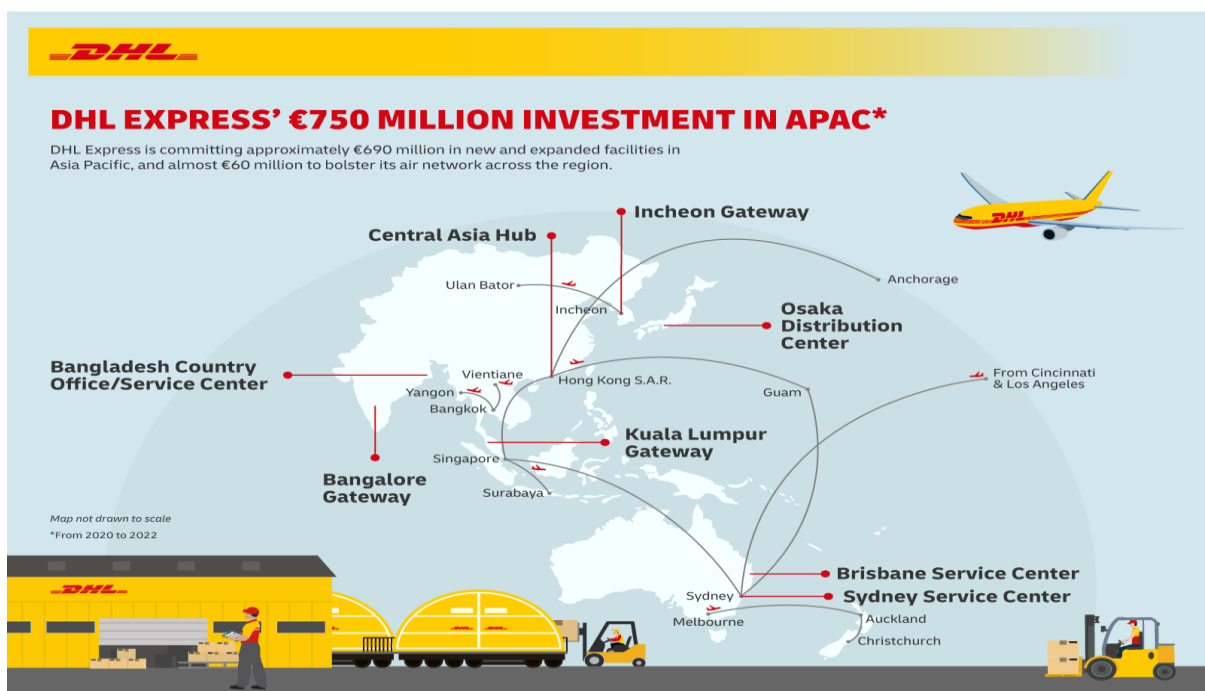


Figure 5 DHL Express outlines €750 million investment in Asia Pacific

The new building was called the DHL Express North Asia Hub, and at the time, it was the biggest warehouse in Asia. The company got eight new planes to meet the increased demand on lines between Shanghai and North Asia, Europe, and the U.S. DHL's market position in Asia was strengthened by the opening of this new hub in Shanghai, and the company expected to make at least a third of its total income from Asia alone by 2017. (Malighetti, 2019)

2.6.7 Stock-level decisions.

Stock is the existence of any item or resource used in an organisation. A stock system is the set of policies and controls that monitor stock levels and determine what levels should be maintained, when stock should be replenished and what the size of orders should be. Stocks have different natures. Some are so-called "involuntary" stocks, while others are "necessary" because they are essential to the normal rhythm of production. This classification derives largely from the main reasons why stocks exist. (Balavishnu, 2021)

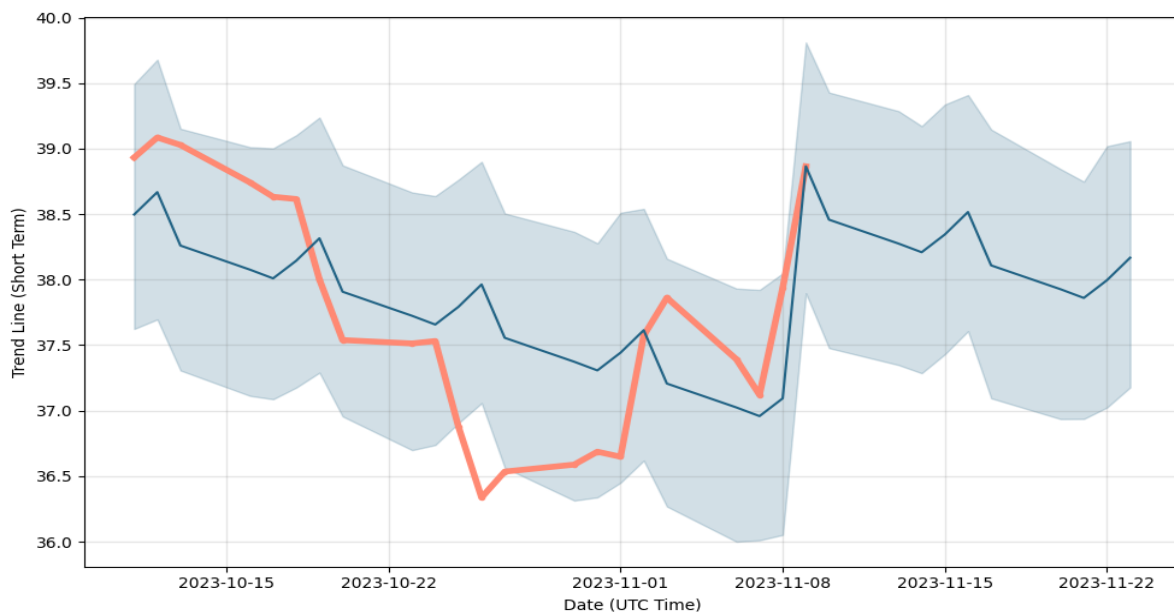


Figure 6 Deutsche Post AG Stock Forecast, "DHL" Share Price Prediction Charts

To reduce the level of stocks, it is necessary to combat some of the reasons that justify them. reasons. To this end, equipment reliability must be increased, the causes of non-conformity must be eliminated or reduced, and changeover times must be shortened. changeover times. Thus, management philosophies that translate into low stock levels (as is the case with stock levels (as is the case with JIT) presuppose a commitment to quality, flexibility and relationships with suppliers and customers (Xin-ming, 2008)

In most cases, stocks are kept fulfilling the following:

- **To create security against delays in the delivery of materials or products by the suppliers.**
- **To increase security in the face of large variations in demand.**
- **To take advantage of the economic size of a purchase order.**

2.6.7.1 Understanding your stock.

The DHL Fulfilments Network shines a clear light on this for customers, with our Advanced Inventory Insights: a tool that deepens customers' understanding of their stock, meaning that not only can they view their inventory in detail, but they can take actions to maximise sales, minimise losses as well as cut costs. (Aggour, 2013)

Customers ask themselves: What are my current stock levels across all the DHL warehouses I use? Which SKUs are running low, and in which warehouse? Do I keep too much stock? My stocks in Spain are low: could I move excess stock there from Poland? I have 300 units in stock: if projected forwards, will this cover me for two months of orders, or three? How can I track our goods with use-by dates more closely? (Xin-ming, 2008)

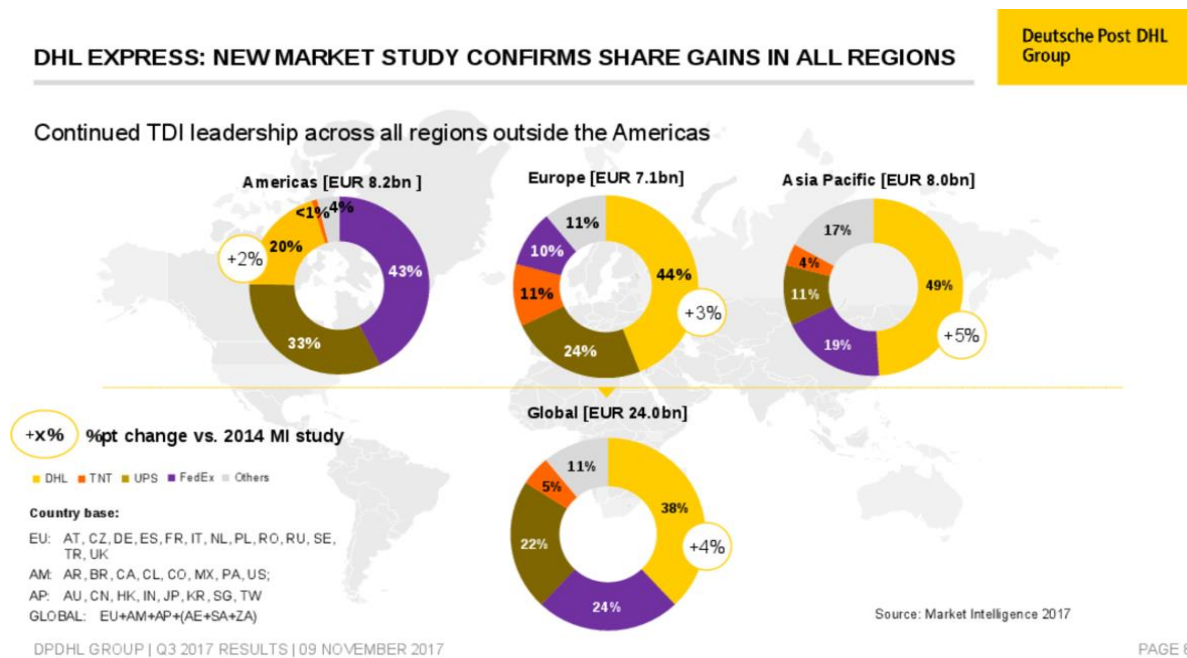


Figure 7 UPS Investors Should Also Consider Deutsche Post DHL Group

Even though big players have teams that take care of restocking and handling, this is not always the case. We think that every business should have world-class delivery, and managing supplies is a big part of that. Advanced Inventory Insights is a tool that comes standard for DHL Fulfilments Network users. It helps all our customers in the same way. It was made with the customer in mind and has several tools that are easy to understand and use. Customers can learn how to use the app with the help of tutorials and a "read me" section. (Xu, 2011)

The platform, which was made with the help of our current customers, is meant to provide analytics with a strong focus on actions. Five key areas, called "action areas" in the tool, let customers use the data to make choices and act. (Manzini, 2008)

Searches can be made to fit your needs. For example, a customer planning for an upcoming peak season can see briefly and in depth how their goods moved during the last peak season, per SKU. How often did we run out of something? How quickly did each item move? How much did we make back? Once a search filter has been used, it can be saved as a note. This makes it easy for customers to return to their search, plan, and keep track of their progress. (Xin-ming, 2008)

Also, the tool gives ideas to buyers. For example, if you have too much stock, it may tell you to sell it at a discount or move it to a place where stocks are low. It also offers benchmarks for the business, which give customers information they can use to compare their own ways of managing their inventory. (Nair, 2022)

2.6.8 Materials Procurement and Storage

2.6.8.1 Materials Procurement

The most widely used and traditional definition of materials procurement is not recent.

In 1951 (Heiritz) and (Farrel) defined the buyer's responsibility as acquiring materials of the right quality, in the right quantity, at the right time and at the right price, from the right source. The right quality, in the right quantity, at the right time and at the right price, from the right source and finally deliver them to the right place. (Prescott, 2012)



Figure 8 DHL AND ACCENTURE UNLOCK THE POWER OF BLOCKCHAIN IN LOGISTICS

The acquisition of raw materials, supplies and other components is a decisive factor in organisational activities, especially in materials management. In materials management, the purchasing function in today's business takes on a truly strategic role in organisations, due to the volume of resources involved. (Paulraj, 2006)

This strategic nature of the purchasing function is related to a fact that occurs mainly in industry, where the purchase of materials for production represents approximately 50 per cent of the total cost of that production. (Tatsiopoulos, 2004)

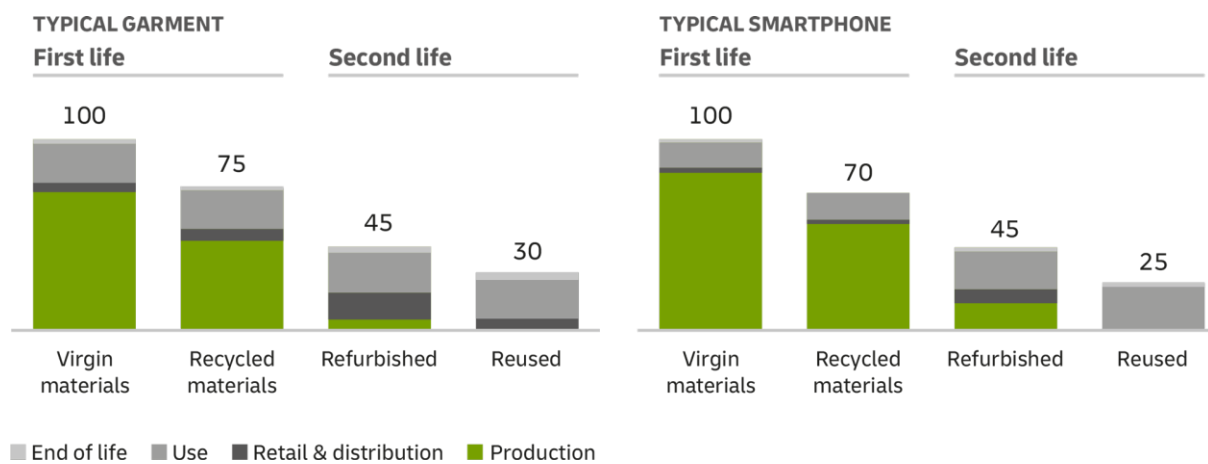


Figure 9 Circularity - DHL - Global

Purchasing activities include several factors, such as: selecting suppliers, qualifying services, determining sales deadlines, forecasting prices, services and determining sales deadlines, forecasting prices, services, and changes in demand. Since a large part of the money paid to suppliers comes from the purchase of materials, small reductions in their acquisition can generate considerable savings and an increase in profits. In view of this, we can say that purchasing management is of vital importance to business success. (Ho, 2015)

According to (Parsanejad, 2015) the purchasing area is also responsible for area is also responsible for observing stock levels, because although high levels may mean few problems with production, they do lead to high maintenance costs. However, low stock levels can put the company at a risky threshold because any detail or eventuality can jeopardise or interrupt the production process. In this context, the company may face customer complaints and must keep high levels of intermediate stock, generated by pauses and interruptions in the production process.

(Rogers, 2017) In addition to these points, it is up to the purchasing sector to analyse the relationship with suppliers. This includes researching and developing qualification and technical support during the relationship. As far as suppliers, it is necessary to negotiate prices with them.

