



Master Thesis

Efficiency of logistics processes in a distribution system

Study programme:

N0413A050030 International Management

Author:

Bc. Oldřiška Brožková

Thesis Supervisors:

doc. Ing. Jakub Dyntar, Ph.D.

Department of Business Administration and Management

Liberec 2022



Master Thesis Assignment Form

Efficiency of logistics processes in a distribution system

Name and surname: **Bc. Oldřiška Brožková**
Identification number: E20000321
Study programme: N0413A050030 International Management
Assigning department: Department of Business Administration and Management
Academic year: 2020/2021

Rules for Elaboration:

1. Definition of logistics.
2. Characteristics of distribution.
3. Characteristics of selected company.
4. Cost efficiency comparison of sales channels based on the sales analysis and the analysis of logistics processes.
5. Results and discussion.

Scope of Graphic Work:

Scope of Report: 65 normostran
Thesis Form: printed/electronic
Thesis Language: English

List of Specialised Literature:

- CHRISTOPHER, Martin, 2016. *Logistics and Supply Chain Management*. 5th ed. United States of America: FT Press. ISBN 9781292083797.
- FERNIE, John and Leigh SPARKS, 2018. *Logistics and Retail Management: Emerging Issues and New Challenges in the Retail Supply Chain*. 5th ed. Great Britain: Kogan Page Publishers. ISBN 9780749481605.
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Consultant: Mgr. Ondřej Turek, department manager, store operation manager

Thesis Supervisors: doc. Ing. Jakub Dyntar, Ph.D.
Department of Business Administration and Management

Date of Thesis Assignment: November 1, 2020

Date of Thesis Submission: August 31, 2023

doc. Ing. Aleš Kocourek, Ph.D.
Dean

L.S.

Ing. Eva Štichhauerová, Ph.D.
Head of Department

Liberec November 1, 2020

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Efektivita logistických procesů v distribuční soustavě

Anotace

Diplomová práce se zabývá efektivitou logistických procesů v distribuční soustavě. Jejím cílem je porovnání efektivity příjmu distribučních kanálů a porovnání efektivity metod používaných při příjmu. Práce nejprve specifikuje základní pojmy jako je logistika a logistický systém, distribuce a e-shop. Skrze provedené měření ve vybrané firmě je vyhodnocování dat provedeno porovnáváním efektivnější metody příjmu. Dle zjištěných výsledků jsou poté navrženy kroky ke zlepšení a je vyhodnocen efektivnější distribuční proces.

Klíčová slova

Distribuce, efektivita, logistika, logistické procesy, zákaznický servis.

Efficiency of logistics processes in a distribution system

Annotation

The diploma thesis deals with the efficiency of logistics processes in the distribution system. Its goal is to compare the effectiveness of receiving distribution channels and the methods used in receiving. The work first specifies basic concepts such as logistics and logistics system, distribution and e-shop. Through the measurement carried out in the selected company, the data is evaluated by comparing the more effective reception method. Based on the results found, steps for improvement are then proposed, and a more efficient distribution process is evaluated.

Key Words

Distribution, efficiency, logistics, logistics processes, customer service.

Acknowledgement

I would like to take this opportunity to thank the supervisor doc. Ing. Jakub Dyntar, Ph.D. for his professional advice, committed time, valuable advice, and patience during consultations and the thesis preparation.

Thank the Decathlon employees who provided me with all the necessary and practical information for my work. Last but not least, I want to thank my family, who supported me throughout my studies and my boyfriend for his support in writing the final thesis.

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List of abbreviations

JIT	Just in time
SCM	supply chain management
HLOP	High-level order pickers
LLOP	Low-level order pickers
B2C	Business to Customer
B2B	Business to Business
CRM	Customer Relationship Management
DVS	Reducing inventory turnover time
C&C	Click and collect
R1	Range one
R2	Range two

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Introduction

The issue of efficiency is becoming a more addressed topic in all fields. Efficiency is significant for the company, and the company can minimize unnecessary costs with the correct settings. The author chose this topic because of her work in the company, the functioning of which is described in work. The main reason for choosing this topic was the need for more data to compare the methods used and to quantify the efficiency in the distribution processes at the company's stores.

This thesis is focused on logistics processes in a selected company. The work focuses on the concepts of logistics and distribution, which are first analyzed theoretically and then the practical part of the work is focused on them. The thesis aims to calculate the efficiency of logistics processes in the distribution system of the selected company.

The company chosen for this final work was founded in 1976, and its aim was first to bring together as many sports as possible under one roof. Over time, this company started developing its products and today could be called one of the strong players in the sports equipment market. This is a Decathlon company that has branches all over the world and has representatives in the Czech Republic as well. In the practical part, the company's distribution channels, for the selected store in the Czech Republic and its supply from the warehouse in Poland, are analyzed.