2.6.8.2 ENGINEERING AND MANUFACTURING DHL

The most important trends shaping today's world economy: globalisation, the rapid growth of emerging markets and the pace of technological development, are determined by engineering and manufacturing (E&M) companies. Whether companies are involved in the extraction and transport of raw materials, the production of high-tech manufacturing equipment, the construction of the most advanced buildings or sophisticated air, sea and rail transport, E&M operations are literally building the modern world. (Palaniswami, 1994)



Figure 10 How the DHL Product Development Team Drives Change From the Digital to the Physical World

Typically, the logistics needs of large E&M companies are complex; often the respective global organisations are responsible for providing services across several business divisions. As a global leader in express, transport and supply chain services in more than 220 countries and territories worldwide, DHL shares its best practices and benchmark opinion by pioneering unrivalled solutions that drive business success in this sector. (Ling, 2009)

2.6.8.3 DHL's Global Warehouse Network

DHL is an international business with several warehouses all over the world. Although the corporation keeps its warehouse count a secret, it is thought to number in the thousands. Because they are used to keep goods and resources that must be delivered to clients, DHL's warehouses are essential to the business's operations. The warehouses operated by DHL are frequently sizable, neatly laid out spaces with high ceilings and lots of storage capacity. (Scott, 2011)



Figure 11 Hecht Group | DHL's Global Warehouse Network

As a part of the DPDHL Group, DHL Supply Chain is one of the top logistical service companies on the planet. By 2025, we want to minimize emissions from our fleet and the fleets of our subcontractors. We can comply with a variety of international trade laws thanks to our knowledge in global trade compliance. (Mazaraki, 2018)

2.6.8.4 How Many Locations Does DHL Operate From?

DHL employs more than 500,000 people in more than 1,000 facilities in more than 220 nations and territories. (Ramani, 1994)

One of the most often used shipping options for overseas shipments is DHL. It is both practical and economical to be able to use a range of methods to get DHL services. In addition to drop-off sites where you may pick up your items and get services, we listed all the DHL locations. Print Label is a feature of the ELEX WooCommerce DHL Express / eCommerce / Paket Shipping plugin. Due to the plugin's abundance of fantastic capabilities, you may utilize it to manage an excellent WooCommerce store. It is possible to deliver the package to you or have it picked up there. Read the product documentation first to understand the plugin. (Singh, 2006)



Figure 12 DHL Global Capability | DHL Supply Chain | Global

2.6.8.5 Order processing DHL

In this era of time competition and mass customisation, different aspects of logistics contribute to meeting customer expectations. Logistics helps plan a range of services that differentiate the original, unbranded product. If competing companies are equivalent in technology and product performance, logistics can help a company differentiate itself by adapting to customers in a way that keeps costs down and improves service. When products seem to be the same, many companies manage to increase their turnover and expand their market share thanks to logistics services and technological differentiators. Customer service should be seen as a powerful weapon for gaining supremacy over competitors, as well as being seen as a key ingredient in marketing strategy. (Veeken, 1998)

2.6.8.6 ORDER CYCLE TIME

Order lead-time can be defined as the time lapse between the moment a service request, customer order or purchase order is placed and the moment the product is received by the customer. The elements of an individual order cycle are order transmission and processing time, order assembly time, stock availability, production time and delivery time. (Stawicki, 2010)





As-is Model		Dynamic Waving Model
Average 138.35 Minutes per Order	Order Cycle time	 Average 136.67 Minutes per Order or saving of 681 human hours
Average 92.68 Minutes per batch	Batch Cycle time	 Average 90.99 Minutes per batch or saving of 50 human hours
Total Orders = 24323 per day	Throughput (Orders)	Total Orders = 24323 per day
Putwall Utilization: 64% Staging Utilization: 74%	Resource Utilization	 Putwall Utilization: 70% Staging Utilization: 83%
Orders processed in 25.76 Hours	Overall Completion time	 23.65 hours, 8.2% less than As-is or with 66 less associates considering same completion time

Table 2 Optimizing E-Commerce Warehouse Operations – AnyLogic Simulation Software

In relation to order processing, activities such as preparing shipping documentation, updating stock records, coordinating credit release, checking for order errors, communicating with customers and stakeholders within the company, order status and disseminating order information to sales, production and accounting can be identified. (Kingsman, 1993)

Order assembly refers to the time taken to release the shipment for delivery after receiving the order and the availability of the information to the area responsible for shipping or storage, involving removing the order from stock, moving it to despatch, any necessary packaging (packing) or manufacturing adjustments and consolidation with other orders heading in the same direction. Order processing and assembly are concurrent, with the total time differing from the sum of the times required by each of these activities, due to the overlapping of some tasks. (Khan, 2017)

2.6.8.7 ORDER PROCESSING AND INFORMATION SYSTEMS

There is a great demand for information systems that allow managers to have a complete view of the supply chain, so that each functional area can know what is happening in the company, the chain, and the market more quickly. The cost of obtaining accurate and timely information throughout the supply chain has decreased substantially, while the cost of labour and materials has increased. Thus, replacing resources with information can reduce logistics costs and even improve the management of supply chain processing. (Khan, 2017)

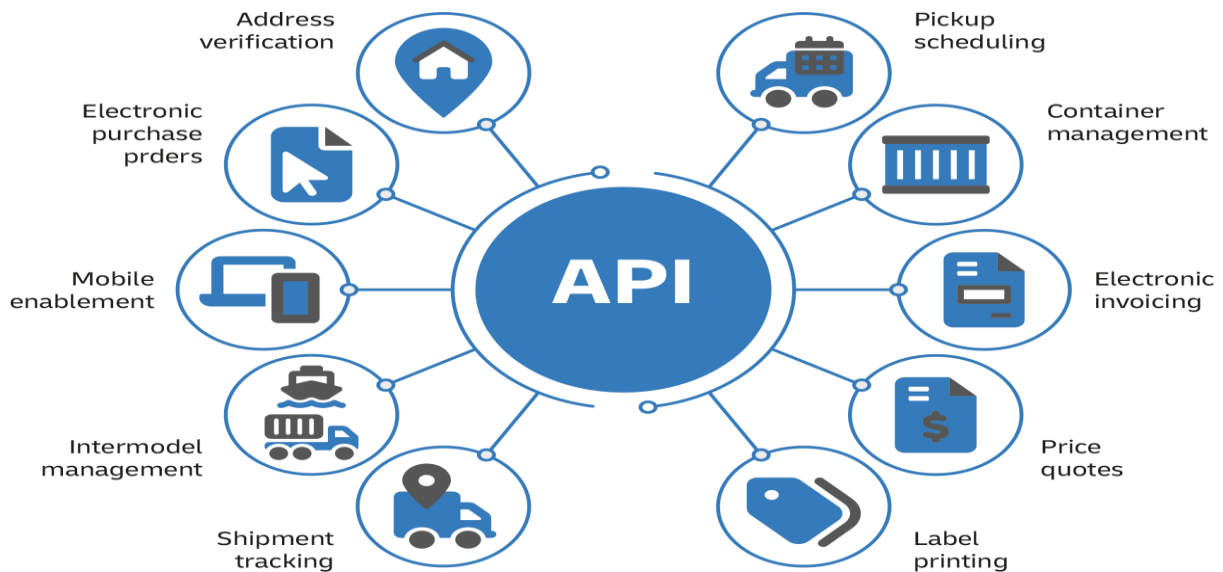


Figure 13 Processes up and down supply chains can benefit from APIs, reducing administrative costs and improving customer service.

It is important to reinforce the involvement of all entities in the various functional areas of a company, especially in the planning phase and management model. Order processing requires information on the entire business cycle to characterise procedures and parameterise any information systems. It consists of the following activities: preparation, transmission, entry, sorting and closing, and communication about the status of the order. (Rehfeldt, 2008)

2.6.8.8 Advantages of sending eCommerce parcels with DHL

- Services dedicated to the individual needs of companies and end customers.
- A wide range of exclusive eCommerce services.
- In-house reverse logistics integrated with a door-to-door collection service.
- Mobile application for parcel tracking; Customised logistics advice.
- Shipping of parcels up to 3000kg; Digital customs documentation management.
- Different options for paying customs fees; Returns with collection at the customer's address. (King, 2009)

Before we analyse the different DHL services for eCommerce, let's talk about their rates. DHL's rates are determined according to the weight, the level of urgency contracted and the destination of each parcel. This is the usual procedure for most carriers. However, it is possible to sign a long-term contract with the carrier and access fixed and much more favourable shipping rates. In addition, if you work with several transport companies, we recommend using a tool like Outvio to centralise the management of all of them. This will save you time and reduce costs by optimising your eCommerce logistics. (Singh, 2006)

2.6.8.9 Returns with DHL for eCommerce.

DHL Express collects returns at the customer's convenience. This means that the end customer just must print out the shipping label and select the meeting point that suits them best. Alternatively, the return can be delivered to any DHL Express office. DHL Express has one of the most comprehensive reverse logistics services available and is equally effective both nationally and internationally. The courier collects the parcel at the collection point chosen by the customer and the company will handle the reverse shipment along with the customs clearance process. (Zaarour, 2020)



Figure 14 The study provides insights into which channels Europeans prefer to shop through and how they would like to pay.

2.6.9 Transport and Distribution

Over the years, transport has become more and more important within companies, not just because it is a significant cost, reaching between 2% and 40% of turnover in industry, depending on the added value of the goods. costs in companies, as they need to fulfil their customers' needs and punctuality, especially in times of rapid response. It's worth saying that business involving transport in Brazil represents 8 per cent of the Gross Domestic Product (GDP). (Griffith, 1974)



2.6.9.1 Transport's role in logistics

Logistics as an object of study has been around for many years. In 1986, (Porter) wrote in his book about the "generic value chain", shown in Figure 1, demonstrating the fundamentals of a modern supply chain, and emphasising that. supply chain and emphasising that contemporary logistics operates in the internal operations, covering downstream operations (towards the customer) and upstream operations (towards the customer) and upstream (towards suppliers), involving various links along the fulfilment process. links along the customer service process. (Walters, 2008)

Porter (1989, p. 33) presents logistics as "a systematic way of examining all the activities that a company carries out and how they interact, in order to analyse the sources of competitive advantage". This supply chain and how it carries out its activities reveals "its history, its strategy, its method of implementing its strategy and the basic economics of its activities". basic economics of the activities themselves". (Walters, 2008)

According to Porter (1986), "the goal of any generic strategy is to create value for buyers" in a profitable way. In this way, the value chain displays the total value consisting of value and margin activities margin. Value activities are the distinct physical and technological activities that company performs. They are the foundations by which the company creates a valuable product for its buyers. Margin is the difference between the total value and the collective cost of carrying out the value activities. (Walters, 2008)

- **Primary (main activities)** - these are activities involved in the physical creation of the product, its sale and transfer to the buyer, as well as after-sales service and support.
- **Support activities** - support the primary activities and provide purchased inputs, technology activities and provide purchased inputs, technology, human resources, and various general company functions. (Bolton, 1994)

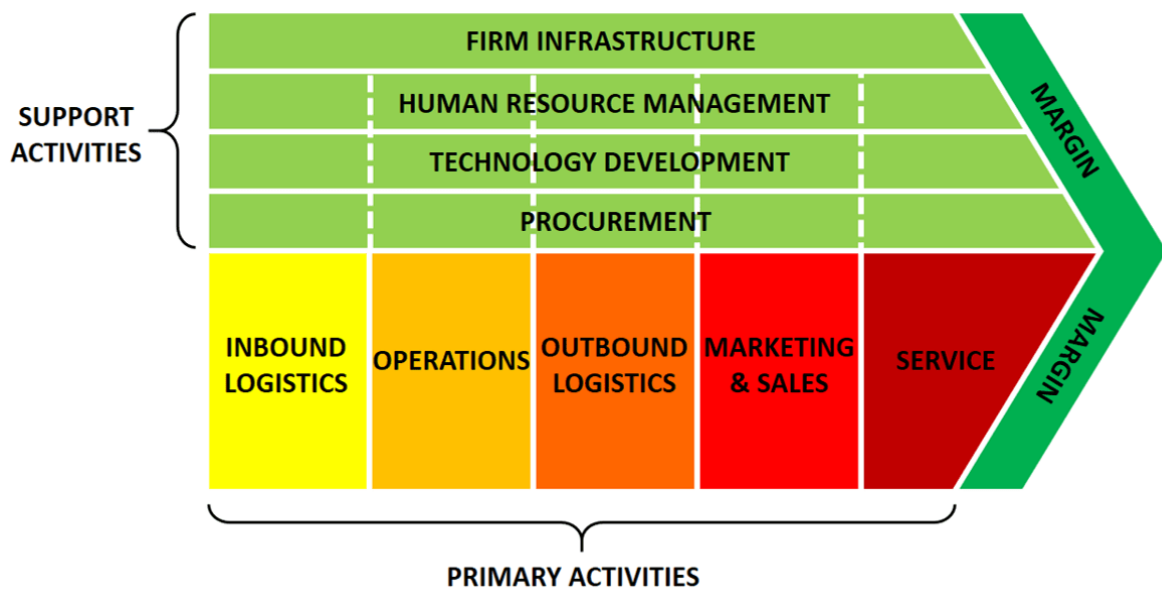


Figure 15 Generic value chain

The fundamental importance of logistics as a macro-process for generating value is thus evident. Within the primary activities of the generic value chain, it encompasses two macro-processes: inbound logistics and outbound logistics and is further expanded within the "operations" macro-process, where we have internal handling logistics. This is different to what is covered in much of the logistics literature, which refers to transport and storage operations, without integrating and its application between supply and distribution, which leads to the understanding that the understanding that transport and warehousing operations are independent of their application throughout the supply chain. (Grunow, 2012)

In this integrated approach, the boundaries between logistics and production are sometimes unclear. According to (Xiong, 2011), any activity that involves transformation and materials is considered production, not logistics. The boundary between production and logistics must be formatted according to these precepts and within the reality of each business.

Logistics has three basic functions:

- **inbound logistics (supply).**
- **internal movement logistics - operations.**
- **outbound logistics (distribution).**

	Inbound	Outbound
Definition	The processes involved in moving materials or goods into a supply chain, and securing inventory that your business later sells.	The processes involved in moving finished inventory out of a supply chain by fulfilling and shipping orders to end customers.
Processes	<ul style="list-style-type: none"> – Materials management – Sourcing – Warehouse receiving – Inventory storage 	<ul style="list-style-type: none"> – Order confirmation & processing – Picking – Packing – Shipping – Last-mile delivery – Customer service involving deliveries
Touchpoints	Transported From: <ul style="list-style-type: none"> – Supplier – Manufacturer – Distributor – Product holder – Delivered To: – Company – Brand – Retailer – Third-party logistics company 	Transported From: <ul style="list-style-type: none"> – Company – Brand – Retailer – Third-party logistics company – Delivered To: – End customers End users

Table 3 Fulfillment & Outbound

2.6.9.2 DHL TRANSPORT SOLUTIONS

Our Transport Solutions help your business maintain high levels of service and reliability and gain full visibility into product movements. At the same time, we reduce your transportation costs. Our team will put together the ideal combination of systems, carriers, and resources to meet your specific needs. (Wieberneit, 2007)



Figure 16 Multimodal Transport Solutions - Air, Ocean, Road and Rail

2.6.9.2 .1 DHL's road freight

The global integration of production and consumer markets comes with a continuous growth in international freight volumes – the pandemic has affected this trend only in the short term. Maintaining supply chains requires coordinated interaction between all modes of transport: air, sea, and land freight. What is the role of road freight in this and what advantages and challenges does it bring? (Alam, 2015)

Road freight is the movement of commodities by motor vehicles via a network of roads from one site to another (a place of loading and a place of unloading). transit of products by logistics firms or forwarders on a commercial basis is known as commercial road freight transit. Thus, internal production-related transportation within an organization that is organized by the firm itself, such as that between sites for internal business operations, is not categorized as commercial freight transit. (Janić, 2014)

Depending on the products being transported, different trucks are utilized for road freight. For instance, in EU member states, road freight laws only apply to cars with an empty weight of more than 3.5 t, which essentially means that lighter vehicles are not covered by national criteria. There are, however, some unique provisions: starting in February 2022, vehicles above 2.5 t must also abide by the rules for road freight transit when they cross EU borders. These are minor legal quibbles, and in theory, vans and semitrailers of every kind are utilized in the transportation of goods by road. There is a wide range, including vacuum trucks for liquids, container semi-trailers, hazardous goods transporters, and refrigerated vehicles. According to the applicable EU rule, trucks are limited to a maximum length of 18.25 m in Europe. (Janić, 2014)



Figure 17 PRIORITY LANE FOR ROAD FREIGHT - DHL Freight Connections

- **Reliable and predictable**

Regular scheduled departures to international locations to serve delivery times resulting in highly reliable door-to-door connections. Predictable delivery times that allow you to schedule your business with complete confidence. (Kanungo, 2012)

- **Transparent and secure**

The trucks equipped with GPS ensure accurate monitoring and full visibility of the location of the shipments. For so-called Longer Heavier Vehicles (LHVs) with lengths of more than 25 m, specific licenses are issued in several nations. Since these LHVs can transport more cargo in a single journey, logistics professionals and government agencies anticipate that they will cut CO2 emissions. (Ortega, 2014)

2.6.9.2 .2 RAIL FREIGHT

Providing cost-effective, efficient, and environmentally responsible rail logistics solutions to transport your goods efficiently and reliably. Logistics in rail transport is carried out quite differently from other types of transport. Some positive and advantageous characteristics are making this mode of transport increasingly important in the logistics process of storing and distributing materials. Unlike road transport, which is currently the most widely used mode of transport, rail transport offers several benefits for companies that need their goods to reach their destination safely and within the timeframe agreed upon with the customer. (Tayyeb, 2018)

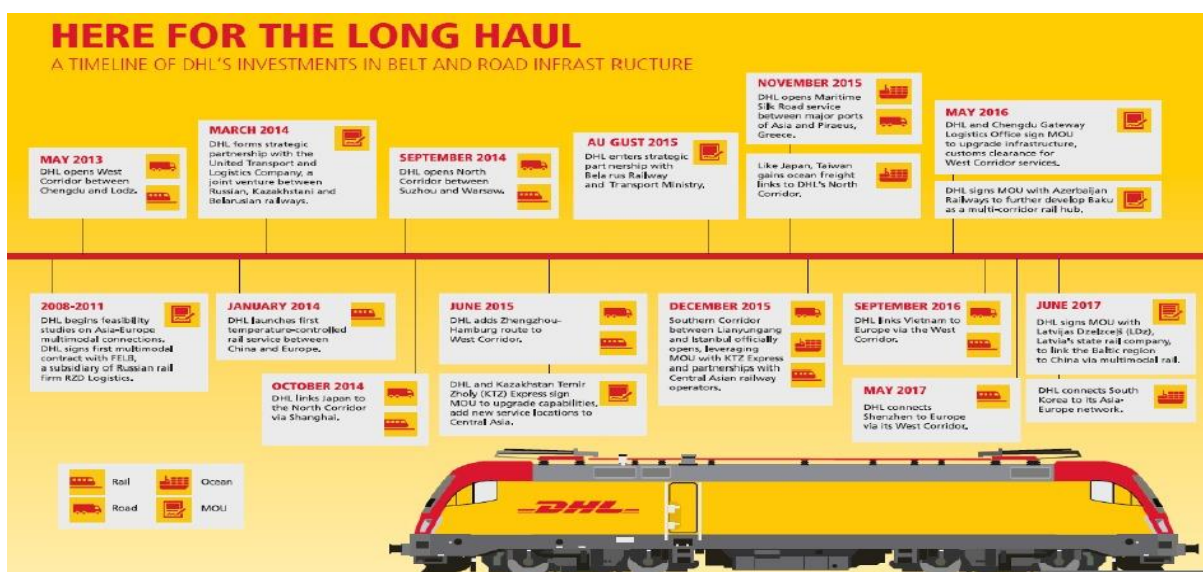


Figure 18 Rail Freight | DHL Global Forwarding

We know that you want to transport your goods in the most reliable, efficient, safe, and environmentally friendly way possible, without any damage. That's why we work closely with you to help you with all your needs: offering rail transport solutions that are faster than sea transport, more economical and efficient than air transport, environmentally friendly, and designed to meet your needs. Our Rail Freight products offer secure, reliable, and environmentally friendly freight transportation via rail, either throughout Europe or connecting Europe and Asia, West- and Eastbound, LCL (Less-than-Container-Load) or FCL (Full-Container-Load). (Arribas, 2015)

➤ **Flexibility**

We're here to transport your goods where they need to get, no matter if they're large or small. We provide a wide range of cost-effective and efficient rail and multimodal logistics solutions with predefined schedules tailored to your specific needs. (Façanha, 2007)

➤ **Reliability**

We take your cargo on time to wherever and whenever necessary. By providing stable deadlines with fixed departure and arrival dates, we make it easy for you to plan your supply chain and honour your commitments. (Façanha, 2007)

➤ **Visibility**

We are here to eliminate the stress of sending to you. Our Tracking and Tracking system provides the confidence and control you need, keeping you informed about the status of your international freight transport by rail through daily cargo location updates. (Façanha, 2007)

➤ **Go Green**

We are here to help you reduce emissions and, at the same time, increase supply chain efficiency. Through strategic network planning and cost-effective and efficient routing, we work to reduce your costs and your environmental footprint. (Façanha, 2007)

We're here to help you with your rail freight transport movements within the planets. Learn how our DHL Freight division can support your need for rail freight across the world. (Façanha, 2007)

2.6.9.2 .3 Ocean Freight

The process of transferring containerized cargo loaded onto ships at sea is known as ocean freight shipping. Most of the trade in the world is transported by water. Ocean freight is the most practical choice for international freight shipping. (Heins, 2016)

Providing you with the most flexible, cost-efficient, and fully coordinated end-to-end ocean freight solutions.



Figure 19 DHL Ocean Freight Market Update – December 2022 | DHL Logistics of Things

We're here to make sure your goods get to its destination in the most cost-effective manner possible without sacrificing dependability or quality. We work directly with you to identify cost-effective, end-to-end ocean cargo shipping solutions that are suited to your unique needs using the broad equipment and consolidation choices of ocean freight. (Heins, 2016)

➤ **Expert Associates**

Our goal is to see you succeed. We identify the ideal ocean freight logistics solutions that assist you in enhancing performance, reducing expenses, and enabling your success thanks to our network of 42,000 logistics specialists throughout the key industrial sectors, markets, and disciplines. (Chung, 2011)

➤ **Global Coverage**

We can assist your company in streamlining international trading. We are present in more than 190 nations and collaborate directly with you to help you import and export from more countries than anybody else. (Chung, 2011)

➤ **Quality and Exposure**

We're here to make shipping less stressful for you. By giving you complete insight into your shipments and providing a variety of equipment types that fit you that have undergone quality control, we provide you control and trust. (Chung, 2011)

➤ **Reliability**

We always deliver your stuff on schedule and to the correct location. For you to fulfil your promises, we work with all significant carriers and alliances, including scheduled space protection from significant container ports. Deliver on your promises: our own in-house network gets your smaller ocean shipments where they need to be. (Chung, 2011)

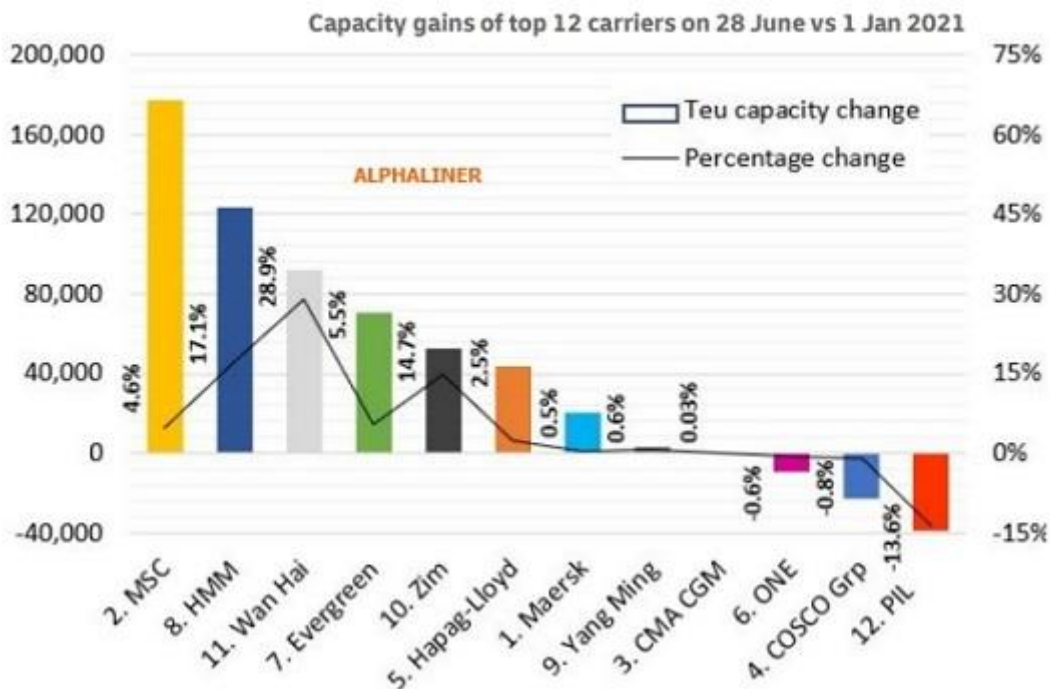


Figure 20 Ocean Freight market update – July | Global Maritime Hub

2.6.9.2 .4 Air freight

We provide the broadest and most flexible range of DHL air freight services to transport your goods quickly and reliably. DHL air freight is here to put your goods on the market quickly and reliably, promising timely deliveries to and from all countries of the world, in full compliance with local regulations. We work closely with you to provide a wide and flexible range of services designed to meet your needs, enable your success, and help you fulfil your promises. (Malighetti, 2019)



Figure 21 DHL Launches New Air Service for Emergency Logistics - Global Trade Magazine

➤ **Reliable Network**

We place your cargo at the intended destination and always on time. By working with carefully selected companies, operating schedules on all major routes worldwide, we help you plan with certainty and keep your promises. (Luzhanska, 2021)

➤ **Specialized partners**

We are in more than 850 offices worldwide to provide you with global knowledge and support. We know that your goods are important, so we employ dedicated and airport-based DHL staff to ensure safe and reliable handling of your air cargo. (Luzhanska, 2021)

➤ **Customs without clamps**

We help to discharge your goods and reduce the stress of global trade. Our global network of local customs experts facilitates the smooth and compliant movement of your goods, regardless of the market. (Luzhanska, 2021)

➤ **Go Green Solutions**

We help reduce emissions and increase the efficiency of your logistics operations. Through strategic network planning, we optimize routes, improve market entry speed, and reduce your carbon footprint. (Luzhanska, 2021)

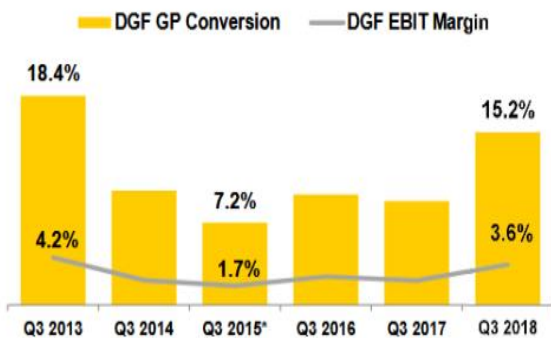
DHL's fastest air freight services for emergency situations: We guarantee delivery of your essential national and international air freight shipments, offering immediate collection and door-to-door delivery. (Sinitsyna, 2016)

DGFF: Q3 PERFORMANCE REFLECTS SELECTIVE STANCE



Q3 2018 yoy	Volume	Gross Profit	GP/export t GP/TEU ¹⁾
Air freight	-5.2%	+9.4%	+15.4%
Ocean freight	-2.7%	+1.8%	+4.6%

- » Volume development still below market
- » Focus on GP supported by disciplined capacity management
- » Benefits visible in marked improvement in GP/t and GP/TEU



- » Focus on file profitability through new Steering Logic concept
- » Indirect cost reductions ongoing
- » Usage of IT Renewal solutions (Quoteshop, EDM²⁾ and ESP³⁾ etc.) ramping up, leading to improved shipment visibility and customer experience (speed of response, service quality)

* Adjusted for NFE write-off

1) Twenty Foot Equivalent Unit 2) EDM = Electronic Document Management, 3) ESP = Electronic Supplier Portal

Figure 22 DHL sees airfreight volumes decline despite revenue improvement

2.6.10 SWOT analysis of DHL

2.6.10.1 Strengths

- **Global Reach:** DHL is one of the world's largest logistics networks, operating in more than 220 countries and territories. DHL's worldwide reach enables it to effectively manage international deliveries, cater to a diverse clientele, and maintain a competitive edge in the market. (Malighetti, 2019)
- **Numerous Divisions:** DHL Express, DHL Supply Chain, DHL Global Forwarding, DHL Freight, and DHL eCommerce are just a few of the company's many service offerings. It can meet a wide range of client demands with its extensive range of services, including supply chain management, international express delivery, freight transportation, and e-commerce solutions. (Malighetti, 2019)
- **Robust Brand:** DHL has established a robust brand and standing. Its reputation for dependability, promptness, and high-quality service aids in drawing in new business and keeping existing clients. **Technological Advancements and Innovation:** DHL is renowned for its dedication to both innovation and the application of technology to enhance its offerings. This involves improvements in data analytics, robotics, automation, and artificial intelligence to improve the precision and efficiency of their logistical processes. (Ozbekler, 2020)
- **Sustainable Practices:** By 2050, DHL wants to have zero emissions in its logistics. Their dedication to sustainability is a great asset in a world where environmental awareness is growing. Customers and stakeholders that place a high value on sustainability will find resonance in this approach, which helps them reduce their environmental impact. **Experience and Expertise:** DHL has been in the shipping and logistics business for more than 50 years. Its extensive experience and knowledge provide it a competitive advantage in handling a range of logistical difficulties and developments in the business. (Setiawan, 2019)
- **Robust Parent Firm:** DHL benefits from increased financial stability and resources as a member of the Deutsche Post DHL Group, which supports its international operations and strategic goals. (Meier, 2013)

2.6.10.2 Weaknesses

- **Deficiencies Dependency on gasoline costs:** Like any logistics or transportation firm, DHL is highly dependent on gasoline costs. The fluctuation of these prices can have a big effect on operating expenses and, in turn, profitability. (Jia, 2019)
- **Large and Complex Supply Chain:** DHL has a large and complex supply chain due to its widespread worldwide presence. This is a plus as well, but it also means that there are management issues, regional regulatory compliance issues, and disruption risks. (Chirimbu, 2016)
- **Competition:** There is fierce competition in the markets for quick delivery and logistics. Companies like FedEx, UPS, and other regional competitors compete fiercely with DHL. DHL is under continual pressure to innovate and maintain low prices because of this competition. (Singh, 2006)
- **Service Quality:** DHL has a solid reputation overall, but because of the extent of its operations, there may be differences in service quality in various areas. The brand's reputation may be impacted by complaints over missing or delayed packages. (Singh, 2006)

- **Dependence on International Commerce:** Both international commerce and the state of the global economy have a direct impact on DHL's operations. Their business may suffer from trade restrictions, political unrest, or economic downturns. (Zakaria, 2016)
- **Environmental Impact:** DHL's business practices continue to contribute to environmental pollution, primarily using air, sea, and land transportation, even with its promise to achieve zero-emission logistics by 2050. This may be a liability in a market where consumers are becoming more ecologically sensitive. (Storch, 2020)