The structure of the thesis is divided into a theoretical and a practical part. The theoretical part is divided into two main chapters, further divided into subsections. The first chapter introduces basic terms such as logistics, logistics systems and primary and secondary processes in logistics. The second chapter focuses on distribution and online sales. These terms were chosen following the practical part, where terms from the theoretical part are used.

The theoretical research is followed by a practical part, divided into two main parts. The third chapter is dedicated to Decathlon. This chapter provides background information and company history. The establishment in the Czech Republic and the opening of the first store, in which the analysis was carried out in the last part of the final thesis, are approaching here. Furthermore, the company's mission, operation and

processes of the store, which are necessary for the day-to-day operation of the stores, are analyzed. Moreover, the distribution channels are explained, and the tasks associated with these channels are described.

The final chapter is devoted to the efficiency of distribution processes. Individual efficiency calculations are being carried out at the stores in Liberec and České Budějovice. These stores use different methods to process in-store receipts, resulting in different efficiencies. Furthermore, the reception of customer orders and the processing of receipts at the store are compared, and this efficiency is quantified. The result of this research will be a recommendation on the method used and an overall recommendation to improve efficiency for the selected store.

1. An introduction to logistics

This chapter is devoted to logistics. The logistics, logistics system versus chain, main and cross-sectional activities in logistics and customer service are explained here.

1.1 Definition of logistics

Logistics comes from the Greek words *logistikon* and *logos*. The term *logistikon* denotes ingenuity and reason. The term *logos* means speech, expression, thought, sentence or reason. Logistics is a discipline that deals with the overall optimization, coordination and synchronization of all activities whose chains are necessary to achieve a given final effect flexibly and economically. In the narrower sense of the word, we can connect logistics primarily with activities such as prediction, supply and transport. It represents the flow of materials from primary raw materials to materials processed in the form of a product transported to the final customer. At its core, logistics focuses on delivering suitable goods in the correct quantity to the right place at the right time and for the right price. Sometimes it could be described as a logistics 5S (Ghiani et al., 2013; Ross, 2015).

1.1.1 Logistics 5S

The fundamental logistical approaches are established by this methodology, which includes self-discipline, systematisation, regular cleaning, and separation. This means that only a specific material is brought to the workplace and in quantity required for production. The remaining material is stored separately, and since all employees know where it is stored and can quickly locate it, the system is sufficient. In addition to keeping the workplace tidy, it's crucial to ensure enough information is presented in an appropriately obvious way. Then, self-control brings about adherence to these laws, which is rewarded based on merit. Such warehouse organisation consequently affects business operations and service delivery efficiency and effectiveness (Gwynne et al., 2016).

1.1.2 Historical development of logistics and military logistics

Historically, logistics began to develop mainly in connection with the military in the 9th century. In the 17th century, the term logistics was perceived as counting with numbers, and in the 19th century, it was connected with the military again. In 1837, the Swiss General published the book *Sketch of Military Art*. This work later served in the USA as an introductory logistics textbook, which the US Navy widely used (Sutherland, 2018).

Around 1912, the term logistics also entered the economic sphere, where in connection with troop movements, it was necessary to solve supply and complex movements of goods. At the same time, there was further development in computer technology, enabling more straightforward mathematical processing. During the war conflicts, the need to build infrastructure and ensure the flow of supplies to military units on the front grew (Sutherland, 2018).

After World War II, mathematical methods were like linear programs or development plans that gradually transferred from the military to the civil sphere. This planning was referred to as operational research, which is still applied in logistics operations today concerning securing materials, moving raw materials and planning production. Computerization is an essential prerequisite for the proper functioning of all logistics processes. It was also thanks to this that Just in time (JIT) technology could be implemented, i. e. the implementation of deliveries on time to a specific location (Chira, 2016; Dolan, 2018).

1.1.3 Just in time

Just in time is one of the most well-known and widespread logistics technologies that can apply in the supply and distribution part of the chain. In the case of this complex implementation, the competitiveness of the entire supply chain is significantly increased by increasing its flexibility and effectiveness. The JIT method emerged after World War II in Japan and was developed at Toyota Motor. After the second oil crisis in 1976, the philosophy began to spread very quickly in other companies in Japan. In the USA, JIT was applied more or less successfully after 1980, and not long after, the first major European companies adopted this philosophy. Today, this

technology is typical of the entire automotive industry in terms of its application on a global scale. According to logistics managers, it is also starting to expand in the food industry, where there is a lot of pressure on delivery time parameters and the elimination of stocks due to customer demands for fresh products.

Just in time consists of satisfying the needs for certain goods in the distribution channel and manifests itself as delivery "just in time", precisely agreed-on terms according to the needs of the receiving article (pull principle).

Deliveries are underway:

- in a small amount;
- very often (within 24 hours or even several times a day);
- at the moment of need on the demand side.