2.6.10.3 Opportunities.

- **E-commerce Boom:** As e-commerce has grown, so too has the need for dependable and effective delivery and logistical services. Being a well-known company in this market, DHL is well-positioned to benefit from this trend. (Wibbeling, 2013)
- **Emerging Markets:** Since internet shopping and the need for logistics services are expanding quickly in emerging markets like Asia, Africa, and Latin America, there are plenty of potential to grow in these areas. (Monika, 2017)
- **Technological Innovation:** Investigating and utilizing novel technologies like automation, artificial intelligence (AI), blockchain, the Internet of Things (IoT), and robots has several prospects. These technologies can save expenses, increase customer satisfaction, and increase operational efficiency. (Bhattacharyya, 2021)
- **Sustainable Solutions:** Creating greener and more sustainable logistics solutions might provide DHL with a competitive advantage as environmental concerns throughout the world grow. Their pledge to do logistics with zero emissions by 2050 is a positive move. (Larina, 2021)
- **Expanded Services:** Value-added services are another way that DHL may extend the range of services it provides. These can include improved tracking services, customized e-commerce solutions, or specialist handling. (Edstein, 1992)
- **Strategic Alliances:** Working together or forming alliances with other organizations (such as e-commerce sites, IT firms, or regional logistics suppliers in new areas) can result in advantageous agreements and increase DHL's capabilities. (Işoraité, 2009)
- **Innovations in Last-Mile Delivery:** Using electric cars, drones, or localized delivery hubs to improve last-mile delivery services might save costs and improve customer satisfaction. (Morganti, 2014)

2.6.10.4 Threats

- **Risks from Competition:** There are several well-known competitors in the logistics and delivery sector, including FedEx, UPS, and several smaller local businesses. The industry is quite competitive. DHL may face pressure from this competition in terms of pricing, services provided, and market share. (Smith, 2020)
- **Global Economic Conditions:** The state of the world economy has a significant impact on DHL's operations. Their firm may be severely impacted by trade policy changes, volume swings in commerce, or economic downturns. (Patibandla, 2020)
- **Regulation Shifts:** DHL is a worldwide logistics company; thus, it must abide by several national laws and regulations. Their activities may be impacted by modifications to current rules or the introduction of new ones (such as those pertaining to data privacy or environmental effect). (Monteiro, 2012)

- **Operational disruptions:** Because DHL depends on intricate international supply networks, disruptions like natural disasters, pandemics, or strikes can have a significant impact on the company's operations. (Munoz, 2015)
- **Cybersecurity Risks:** As DHL's operations become more digitally integrated, it is more vulnerable to cybersecurity threats. Its reputation might be harmed, and substantial financial losses could result from a severe data breach or cyberattack. (Škiljić, 2020)
- **Increasing gasoline costs:** DHL is susceptible to changes in gasoline costs because it is a logistics and transportation firm. An increase in gasoline prices can have a major impact on profitability by raising operational expenses. (Milewska, 2022)
- **Environmental Concerns:** The effects of the logistics and shipping sector on the environment are coming under closer examination. DHL has committed to have zero-emission logistics by 2050, but its existing operations still have a large carbon footprint, which might present legal issues as well as reputational difficulties. (Wells, 2019)

2.6.10.5 Eco-Friendly Solutions

Your international logistics operations may operate more efficiently and with fewer emissions if you work with DHL Global Forwarding.

- **Pioneers in green logistics**

Our relations with environmental authorities and subscription to all major entities in the sector (regional and global) enable us to be an important driver in setting industry standards. (Storch, 2020)

- **Comprehensive portfolio of services**

Our wide range of sustainable solutions can meet all your requirements, regardless of the mode of transport used. DHL Go Green logistics experts can also develop custom recommendations to improve the carbon footprint of your supply chain. (Mangina, 2019)

- **Documented Liability**

We offer complete transparency about the emissions generated by transporting your shipments with DHL, verified externally and in accordance with the key carbon reporting guidelines. (Herold, 2017)

- **Focus on KPIs**

We are committed to helping reduce the carbon footprint of your supply chains. Carbon efficiency KPIs are monitored to find optimization potential, both in cost and emissions. (Bai, 2016)

2.6.11 DHL biggest contribution in fight against the COVID-19 Pandemic.

2.6.11. 1 Statement from Katja Busch, Chief Commercial Officer DHL

DHL expressed that, in reflecting on the nine-month period of a state of emergency, they are proud to have contributed by efficiently overseeing and implementing various supply chain arrangements, ensuring uninterrupted cold chain operations, and maintaining security without any incidents. Our team is now engaged in overseeing various supply chain configurations and effectively coordinating direct distributions within specific nations. We successfully deployed novel, specialized, and dependable logistical solutions with expedited efficiency to facilitate the transportation of vaccines that require stringent temperature control, together with supplementary materials and diagnostic tools. Aligned with our objective of "Facilitating interpersonal connections and enhancing quality of life," we will persist in leveraging our robust cold chain infrastructure, resilient worldwide network, and extensive expertise in pharmaceutical logistics. (Katja Busch, 2021)



Figure 23 Delivery of Covid-19 Vaccine: DHL Study Shows How Public and Private Sector Can Partner for Success

2.6.11. 2 Statement from Thomas Ellmann, Vice President of Life Sciences & Healthcare, DHL Customer Solutions & Innovation

DHL Customer Solutions & Innovation, stated out that, “Making a meaningful difference is what drives us, and we are proud of our contribution to the enormous task of delivering COVID-19 vaccines and related critical medical supplies to the right place at the right time, worldwide. The current COVID-19 situation clearly demonstrates how collaboration across governments and NGOs, pharmaceutical companies, medical equipment manufacturers, and logistics companies is the only way to beat pandemics, both now and in the future.” (Ellmann, 2021)

2.6.11.3 Statement from Claudia Roa, President of Life Sciences & Healthcare at DHL Customer Solutions & Innovation

One of our strengths lies in the pre-existing establishment of a highly developed network that possesses essential healthcare competence. According to Claudia Roa, President of Life Sciences & Healthcare at DHL Customer Solutions & Innovation, this enabled us to respond promptly. The vaccinations are transported using specialized thermal containers that are equipped with advanced GPS temperature trackers. This ensures that the vaccines are consistently maintained at appropriate temperatures and allows for complete visibility and accountability during the whole transportation process. (Roa, 2021)

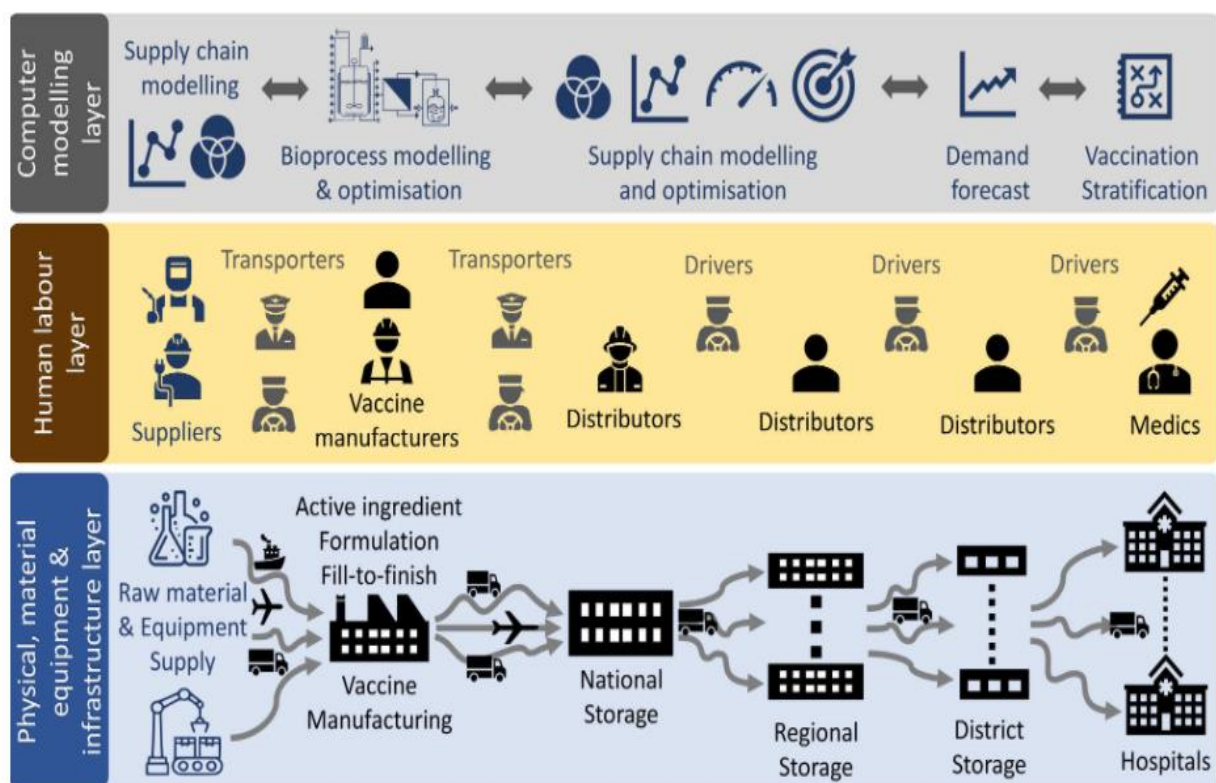


Figure 24 covid-19 | The blog of Logistics at MGEPS at UPV

3. Methodology

The methodology employed in the development of this dissertation involves conducting research and analysis of the primary logistical activities discussed in the literature review. Additionally, an examination of the existing models utilized by a domestic transportation service provider is conducted as a case study. The research methodology incorporates the process of verification, which is conducted in accordance with theoretical principles, aiming to get funding for the implementation of a program aimed at reducing costs.

The company's analysed processes are derived from monitoring activities within its operational sector. This sector encompasses common routines such as distribution, order management, packaging, storage, and primarily transportation. By subjecting these processes to theoretical frameworks, their coherence and consistency can be verified.

The activities involve the verification of processes, which includes the examination and analysis of cost and fee documents such as NFs, collection orders, loading records, loading knowledge, and monthly reports on losses and efficiency. The purpose of this verification is to ensure that the processes defined by the company are being followed and implemented correctly in accordance with the established internal procedures.

The presence in the areas of activity and the subsequent monitoring of operations serve to exemplify the research by enhancing the ability to see and comprehend the many processes involved.

The research on logistics expenses percentage is based on the quality records maintained by the firm inside its accounting department.

During the subsequent phase, the company utilized software developed internally to assess performance indicators. However, only partial and percentage cost results were presented, without disclosing the specific calculation processes, as they involve confidential data owned by the company.

The research work employed the Case Study method to investigate the operations and activities of DHL, one of the largest logistics companies globally. This method was chosen due to its relevance in addressing a contemporary problem within a specific situational context.

4. Data collection

This section presents the findings of published publications, subjects under study, and secondary sources of information. The empirical findings go from an exterior standpoint to an inward perspective. To start, a short overview of DHL is provided. Furthermore, the inclusion of third-party publications that include reliable and substantiated evidence is of utmost importance.

A crucial foundation for doing good research is in the acquisition of information. The information referred to as facts might be referred to as data, which enables the researcher to get an understanding of the subject being examined. To ensure the validity of the research, the collection of both primary and secondary data was undertaken. The researchers acquired secondary data from scholarly journals, pertinent literature, and online sources.

The utilization of external analysis and internal analysis is employed first. The integration of external elements (customer, competition, and environment) and internal aspects (quality of product and brand association) into the SWOT matrix is informed by actual data regarding DHL. Furthermore, a SWOT analysis is conducted to identify the strengths, opportunities, threats, and weaknesses of DHL. In addition, the competitive advantages of a corporation are commonly attributed to its strengths and opportunities, whereas its competitive disadvantages are typically associated with its weaknesses and threats. In conclusion, the main points are summarized.

5. Results

DHL customer analysis: This part reviews DHL logistics strategies and presents the thesis's substantial and key findings.

5.1 DHL customer analysis

DHL customers may be found anywhere, and anybody can become a DHL client provided there is anything to send. It also incorporates the use of DHL. Customers may contact DHL for assistance from anywhere in the globe thanks to a global network that includes more than 220 nations and territories and 285,000 workers. DHL divides its customers into several groups, which allows managers to learn more about marketing and service innovation. Customer segmentation also allows you to give consumers unique services depending on their demands.



Figure 25 Digital Customer Platform myDHLi Becomes Smarter and Greener - DHL – Global

DHL endeavors to consistently maintain a position of excellence, using a proactive approach aimed at preemptively resolving issues. DHL's prominent brand awareness, robust safety insurance measures, and competitive pricing contribute significantly to its ascendancy in the business landscape, enabling the company to sustain its dominant market position. Hence, taking into account the dominant market position of the business, it is postulated that this is the key factor influencing individuals' preference for DHL over competing brands.

Based on the insights provided by Sara Arrhenius and the official website of DHL, it can be inferred that DHL demonstrates efficacy in its approach to consumer engagement by attentively considering the relative significance of various motives. On addition, DHL takes pride on its

expedited delivery timeframe and exemplary safety performance, among other notable aspects. The aforementioned attributes attract a growing population of consumers who choose to become loyal customers of DHL. In addition, it is worth noting that the level of customer satisfaction with DHL was considerably high in the year 2011.

In 2011, DHL Express was honored with the prestigious customer service award for delivering exceptional B2B customer service in Sweden. This observation illustrates the consumer's confidence in the reliability and trustworthiness of DHL. Credibility is considered to be complete, as per the available information. Consequently, clients may prioritize the quality of the service as the most crucial factor.

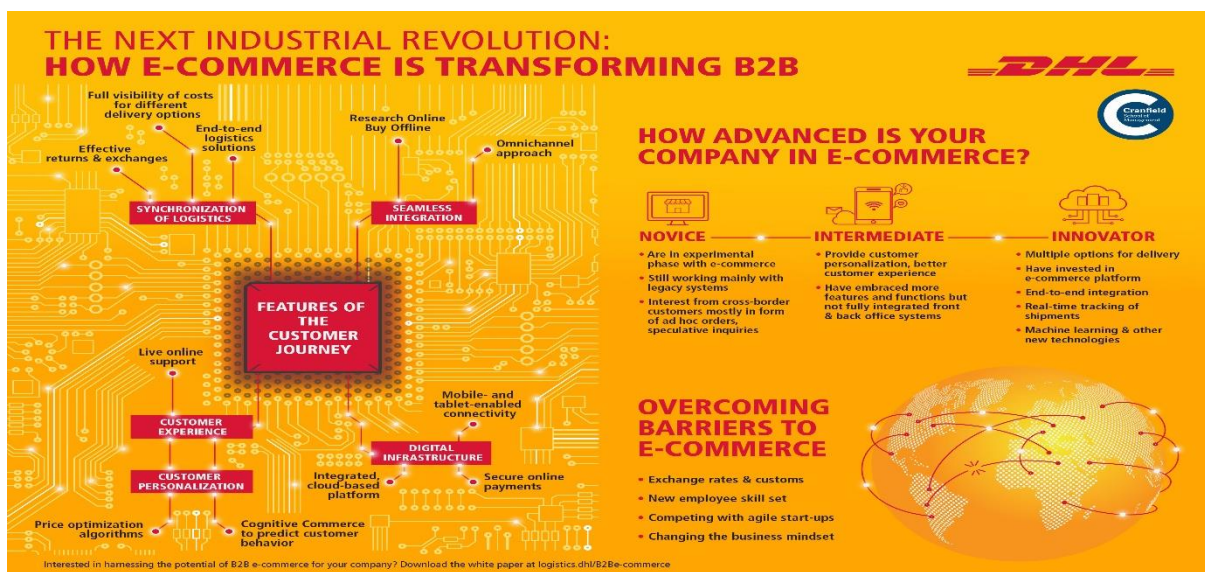


Figure 26 B2B e-commerce | DHL | Global

Typically, numerous enterprises and institutions prioritize the acquisition of fresh clientele. In contrast, there appears to be a lack of concern for the retention of customers. In contrast, DHL recognizes the significance of cultivating a loyal customer base. The previous clientele maintains a strong correlation with the company's revenue. Consequently, retaining existing customers can contribute to the establishment of enduring business relationships and reduce costs associated with acquiring new consumers. The importance of customer retention in a company's business strategy has been highlighted by Gao (2012).

Regrettably, the availability of information regarding any unmet demands by DHL remains uncertain, as the authors were unable to get such data due to the site manager's refusal to grant an interview. Nevertheless, further investigation may be conducted over unmet expectations by DHL. Figure 9 depicts the outcome of the amalgamation of the theories proposed by Gerhardt in 2001 and 2002, which aims to ascertain customer motives.

The achievement of a win-win scenario is becoming increasingly seen. DHL has achieved a prominent position within the sector through the establishment of enduring partnerships with clients and other enterprises. Additionally, this factor contributes to customer satisfaction, resulting in a consistent positive experience with DHL on a daily basis. The current scenario is inconceivable in the absence of faith.

5.2 DHL competitor analysis

As stated by Gerhardt (2002), the comprehension of competitors is a crucial strategic approach for acquiring a larger portion of the market. United Parcel Service (UPS) exhibits a distinct advantage in relation to its overall workforce size. UPS possesses a substantial pool of human resources, enabling it to undertake a greater number of tasks compared to the remaining three entities. Conversely, a substantial workforce can promptly escalate the expenses.

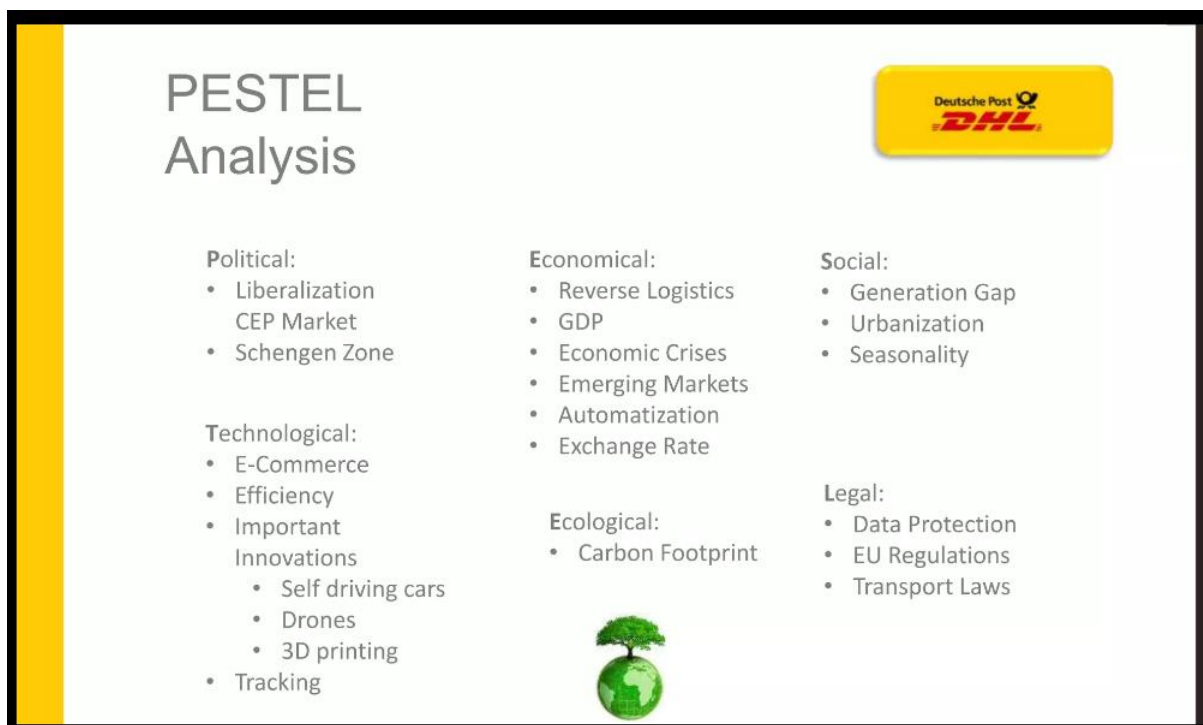


Figure 27 External business environment of DHL

Due to its earlier establishment, UPS is thought to possess a more extensive tenure of operational experience compared to the remaining two companies. When considering insurance verification, it is noteworthy that while UPS and FedEx possess comprehensive liability insurance, DHL maintains its position as the dominant player in the industry. DHL is able to achieve customer satisfaction, and maybe foster customer loyalty, with the implementation of enhanced security equipment and state-of-the-art technology.

However, DHL should strive to learn from its competitors in order to enhance its operations and potentially attract a larger customer base. This presents a chance for DHL to gain insights that could lead to improvements and potentially expand its consumer reach. One conspicuous illustration is the presence of liability insurance; otherwise, DHL would likely possess a notable deficiency.

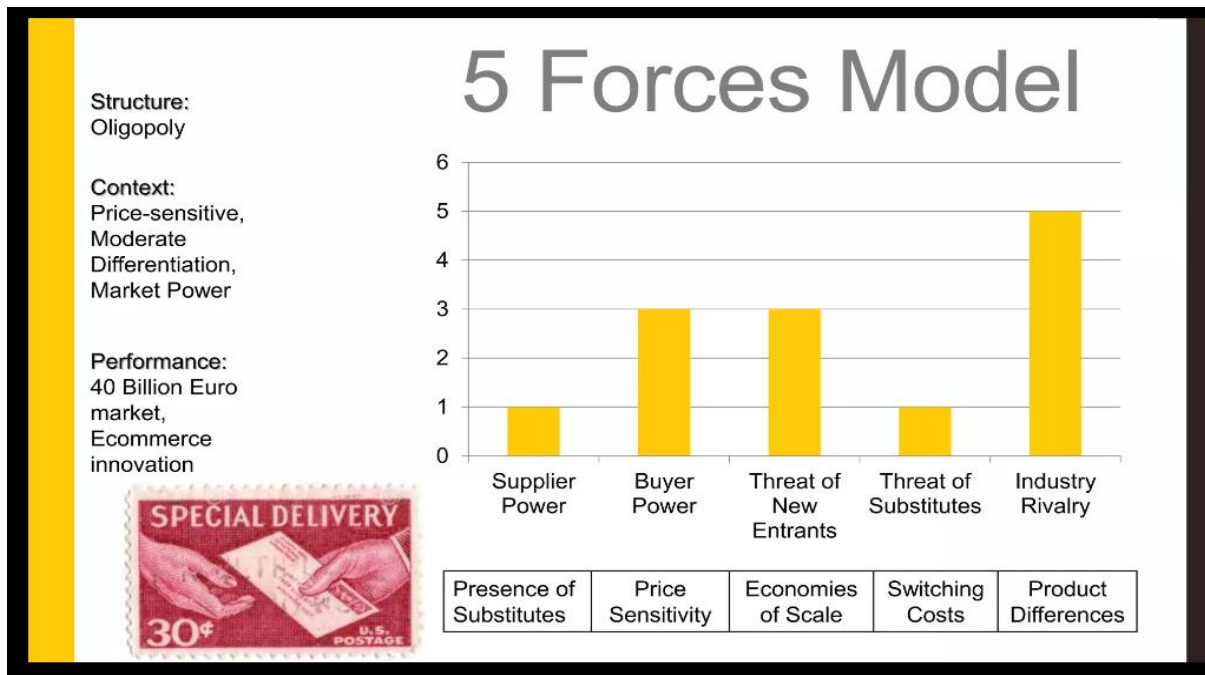


Figure 28 Porter's five forces for DHL by Maureen Hofman

The primary emphasis of UPS Critical Freight is to cater to the time-sensitive freight needs. Critical freight has several advantages. Firstly, it enables faster transportation, which is particularly beneficial for clients with time-critical freight shipping requirements. Secondly, it provides real-time cargo tracking capabilities, allowing for continuous monitoring of the shipment from pickup to delivery.

Develop customized strategies to meet the specific requirements of specialized transportation. TNT is widely relied upon by numerous enterprises because to its provision of specialized enterprise services, including Express Shipper and Express Manager. FedEx has the potential to develop a distinctive packaging solution tailored to accommodate a customer's advanced technological equipment, thereby guaranteeing the security and protection of the items throughout transportation. This solution has the potential to enhance customer satisfaction and streamline the distribution process. Moreover, Yunfeng Gao thinks that DHL ought to prioritize its marketing efforts in the United States and South America. UPS and FedEx demonstrate superior performance compared to DHL.







Courier	Insurance	Speed	Price	Availability
	Up to 500 €	⚡⚡⚡	€€	220+ countries & territories
	Up to 100 €	⚡⚡⚡	€€€	220+ countries & territories
	Up to 510 €	⚡⚡	€€	220+ countries & territories
	Up to 750 €	⚡	€	Over 40 countries
	3,4 €/kg	⚡	€	37 European countries
	Up to 500 €	⚡	€	Over 20 countries

Table 4Best Courier Alternatives to DHL

The perception of strategic prospects can be significantly influenced by notable trends or events, such as the apprehension arising from the entry of a new competitor. It is imperative that DHL remains cognizant of the prevailing circumstances. Moreover, the emergence of a novel technology has the ability to pose a threat to an established firm while simultaneously presenting an opportunity for a future competitor, so indicating the possibility of new commercial sectors. Therefore, it is imperative for DHL to engage in innovation within its service offerings. Alternatively, the eventual loss of leadership within the industry would occur. Each of the four firms places a high priority on environmental effect, as seen by their respective sustainability policies.

The organization diligently endeavors to mitigate the adverse environmental impacts while simultaneously making significant contributions to the industry's overall environmental sustainability. The subsidiaries of DHL, UPS, and FedEx contribute to enhanced operational efficiency inside the respective organizations. In certain respects, it also caters to the diverse needs and preferences of customers.

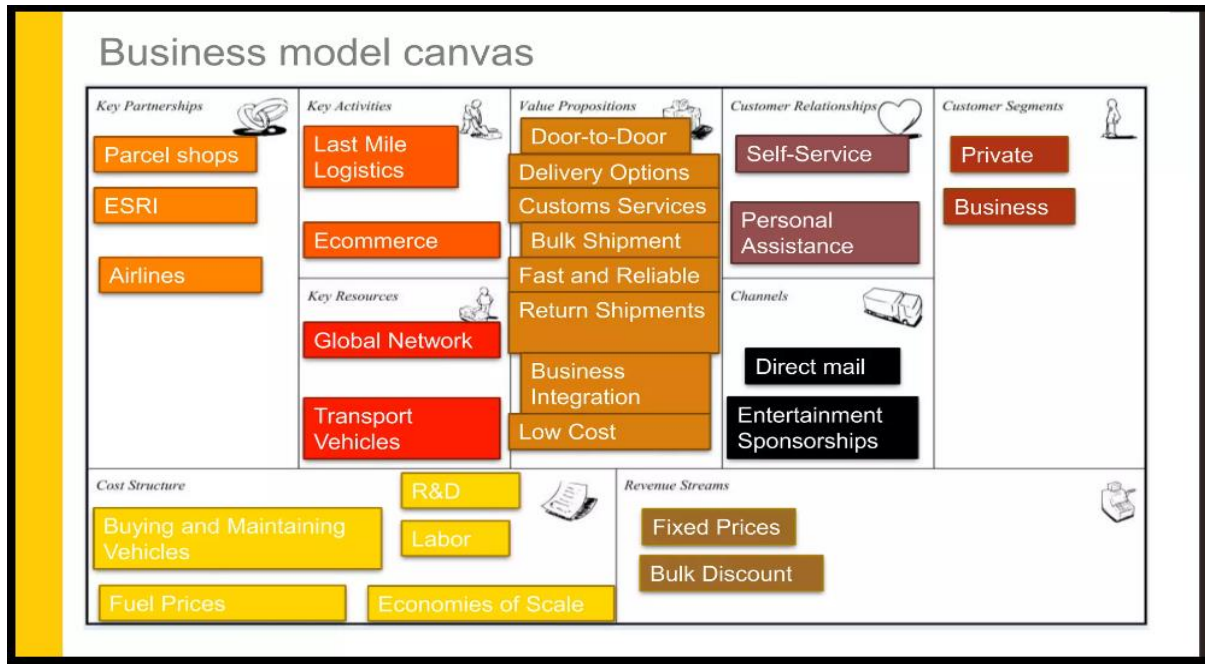


Figure 29 DHL Business Modal canvas

Moreover, according to Lieb (2005), it has been observed that there has been an increase in collaboration among 3PL partnerships in recent times. According to the author's viewpoint, the necessity of collaboration among competitors arises in certain instances in order to achieve a shared objective. For instance, multiple third-party logistics (3PL) enterprises may have the potential to engage in collaborative efforts due to factors such as extensive procurement or comparable circumstances. Through their collaborative efforts, these organizations have the opportunity to exchange and leverage their respective expertise, accumulated experience, and individual abilities. Moreover, the absence of a formidable adversary is detrimental to the success of any business.

5.3 DHL environment analysis

According to Deutsche Post DHL, the GOGREEN program is an environmentally friendly initiative implemented by DHL to effectively and considerably tackle various environmental difficulties encountered during service operations. It is indisputable that every corporation or organization exerts an influence on the environment, which can be either positive or negative, particularly in relation to carbon dioxide emissions. However, GOGREEN possesses the capacity to effectively manage and mitigate adverse effects to some extent. As mentioned earlier, DHL possesses a dedicated in-house Carbon Management team responsible for managing carbon credits. This team undergoes regular audits conducted by an independent third-party validator. DHL is committed to wholeheartedly endorsing and actively pursuing the attainment of GOGREEN objectives. In this regard, comprehensive environmental impact data, with a particular focus on DHL's carbon footprint, is furnished, encompassing both DHL's internal operations and outsourced transportation services.

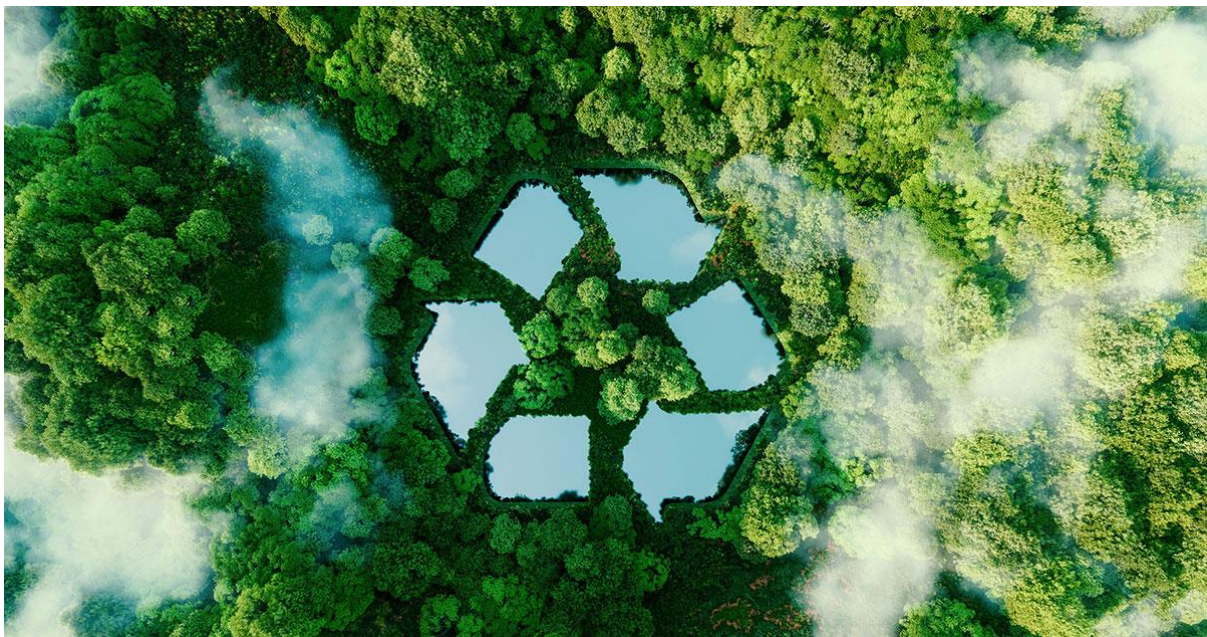


Figure 30 Green shipping solutions

DHL employs environmental management systems (EMS) to address the enhancement of operational efficiency and the mitigation of our environmental impact. DHL is currently engaged in an investigation of electric and other alternative vehicles as potential next-generation delivery tools, with the aim of mitigating its environmental impact. This endeavor holds the potential to supplant conventional energy sources in the context of delivery operations. The mitigation of environmental damage can be achieved through the proper implementation of novel technologies and the utilization of untapped resources. The DHL

Supply Chain GOGREEN 2011 report also demonstrates that establishing partnerships with prominent vehicle manufacturers has led to substantial enhancements, particularly in terms of fuel efficiency. Consequently, the organization would be inclined to offer a sustainable strategy, commonly referred to as GOGREEN, to its clientele. This approach not only fulfills customer needs but also confers substantial environmental benefits.



Figure 31 DHL GoGreen Solution

The training provided by DHL enhances employees' understanding of environmental issues, hence enabling them to effectively implement environmental objectives. Education plays a crucial role not just in the corporate sector but also in the broader community, since it equips individuals with the necessary knowledge and skills to navigate life successfully.

DHL has demonstrated commendable performance in addressing environmental concerns, so indicating a positive trend in the enhancement of worker expertise. The DHL method offers employees the opportunity to acquire knowledge on the significance of the environment and strategies for safeguarding it against contamination.

The assessment of DHL's capacity to effectively address the sustainability issue is of utmost importance. DHL consistently endeavors to offer optimal delivery solutions for clients while also considering environmental concerns. However, achieving a harmonious equilibrium between these two objectives can present certain challenges. In contrast, GOGREEN has the capability to accomplish the task. Business clients are provided with the choice to send either all or a portion of their international express shipments as GOGREEN, which is offered at a

competitive price. Under the GOGREEN optional service, external climate protection programs would effectively reduce all carbon dioxide emissions originating from transportation. As a result, DHL is capable of achieving the objective of integrating environmental initiatives with customer demands.



Figure 32 DHL Express Go Green Project

Lieb (2005) emphasizes the importance of carefully choosing an appropriate environmental objective, as well as effectively aligning sustainability efforts with consumer demands. The absence of a sufficient objective renders the achievement of success unattainable. Nevertheless, DHL, a trailblazer in the industry and the initial logistics company to embrace a carbon-efficient objective, has established an aim to enhance efficiency by 10% before the year 2012. It is projected that the efficiency of every industry will reach a level of 30% by the year 2020.

The business section of DHL encompasses its subcontractors. Through the implementation of the GOGREEN program, it can be inferred that DHL demonstrates a consistent commitment to the preservation of the environment and the promotion of sustainable practices. In essence, these issues can be subject to prioritization, with environmental protection being accorded primary importance. DHL, as an exemplar, consistently endeavors to improve carbon dioxide efficiency within its internal networks and operational processes. The implementation of the GOGREEN initiative has already shown benefits for both DHL and its customers. DHL, as a prominent third-party logistics (3PL) company, consistently endeavors to mitigate its ecological footprint. In contrast to numerous Chinese domestic enterprises, which prioritize economic gains at the expense of environmental concerns (Koh, 2005).

DHL offers opportunities for professional growth and development to both current and potential employees. This initiative provides employees with knowledge and information pertaining to contemporary environmental practices, hence fostering an increased awareness and consciousness regarding environmental matters. DHL has the potential to enhance its focus on sustainability while simultaneously reducing expenses through this approach. Consequently, DHL actively fosters the promotion of environmental consciousness and philosophy within its operations. This suggests that DHL possesses the capacity to address several environmental or ecological concerns pertaining to the corporate domain.



Figure 33 Fast Forward Challenge Sustainable Solutions Edition

5.4 DHL quality of service

The primary offering of DHL, a globally recognized third-party logistics (3PL) company, is its delivery service. Consequently, DHL and its clients attach significant importance to a range of transportation tools. Delivery service is commonly linked with concerns pertaining to safety, environmental impact, longevity, and reliability. Customers express concerns and frequently inquire about these issues.

As stated on the official website of DHL, the company has a range of software and hardware tools at its disposal to facilitate the process of identification. DHL's advanced technological capabilities may serve as a valuable resource for the company. In addition, a global network of over 7,000 professionals is available to offer professional assistance to its clientele.

In contrast to numerous other freight insurers, DHL employs a valuation-based metric rather than relying on weight or quantity of packages. DHL can ensure the security of items and messages, regardless of the mode of transportation employed, including air, sea, or land. DHL strives to fulfil the needs and requirements of every customer to the best of its ability. Consequently, it is imperative for the firm to give precedence to safety and durability, which are two key factors highly valued by clients. Annually, the firm allocates a substantial amount of funds, amounting to billions of Euros, towards safeguarding the security of its products and mail. This is achieved using state-of-the-art security equipment and cutting-edge technology, thereby ensuring a flawlessly efficient delivery process. Additionally, a convenient method of reaching out to DHL is through their official website, where dedicated personnel are readily available to help customers. As per the findings of Klefsjö (2010), this facilitates the processes of communication, reaction, and access.

5 Dimensions of Service Quality

Reliability	• Cold Chain Excellence
Assurance	• Time frame, DHL Brand
Tangibles	• Air fleet, Employee attire, Packages, Ads
Empathy	• Complaint directly to manager of DHL
Responsiveness	• Pickup scheduling

Table 5 Marketing strategy of DHL Express Ltd

DHL can deliver exceptional service to its customers. Nevertheless, the primary concern revolves around the aspect of financial implications. The exorbitant cost is likely to lead to a detriment for consumers. Moreover, it is recommended that DHL augment its marketing efforts in both the United States and South America through the enhancement of human competency, attitude, and knowledge.

Nevertheless, the accessibility of information regarding DHL customer complaints remains limited, rendering it an enigmatic domain that could significantly influence the ramifications of strategic decision-making. Consequently, a customer complaint could be perceived as a manifestation of strategic ambiguity. The acquisition of information plays a crucial role in the management of customer complaints. According to Aaker (2001), there exist scenarios in which strategy development can take place. For instance, DHL may establish a dedicated department to manage customer concerns. Consequently, the firm may design a contingency strategy to mitigate potential disruptions and minimize consumer discontent.

In relation to the concept of service excellence. It is recommended that DHL should persist in enhancing its assessment technique, regularly conducting customer satisfaction assessments, and being updated on market dynamics.

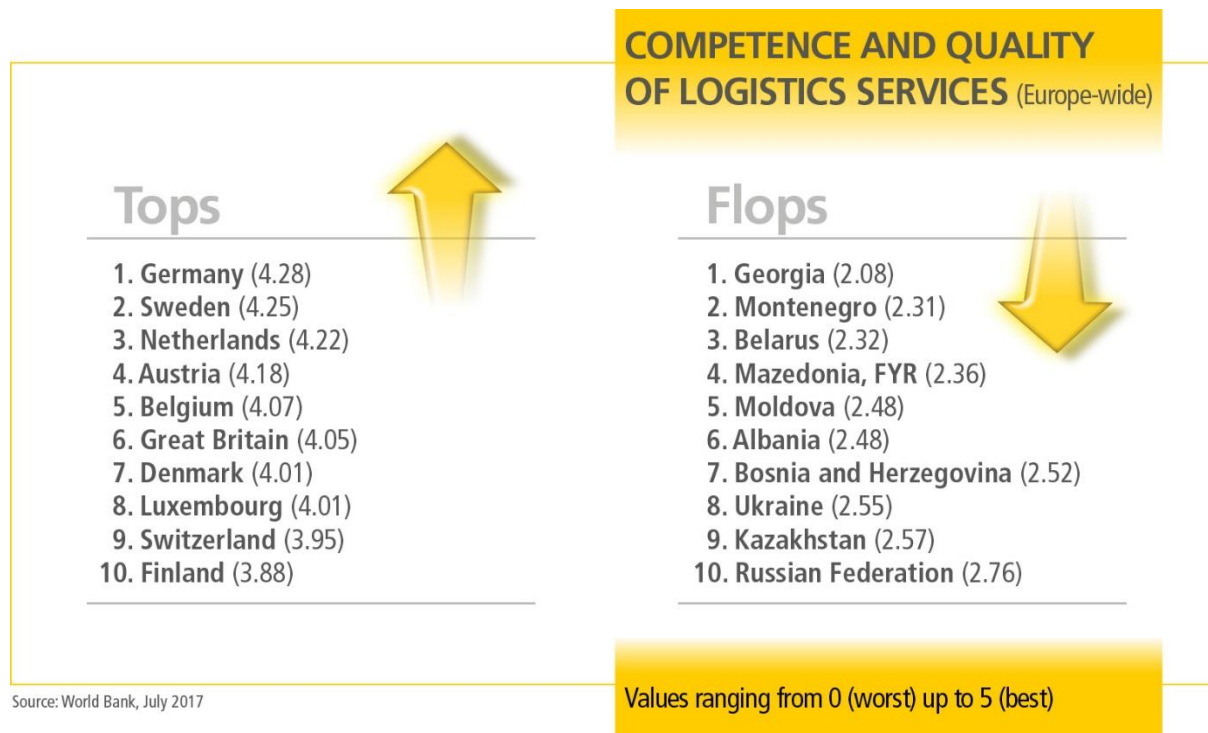


Figure 34 Knowledge means quality - DHL Freight Connections

5. 5 DHL brand association

DHL provides reliable and innovative services and solutions to its clients. Corporate identity can be defined as a collection of visual, physical, or behavioural indicators that symbolize a company and enable consumers to readily identify and associate it with its unique characteristics. The statement implies that DHL's logo possesses a high degree of distinctiveness, enabling customers to promptly identify the company in any context. This uniqueness captures individuals' attention upon initial encounter and creates a memorable impact. Considering a dynamic marketing landscape, predicting future developments becomes a challenging task. DHL currently faces the imperative of sustaining its competitive advantage and expanding its customer base.



Figure 35 Sponsorship Design | DHL Brand Hub

Moreover, the exorbitant cost has a deleterious effect on the reputation of the DHL brand. In a highly unpredictable context, customers would be inclined to choose cost-effective services that align with their financial means. DHL stands to gain additional advantages by effectively managing its expenses through the implementation of a mutually agreed upon pricing strategy.

Externally, the company's reputation appears to be favorable as a result of its prominent market position and favorable feedback from clients. Employees can also influence brand association. According to a survey conducted in 2010, a majority of 73% of employees expressed general satisfaction with their employment.

The organizational system mentioned before consists of three main components: leadership, organizational structure, and working system. According to Yunfeng Gao, his supervisor has

amiable and endearing qualities. From our vantage point, the organizational climate is commonly shaped by the leader's behavior and actions. Individuals are consistently attracted to one another due to the allure of their personalities. It is vital for individuals of the male gender to allocate a certain period of time in order to acclimate themselves to a novel professional arrangement during its initial stages.

Influencers	Number Of Posts	Sentiment	Reach	Engagement	Engagement Per Mention
yahoo.com	1		11.23G	0	0
msn.com	2		2.75G	0	0
repubblica.it	1		133.3M	25	25
appledaily.com.tw	1		84.6M	0	0
formulapassion.it	12		54M	647	53.9

talkwalker

Table 6 DHL and F1: Proving Sponsorship Value with Social Listening and Image Recognition - Business 2 Community

The operational approach employed by DHL has a high level of efficiency, however it can occasionally be characterized by a demanding nature. A stringent work system may be deemed necessary for the attainment of optimal organizational success. DHL comprises four distinct departments, each possessing its own unique vision, strategy, and service offerings. Assigning tasks and directing attention towards distinct objectives might yield advantageous outcomes.

A comprehensive training program offers DHL employees the means to enhance their professional development and fosters their active engagement in leveraging their expertise and competencies towards the achievement of the company's objectives. Key Performance Indicators (KPIs) are utilized as a means of evaluating the performance of personnel.

Factors such as absences, workplace health and safety, worker turnover, and vocational training are important considerations in the context of the workplace. When comparing the Key Performance Indicators (KPIs) for the years 2009 and 2010, it is observed that there is an increase in the credit for each individual aspect. As an illustration, there has been a notable enhancement in working circumstances, whereby employees are presently equipped with comprehensive access to all necessary resources to effectively carry out their job

responsibilities. An increase in customer commitment suggests that an employee possesses the capacity to deliver a service or product of superior quality that will effectively meet the needs and expectations of the consumer. Undoubtedly, it makes a substantial contribution to the overall satisfaction of DHL customers. The importance of group collaboration cannot be overstated, as seen by the higher percentage of credit given to cooperation in 2010 (74%) compared to the preceding year (71%).

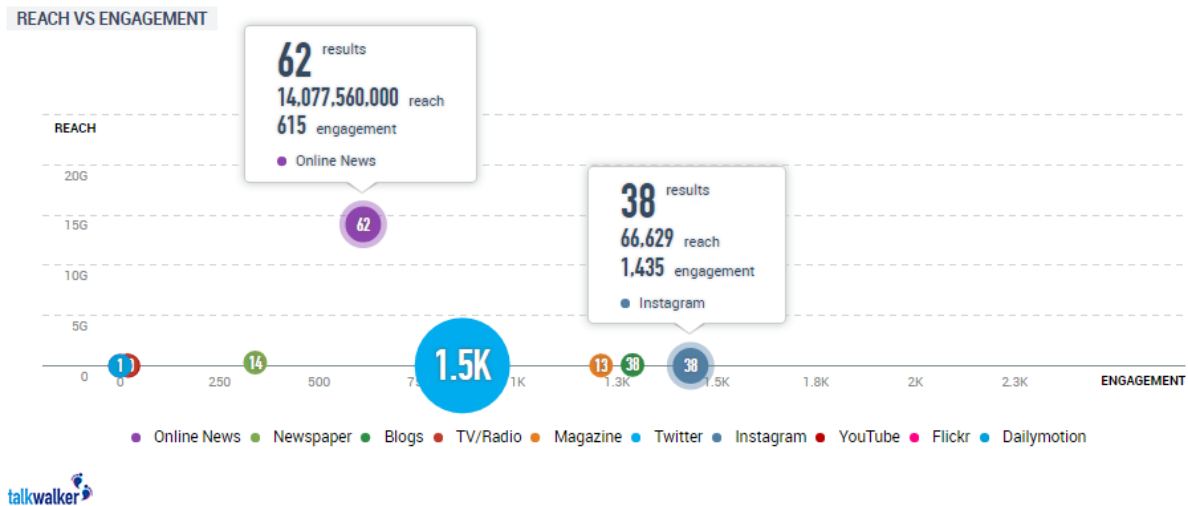


Figure 36 DHL and F1: Proving Sponsorship Value with Social Listening and Image Recognition

The data indicates that a majority of employees had a comprehension of the significance of collaboration. Nevertheless, the current level of resources and efforts allocated to this global organization are inadequate.

There remains ample room for DHL to enhance staff collaboration. Moreover, Yunfeng Gao asserts that the quality of DHL personnel service in the United States and South America is below standard. In order to assess the extent of collaborative efforts within DHL, it is recommended that the company establish a benchmark or aim to measure the spirit of cooperation. Additionally, DHL should set an environmental efficiency target to further enhance their sustainability practices. The importance of staff training lies in its ability to impart knowledge and cultivate appropriate behavior among DHL employees during the course of their business activities. In certain circumstances, the provision of a medal or prize may be employed as a means to foster and incentivize both collaborative efforts and individual aptitudes.

Regarding working conditions, DHL has made concerted efforts to provide a satisfactory working environment for all employees, resulting in a notable improvement from 67% to 73%.

Nevertheless, achieving the satisfaction of every employee simultaneously can be challenging. Regarding the physical environment, augmenting the array of operational circumstances, such as the inclusion of novel furniture, an illuminated office space, a state-of-the-art computer system, and similar provisions, might potentially enhance employees' sense of comfort. Nevertheless, with regards to the cognitive milieu, consistent communication between managers and employees has the potential to foster a favorable disposition within the organization. Every employee derives satisfaction from collaborating with their colleagues. Increasing the frequency of oval, vacation, and coffee breaks has been found to be beneficial in alleviating stress among employees.

DHL actively advocates for equal opportunity, endeavors to strike a harmonious balance between work and family life, and strives to foster the advancement of women's professions on a broader scale. In truth, this particular approach demonstrates a notable degree of efficacy as it fosters a congenial professional atmosphere, so indirectly enhancing overall job output. Additionally, the organizational climate can serve as an indicator of the success or failure of a corporation or organization. As stated on the official DHL website, the promotion of employee wellness fosters a positive and healthy work environment, thereby enabling employees to perform their duties with a sense of contentment and well-being.

In relation to the matter of wage, it has been noted by Yunfeng Gao that DHL consistently provides its employees with remuneration commensurate with their contributions to the organization. The majority of employees express contentment with their wage. Individuals that possess a high level of talent are more likely to experience professional advancement, including the possibility of receiving promotions.

6. Discussion

Unmet needs pertain to goods or services that do not meet the expectations of clients, hence posing potential opportunities and risks for firms aiming to improve the quality of their offerings. Nevertheless, the current thesis is deficient in providing evidence regarding the presence of unmet expectations within DHL. However, it is crucial to recognize the probability of their existence. By effectively addressing unmet consumer requests, DHL has the potential to attain a substantial competitive edge in the third-party logistics (3PL) industry. Moreover, the failure to meet requirements has a significant impact on consumer satisfaction. Customer happiness is a primary focus in the marketing discipline, thus necessitating an inquiry into the level of client contentment inside DHL by analysing unmet needs. The use of a customer satisfaction questionnaire is essential for the successful execution of this research attempt. Furthermore, it is imperative to actively search for relevant theories that can serve as a guiding framework. Through the establishment of a correlation between theoretical frameworks and the results obtained from a questionnaire, it becomes feasible to eventually discern the unmet needs and demands of DHL.

6.1 Interview questionnaire for DHL

- **Short description of DHL**

DHL is a subsidiary of the Deutsche Post DHL Group, one of the world's largest employers. With a global network of over 220 nations and territories and over 470,000 employees globally. In addition, DHL provides unrivalled competence in express, air and ocean freight, overland transport, contract logistics solutions, and international mail services. (*DHL official Website, 2021*)

- **What kind of business is DHL doing?**

DHL offers our clients creative, dependable, and successful services and solutions in international express, air and ocean freight, road and rail transportation, contract logistics, and worldwide mail. (*DHL official Website, 2021*)

- **Explain how DHL has developed in recent years shortly.**

One of DHL's most significant recent initiatives has been the unification of business in the APAC and EEMEA regions. The new organizational structure is organized into three operational districts: APAC and Eastern Europe, Middle East and Africa, Europe, and America. Following this merger, DHL freight volume increased by 16% on an annual basis in the APAC EEMEA district and 4% in the other districts. (*DHL official Website, 2021*)

6.1.1 Customer analysis

- **How many customers does DHL have throughout the whole world?**

An exact amount is difficult to determine. All I can say is that our clients can be found anywhere on the planet. (*Arrhenius, 2019*)

- **How does DHL measure customer satisfaction? (By feedback from customer? Make customer satisfaction research? Or other ways?)**

DHL assesses customer satisfaction in a variety of methods, and it varies by location and country. We track how quickly we answer the phone, how quickly we resolve client issues, and how satisfied customers are. (*Arrhenius, 2019*)

- **How does DHL deals with customers' complaints?**

DHL Express in Sweden has procedures and KPIs in place to resolve complaints. They must be addressed within a specific time limit and resolved in accordance with agreed-upon timelines. (*Arrhenius, 2019*)

- **Does DHL have long term relationship with its customers?**

Yes. We aspire to be our clients' first choice every time. As a result, we are continually striving to make our clients more successful by assisting them in growing and realizing their company goals. In addition, we provide Global Customer Solution to the top 100 customers. (*Arrhenius, 2019*)

clients are classified into three types based on their needs: strategic clients, long-term relationship customers, and regular consumers.

- **What benefits or profits will DHL obtain from long term relationship with customers?**

Our best clients also want the freedom to select from a variety of supply chain solutions, such as express, air, ocean, freight, and contract logistics. (*Arrhenius, 2019*)

DHL's Global Customer Solutions team is always customizing new solutions to meet the demands of its clients and take their business forward. We pay special attention to our clients and collaborate with them to create high-quality solutions. The success of our clients is our success. (*Arrhenius, 2019*)

Of sure, long-term client relationships would increase earnings. (*Gao, 2012*)

6.1.2 Environment analysis

- **Does DHL leave any environmental impact during transportation or working time?**

DHL, of course, has. Waste, noise, the usage of natural resources, and local air pollution, particularly CO₂, are all issues. (*Arrhenius, 2019*)

- **How does DHL measure its environmental impact?**

There are several occasions where our environmental influence and the corrective steps we take are difficult to distinguish. As part of our dedication to operational and service excellence, we've created strong tools for quantifying carbon emissions. (*Arrhenius, 2019*)

Our Corporate Responsibility Report, which is available both online and offline, provides complete transparency by giving certified documentation of our carbon footprint and proving the impact of our efficiency efforts. Furthermore, GOGREEN is an important tool for calculating CO₂ emissions. (*Gao, 2012*)

- **Does DHL own any unique strategies or approaches to minimize its environmental impact ?**

Critical evaluation of our large vehicle fleet is already yielding great outcomes, including partnership with renowned car manufacturers to realize considerable fuel savings. We collaborated to produce the groundbreaking Teardrop Trailer by using the benefits of aerodynamic design. Alternative fuel research and assessment, cutting-edge telematic systems, and cutting-edge technology, including hybrid and electric cars, are backed by simple and quick solutions, such as maximum speed decrease. Advanced driver training that incorporates dynamic vehicle control and efficient fuel management is also important. Moreover, GOGREEN The program is the most important approach for reducing environmental effect. (*Arrhenius, 2019*)

- **Does DHL have any sustainable strategies to deal with the disruption of natural resource?**

Climate change is the most important issue confronting humanity. We are dedicated to adopting corporate responsibility for the environment as part of the world's leading logistics organization, Deutsche Post DHL. This approach is consolidated in our GOGREEN initiative, which ensures that sustainability is at the centre of all we do. (*Arrhenius, 2019*)

Since the inception of GOGREEN, we have demonstrated that what is good for the environment can also be excellent for business. DHL Supply Chain's collaboration with Fujitsu, for example, has achieved 45% carbon efficiency too far. Many of our UK retail clients are already reaping the cost savings associated with better aerodynamics, alternative fuels, and hybrid cars. (*Arrhenius, 2019*)

7. Conclusion

Exploring the details on DHL's logistics process has proven to be an engrossing endeavor, providing a full understanding of the operational mechanisms that distinguish this multinational logistics corporation within a dynamic and high-pressure context. The objective of this study is to examine and provide a framework for understanding the logistics operations of DHL, with a focus on identifying key factors that contribute to the company's performance and its position as a leader in the industry.

Based on the research, DHL has enhanced its market position through the strategic implementation of advanced technologies, emphasizing innovation as a crucial foundation. Real-time tracking technologies, advanced automation, and data analysis have emerged as integral elements of the logistics process, facilitating not only operational efficiency but also prompt responsiveness to evolving market demands.

The emphasis given by DHL on sustainability is not only commendable, but also imperative. Adopting environmentally responsible practices not only ensures organizational alignment with prevailing societal standards, but also confers enduring competitive advantages. In an era characterized by a growing emphasis on sustainability, the integration of green logistics solutions serves to not only mitigate environmental harm but also presents novel avenues for commercial development.

One important differentiation has been identified in the form of a close collaboration between DHL, its partners, and customers. The company's ability to adapt and respond quickly in its joint endeavors highlights the importance of adopting a collaborative strategy in addressing the intricate challenges of global logistics.

Despite achieving evident success, it is imperative to bear in mind that the field of logistics is a dynamic domain marked by regular fluctuations in market conditions and client demands. DHL is expected to encounter persistent challenges; yet its history of pioneering advancements and adaptability suggests that it possesses the capability to surmount these obstacles.

In summary, this study provided a comprehensive analysis of DHL's logistics process, highlighting exemplary strategies and valuable insights that can be applied by other companies operating in the same industry. The study findings can be utilized by enterprises to enhance their pursuit of efficiency, innovation, and leadership in the dynamic field of logistics, as DHL continues to exert its influence on the future of global logistics.

8. SUMMARY

This thesis provides a comprehensive examination of the logistics processes employed by DHL, with the objective of enhancing efficiency and overall performance. By employing a mixed research methodology that integrates quantitative measures and qualitative assessments, this study offers a comprehensive comprehension of the intricate logistical operations undertaken by DHL.

The research commences by constructing a theoretical framework that incorporates fundamental ideas in logistics and supply chain management that are pertinent to the operations of DHL. Consequently, the study conducts a thorough examination of the current logistical procedures at DHL, utilizing several techniques for data gathering, including primary and secondary sources.

The analysis findings provide valuable insights into the deficiencies, inefficiencies, and potential opportunities for enhancement inside DHL's logistics system. Process performance is evaluated by analyzing quantitative measures such as cycle times, deadlines, and mistake rates. The acquisition of qualitative data through direct research offers significant insights into the dynamics of organizations, communication patterns, and other qualitative aspects that influence the effectiveness of DHL's logistics workflow.

REFERENCES

1. Smith, P., & West, C. (1994). The Globalization of Furniture Industries/Markets. *Journal of Global Marketing*, 7, 103-132. https://doi.org/10.1300/J042V07N03_06.
2. Yong-quan, Y. (2005). Demand chain management based on customer value. *Journal of Agricultural Mechanization Research*.
3. Manzini, R., & Gamberini, R. (2008). Design, Management and Control of Logistic Distribution Systems. , 263-290. <https://doi.org/10.5772/5347>.
4. Nekutova, M., Švadlenka, L., & Kudláčková, N. (2015). Warehouse Location Problem as a Strategical and Operative Logistic Decision. *Applied Mechanics and Materials*, 803, 40 - 46. <https://doi.org/10.4028/www.scientific.net/AMM.803.40>.
5. Roland, A., & Lynn, J. (1993). Feeding Mars: Logistics in Western Warfare from the Middle Ages to the Present. *Technology and Culture*, 36, 172. <https://doi.org/10.2307/3106347>.
6. Ferris, S., & Keithly, D. (2001). Outsourcing the Sinews of War: Contractor Logistics. *Military review*, 81, 72.
7. WILL KENTON (June 12, 2023) Logistics: What It Means and How Businesses Use It <https://www.investopedia.com/terms/l/logistics.asp>
8. Perenc, J. (2018). Logistics as a tool to improve the competitiveness of DHL services. , 27, 339-346. <https://doi.org/10.18276/EJSM.2018.27/2-41>.
9. Edstein, G. (1992). Reshaping a Logistics Group for the Future. *International Journal of Physical Distribution & Logistics Management*, 22, 30-32. <https://doi.org/10.1108/EUM0000000000413>.
10. Edmonds, C. (2009). Delivering an international HR strategy at DHL. *Human Resource Management International Digest*, 17, 32-34. <https://doi.org/10.1108/09670730910929431>.
11. Türkeli, B., Ariburnu, A., & Vayvay, O. (2010). Innovative Strategies for Logistics Processes. , 1-20. <https://doi.org/10.4018/978-1-61520-603-2.CH001>.
12. Sandelands, E. (1994). Strategic logistics management. *International Journal of Physical Distribution & Logistics Management*, 24, 1-48. <https://doi.org/10.1108/09600035199400005>.

13. Sirajudeen, M. (2012). Evaluation of service quality and its impact on customer satisfaction - a life insurance experience. *International Multidisciplinary Research Journal*, 2.
14. Lengnick-Hall, C. (1996). Customer Contributions to Quality: A Different View of the Customer-Oriented Firm. *Academy of Management Review*, 21, 791-824. <https://doi.org/10.5465/AMR.1996.9702100315>.
15. Perenc, J. (2018). Conditions for Improving the Functioning of Logistics in Courier Companies. , 28, 247-255. <https://doi.org/10.18276/ejsm.2018.28/1-31>.
16. Park, Y., Choi, J., & Zhang, A. (2009). Evaluating competitiveness of air cargo express services. *Transportation Research Part E-logistics and Transportation Review*, 45, 321-334. <https://doi.org/10.1016/J.TRE.2008.09.004>.
17. Karp, A. (2008). Slow Delivery: DHL's Ambitious Plans for U.S. Market Have Yet to Come to Fruition. *Air Transport World*, 45.
18. Leung, L., & Cheung, W. (2000). An Integrated Decision Methodology for Designing and Operating an Air-Express Courier's Distribution Network. *Decis. Sci.*, 31, 105-127. <https://doi.org/10.1111/j.1540-5915.2000.tb00926.x>.
19. Bagalwadi, P. (2015). DHL: Addressing the Skills Gap in East Africa. *Africa Journal of Management*, 1, 437 - 439. <https://doi.org/10.1080/23322373.2015.1105451>.
20. Bagchi, P., & Skjoett-Larsen, T. (2003). Integration of Information Technology and Organizations in a Supply Chain. *The International Journal of Logistics Management*, 14, 89-108. <https://doi.org/10.1108/09574090310806477>.
21. Lind, M., & Barner, K. (2018). Building Competitive Advantage by Connecting the Physical and Financial Chains: A Study of UPS and DHL. , 73-79. https://doi.org/10.1007/978-3-319-66370-8_11.
22. Tari, I., & Alumur, S. (2014). Collection Center Location with Equity Considerations in Reverse Logistics Networks. *INFOR: Information Systems and Operational Research*, 52, 157 - 173. <https://doi.org/10.3138/infor.52.4.157>.
23. Marianov, V. (2003). Location of Multiple-Server Congestible Facilities for Maximizing Expected Demand when Services are Non-Essential. *Annals of Operations Research*, 123, 125-141. <https://doi.org/10.1023/A:1026171212594>.
24. Dupont, L. (2008). Branch and bound algorithm for a facility location problem with concave site dependent costs. *International Journal of Production Economics*, 112, 245-254. <https://doi.org/10.1016/J.IJPE.2007.04.001>.

25. Olafson, G. (2002). CONVERTED 757S IN THE FRAME. *Aircraft Economics*.
26. Malighetti, P., Martini, G., Redondi, R., & Scotti, D. (2019). Integrators' Air Transport Networks in Europe. *Networks and Spatial Economics*, 1-25. <https://doi.org/10.1007/S11067-018-9390-5>.
27. Valančius, R., Jurelionis, A., Vaičiūnas, J., & Perednis, E. (2015). Dimensioning of Solar Thermal Systems for Multi-Family Buildings in Lithuania: an Optimisation Study. *Journal of Sustainable Architecture and Civil Engineering*, 11, 32-40. <https://doi.org/10.5755/J01.SACE.11.2.12459>.
28. Hemp, P. (2003). The DHL EuroCup: shots on goal.. *Harvard business review*, 81 11, 43-8, 50-2, 137
29. Jereb, C., Schönfels, C., Schmalhofer, A., & Sorensen, A. (2010). Plan Administration Sourcing: The Deutsche Post DHL Story. *Compensation & Benefits Review*, 42, 247 - 255. <https://doi.org/10.1177/0886368710374385>.
30. Balavishnu, M., Viswanathan, D., Chitradevi, K., Priya, M., & Rajkumar, N. (2021). Stock Management System. , 7, 342-347. <https://doi.org/10.32628/CSEIT217286>.
31. Xin-ming, Z. (2008). JIT and stock management. *Storage,Transportation & Preservation of Commodities*.
32. Aggour, K., Hoogs, B., Leber, C., Correia, C., & Senturk-Doganaksoy, D. (2013). Mining company networks for marketing insights and sales leads. 2013 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2013), 805-812. <https://doi.org/10.1145/2492517.2500227>.
33. Nair, A., & Narayanan, J. (2022). Indian Stock Market Forecasting using Prophet Model. 2022 International Conference on Connected Systems & Intelligence (CSI), 1-7. <https://doi.org/10.1109/CSI54720.2022.9924117>.
34. Xu, T. (2011). User's Manual for BEST-Dairy: Benchmarking and Energy/water-Saving Tool (BEST) for the Dairy Processing Industry (Version 1.2). Lawrence Berkeley National Laboratory. <https://doi.org/10.2172/1026805>.
35. Prescott, R., & Dobosz, A. (2012). The importance of a supply chain perspective in procurement decisions. *MHD Supply Chain Solutions*, 42, 89.
36. Paulraj, A., Chen, I., & Flynn, J. (2006). Levels of strategic purchasing: Impact on supply integration and performance. *Journal of Purchasing and Supply Management*, 12, 107-122. <https://doi.org/10.1016/J.PURSUP.2006.08.002>.

37. Tatsiopoulos, I. (2004). Special issue editorial: purchasing and e-Procurement. *Production Planning & Control*, 15, 631 - 633. <https://doi.org/10.1080/09537280412331298256>.
38. Ho, W., Dey, P., & Bhattacharya, A. (2015). Strategic supplier selection using multi-stakeholder and multi-perspective approaches. *International Journal of Production Economics*, 166, 152-154. <https://doi.org/10.1016/J.IJPE.2015.03.028>.
39. Parsanejad, M., Matsukawa, H., & Chu, B. (2015). Inventory-Production System Subject to Production Constraints with Non-Zero Target Inventory. , 9, 25-29. <https://doi.org/10.14327/ISCM.9.25>.
40. Rogers, H., & Fells, R. (2017). Successful buyer–supplier relationships. *Journal of Strategic Contracting and Negotiation*, 3, 121 - 136. <https://doi.org/10.1177/2055563618763037>.
41. Palaniswami, S., & Lingaraj, B. (1994). Procurement and vendor management in the global environment. *International Journal of Production Economics*, 35, 171-176. [https://doi.org/10.1016/0925-5273\(94\)90078-7](https://doi.org/10.1016/0925-5273(94)90078-7).
42. Ling, T., Lee, C., & Ho, W. (2009). The analysis and case studies of successful express logistics companies. *International Journal of Value Chain Management*, 3, 20. <https://doi.org/10.1504/IJVC.2009.022415>.
43. Scott, C., Lundgren, H., & Thompson, P. (2011). Guide to Deliver in Supply Chain Management. , 75-89. https://doi.org/10.1007/978-3-642-17676-0_5.
44. Mazaraki, A., & Kharsun, L. (2018). DEVELOPMENT OF UKRAINE’S LOGISTIC SYSTEM: ENVIRONMENTAL CHALLENGES. *Economy of Ukraine*. <https://doi.org/10.15407/economyukr.2018.09.003>.
45. Ramani, K., & McKinney, R. (1994). DHL goes 'open'. *J. Strateg. Inf. Syst.*, 3, 137-143. [https://doi.org/10.1016/0963-8687\(94\)90013-2](https://doi.org/10.1016/0963-8687(94)90013-2).
46. Singh, S., Burgess, G., Singh, J., & Kremer, M. (2006). Measurement and analysis of the next-day air shipping environment for mid-sized and lightweight packages for DHL, FedEx and United Parcel Service. *Packaging Technology and Science*, 19. <https://doi.org/10.1002/PTS.726>.
47. Veeken, D., & Rutten, W. (1998). Logistics Service Management: Opportunities for Differentiation. *The International Journal of Logistics Management*, 9, 91-98. <https://doi.org/10.1108/09574099810805861>.

48. Kingsman, B., Worden, L., Hendry, L., Mercer, A., & Wilson, E. (1993). Integrating marketing and production planning in Make-To-Order companies. *International Journal of Production Economics*, 53-66. [https://doi.org/10.1016/0925-5273\(93\)90081-U](https://doi.org/10.1016/0925-5273(93)90081-U).
49. Khan, S., Li, D., & Yu, Z. (2017). The Role of Warehouse Design and Layout: In Order Fulfilling Process Improvement, 1, 21. <https://doi.org/10.11648/j.ajname.20160101.14>.
50. Rehfeldt, M. (2008). Organizational knowledge in enterprise systems. 2008 IEEE International Technology Management Conference (ICE), 1-4.
51. King, W. (2009). Knowledge Management and Organizational Learning. *Omega-international Journal of Management Science*, 36, 167-172. <https://doi.org/10.1016/J.OMEGA.2006.07.004>.
52. Griffith, H. (1974). TRANSPORT PLANNING & TOTAL DISTRIBUTION. . <https://doi.org/10.1108/eb017794>.
53. Walters, D. (2008). Emerging Business Models. . <https://doi.org/10.1017/9781108555111.009>.
54. Bolton, W. (1994). 3 – Business functions. . <https://doi.org/10.1016/B978-0-7506-2197-7.50006-2>.
55. Grunow, M., Günther, H., & Pisinger, D. (2012). Logistics in supply chains (Part 2). *Flexible Services and Manufacturing Journal*, 24, 1-3. <https://doi.org/10.1007/S10696-011-9130-3>.
56. Xiong, G. (2011). Study on Production Logistics Based on SCM Integration Models. , 315-321. https://doi.org/10.1007/978-3-642-23062-2_47.
57. Alam, A., Besselink, B., Turri, V., Mårtensson, J., & Johansson, K. (2015). Heavy-Duty Vehicle Platooning for Sustainable Freight Transportation: A Cooperative Method to Enhance Safety and Efficiency. *IEEE Control Systems*, 35, 34-56. <https://doi.org/10.1109/MCS.2015.2471046>.
58. Janić, M. (2014). Advanced Transport Systems: Operations and Economics. , 83-164. https://doi.org/10.1007/978-1-4471-6287-2_3.
59. Kanungo, A., & Chakraborty, D. (2012). Book Reviews. *Foreign Trade Review*, 47, 85 - 92. <https://doi.org/10.1177/0015732515120106>.
60. Ortega, A., Vassallo, J., Guzman, A., & Pérez-Martínez, P. (2014). Are Longer and Heavier Vehicles (LHVs) Beneficial for Society? A Cost Benefit Analysis to Evaluate their Potential Implementation in Spain. *Transport Reviews*, 34, 150 - 168. <https://doi.org/10.1080/01441647.2014.891161>.

61. Arribas, A., Belboom, S., & Léonard, A. (2015). Environmental impact assessment of rail freight intermodality. . <https://doi.org/10.4203/CCP.110.296>.
62. Tayyeb, H. (2018). Framework of a comparative life cycle analysis for rail and road freight transport. . <https://doi.org/10.22215/etd/2018-13333>.
63. Façanha, C., & Horvath, A. (2007). Evaluation of life-cycle air emission factors of freight transportation.. *Environmental science & technology*, 41 20, 7138-44 . . <https://doi.org/10.1021/ES070989Q>.
64. Arribas, A., Belboom, S., & Léonard, A. (2015). Environmental impact assessment of rail freight intermodality. . <https://doi.org/10.4203/CCP.110.296>.
65. Heins, M. (2016). The Globalization of American Infrastructure: The Shipping Container and Freight Transportation. . <https://doi.org/10.4324/9781315642222>.
66. Chung, C., Chung, Y., & Tai, A. (2011). An Evaluation of Key Service Attributes of Ocean Container Carriers from the Ocean Freight Forwarder's Perspective. *Journal of the Eastern Asia Society for Transportation Studies*, 9, 116-116. <https://doi.org/10.11175/EASTPRO.2011.0.116.0>.
67. Luzhanska, N., Lebid, I., Kravchenya, I., & Mazurenko, O. (2021). RELIABILITY OF LOGISTICS CHAINS IN FOREIGN TRADE OPERATIONS. *Transport systems and transportation technologies*. <https://doi.org/10.15802/tstt2021/247877>.
68. Sinitsyna, A. (2016). LOGISTICS CENTER: INFORMATION SUPPORT POINTS. *World of Transport and Transportation*. <https://doi.org/10.30932/1992-3252-2016-14-5-17>.
69. Setiawan, S. (2019). Sustainability and the Competitive Advantage: The Perspective of the Logistics Industry. *International Journal of Business and Economic Affairs*. <https://doi.org/10.24088/ijbea-2019-45001>.
70. Ozbekler, T., & Ozturkoglu, Y. (2020). Analysing the importance of sustainability-oriented service quality in competition environment. *Business Strategy and The Environment*, 29, 1504-1516. <https://doi.org/10.1002/bse.2449>.
71. Meier, S., & Keppler, J. (2013). Preparing airports for disasters. , 37-38. <https://doi.org/10.18356/94812E12-EN>.
72. Jia, X., Zhang, Z., Yuan, L., Qi, S., & Tian, Y. (2019). Logistics company transportation solution research. *IOP Conference Series: Earth and Environmental Science*, 295. <https://doi.org/10.1088/1755-1315/295/4/042122>.

73. Zakaria, N., Abdul-Talib, A., & Osman, N. (2016). Handbook of Research on Impacts of International Business and Political Affairs on the Global Economy. . <https://doi.org/10.4018/978-1-4666-9806-2>.
74. Storch, H. (2020). Mission 2050 - Deutsche Post DHL's path to carbon neutral logistics. . <https://doi.org/10.5194/dkt-12-69>.
75. Wibbeling, S., & Schneiders, F. (2013). Research Project ePOD@Home: Electronic Proof of Delivery at Point of Delivery. , 99-108. https://doi.org/10.1007/978-3-642-32838-1_12.
76. Wibbeling, S., & Schneiders, F. (2013). Research Project ePOD@Home: Electronic Proof of Delivery at Point of Delivery. , 99-108. https://doi.org/10.1007/978-3-642-32838-1_12.
77. , M. (2017). E- Commerce- The Future Market. Journal for Studies in Management and Planning, 3, 123-126.
78. Bhattacharyya, S., & Mandke, P. (2021). Exploratory Study of the Role of Emerging Technologies in Outsourcing of Supply Chain Functions. Int. J. Appl. Logist., 11, 71-98. <https://doi.org/10.4018/IJAL.2021070104>.
79. Larina, I., Larin, A., Kiriliuk, O., & Ingaldi, M. (2021). Green logistics - modern transportation process technology. Production Engineering Archives, 27, 184 - 190. <https://doi.org/10.30657/pea.2021.27.24>.
80. Išoraitė, M. (2009). Importance of strategic alliances in company's activity. Intellectual economics, 1, 39-46.
81. Morganti, E., & Dablanc, L. (2014). Recent Innovation in Last Mile Deliveries. , 27-45. https://doi.org/10.1007/978-3-319-09791-6_3.
82. Patibandla, M. (2020). International Trade and Investment Behaviour of Firms. . <https://doi.org/10.1093/oso/9780190126865.001.0001>.
83. Monteiro, M. (2012). SSA Solutions case study : being our customers' first choice. Management Today, 30, 60-62.
84. Munoz, A., & Dunbar, M. (2015). On the quantification of operational supply chain resilience. International Journal of Production Research, 53, 6736 - 6751. <https://doi.org/10.1080/00207543.2015.1057296>.
85. Škiljić, A. (2020). Cybersecurity and remote working: Croatia's (non-)response to increased cyber threats. International Cybersecurity Law Review, 1 - 11. <https://doi.org/10.1365/s43439-020-00014-3>.

86. Milewska, B., & Milewski, D. (2022). Implications of Increasing Fuel Costs for Supply Chain Strategy. *Energies*. <https://doi.org/10.3390/en15196934>.
87. Wells, P. (2019). Zero-Carbon Logistics. *Contemporary Operations and Logistics*. https://doi.org/10.1007/978-3-030-14493-7_6.
88. Mangina, E., Narasimhan, P., Saffari, M., & Vlachos, I. (2019). Optimising Supply Chain Logistics System Using Data Analytics Techniques. *Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering*. https://doi.org/10.1007/978-3-030-38822-5_6.
89. Herold, D., & Lee, K. (2017). The Influence of the Sustainability Logic on Carbon Disclosure in the Global Logistics Industry: The Case of DHL, FDX and UPS. *Sustainability*, 9, 601. <https://doi.org/10.3390/SU9040601>.
90. Bai, H., Qiao, S., Liu, T., Zhang, Y., & Xu, H. (2016). An inquiry into inter-provincial carbon emission difference in China: Aiming to differentiated KPIs for provincial low carbon development. *Ecological Indicators*, 60, 754-765. <https://doi.org/10.1016/J.ECOLIND.2015.08.029>.

ANNEXES

Figures of DHL Innovation.



Figure 37 DHL expands pharma logistics capacity in Florstadt - AIR CARGO WEEK



Figure 38 DHL Supply Chain opens e-commerce fulfilment centre for Adidas in Luhari



Figure 39 DHL employs robot as picker's best companion – EFFIDENCE



Figure 40 DHL Global Forwarding Electric Forklift Conversion - Supply Chain 24/7

VISION PICKING
AUGMENTED REALITY SUPPORTED PICKING IN WAREHOUSES

In partnership with Google, Vuzix and Ubimax, DHL Supply Chain is rolling out its global augmented reality program with vision picking pilots across several markets and industries.

HIGHLIGHTS OF THE TECHNOLOGY

- AGILE, QUICK FULFILLMENT
- REDUCED ERROR RATES
- USER FRIENDLY, INTUITIVE
- HANDS-FREE
- HIGH APPROVAL AMONG EMPLOYEES

HOW IT WORKS

- PICK & SCAN TROLLEY
- FIND, PICK AND SCAN ORDER ITEMS
- PLACE ORDER ITEMS IN THE CORRECT TROLLEY BOXES

PILOTS

RETAIL, CONSUMER, TECHNOLOGY

Figure 41 Global vision picking | Post & Parcel



Figure 42 DHL is shelving 'out of stock,' thanks to smart supply chains built in the cloud – Source



Figure 43 Freight Forwarder Malaysia & Global Forwarding Agent - Johann Freight



Figure 44 Top 25 Freight Forwarders: Strong Growth, Abundant Opportunity - Logistics Management

DHL eCOMMERCE BRINGS FAST, FLEXIBLE DELIVERIES TO U.S. CITIES*

Today's consumers want fast, flexible delivery solutions with full visibility. Retailers need easy, affordable solutions that provide a quick and seamless delivery experience. **DHL Parcel Metro** has it all.

- Same Day or Next Day delivery
- Urban delivery fleet
- Real-time tracking

HOW DOES DHL PARCEL METRO WORK?

- 1 Consumer makes purchase online
- 2 Retailer prints label & prepares package for pick-up
- 3 Driver picks-up & delivers package to DHL for consolidation
- 4 Route assigned & pick up confirmation sent to retailer
- 5 Consumer notified of scheduled delivery
- 6 Consumer tracks delivery and gives special instructions
- 7 Driver delivers, collects proof of delivery
- 8 Consumer can rate delivery experience

HOW RETAILERS WILL BENEFIT

- All consumer touchpoints can be branded
- Volume consolidation reduces last mile costs
- Best in class API integration

WHY CONSUMERS WILL LOVE IT

- Ability to track delivery in real-time
- Add special instructions & reschedule delivery
- They can even rate their delivery experience!

DHL * Available in NYC, LA & Chicago and coming to more U.S. cities soon! **PARCELMETRO**

Figure 45 DHL Introduces New Technologies and Delivery Solutions in Us to Meet Evolving Demands of the Urban Consumer | DHL | Global