The basic principle of JIT is that goods are prepared, transported and assembled only when needed by the following link in the supply chain. In other words, the need for specific interests in the distribution channel is satisfied by delivering them "just in time" in precisely agreed and observed terms according to the needs of the receiving article. Small quantities are delivered as late as possible, with deliveries being widespread. Thanks to this, links in the logistics chain can follow each other with only minimal or no insurance stock. Stocks are usually only kept for a few hours.

However, JIT also has negative consequences when demands for transportation increase despite adverse effects on ecology (Dolan, 2018; Banton, 2022).

1.1.4 Economic logistics

From the middle of the twentieth century, military logistics principles also began to be transferred to the economic sphere, first in the USA and later in Western Europe. The impetus for the emergence of financial logistics was the most expensive marketing tool, distribution, precisely because of the significantly rationalizing effects of logistics. At that time, it was closely associated with defining the so-called physical distribution. Physical distribution can still be perceived as a synonym for distribution logistics.

Physical distribution can be defined as a subsystem of distribution, which includes all actions related to the physical movement of distributed goods, including the provision and processing of the necessary information. We can also include relevant warehouse and transport activities and additional services here. Complex distribution decision-making consists of both marketing and logistics. Over time, economic logistics have changed. In the beginning, there were three development periods:

1. "sleep" period of logistics (1920 – 1950).

In this period, logistics activities were strictly separated logistics activities from each other. Logistics was focused on distribution problems.

2. period of "preparation and launch" of logistics theory and practice (1950 – 1970).

This is a very significant period of logistics from the point of view of logistics principles, tools and methods. In the period of this method, first applied the principle of total costs. In addition, management methods and quality control systems were intensively developed in Japan. Some are still referred to as logistics, for example, Kanban or the previously labelled business-oriented JIT. This period also saw computer technology's development, which is essential for managing logistics processes.

3. period of "logistics success."

In this period, countries with advanced market economies unconditionally accepted logistics as a rationalization discipline. However, countries that were not so developed and the countries of the "Eastern bloc" had a problem with acceptance (Lukoszová, 2020).

1.2 Logistics system vs. supply chain management

Logistics system and supply chain management are explained in this section. The purpose of logistics is to effectively and economically use inventory, warehousing, and transportation resources to help businesses meet the ongoing needs of their supply chains for goods and services. Management of the supply chain is the second

term. By establishing cooperative relationships that make use of the resources, skills, and capabilities of the channel to boost the competitive advantage of the entire channel system, SCM's job is to provide distinctive sources of customer value.

1.2.1 The logistics system

A Logistics system can be characterized as a movement and storage process. A logistics system is a conceptual set of logistics elements (technology, tools, information and people) that carry out logistics functions (purchasing, inventory management, production planning, storage, issuing customs documents and transport). For the logistics and for the basic principle is a typical system approach and its application. A systematic approach means that all logistical problems are solved in essential internal and external contexts, while the primary tool is the cooperation of the system's individual components. The system approach combines the strategic level of management with the level of operational management, connecting supply with production and distribution. The main part of the logistics system is shown in Figure 1 (Ghiani et al., 2013; Ghiani et al., 2004).

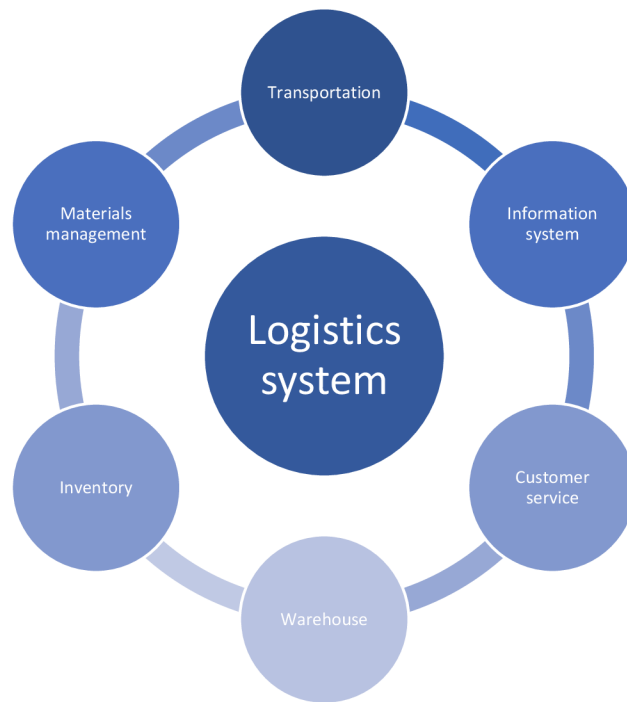


Figure 1: Logistics system

Source: own processing

1.2.2 Supply chain management

Supply chain management focuses on business-to-business cooperation to build chains that provide value along the entire chain. A supply chain represents a network of companies participating in processes and activities. Their objective is to add value to their clients' goods and services (Christopher, 2016; Fernie, et al., 2019).

The term "supply chain management" (SCM) refers to an integrated logistics chain that depicts all of the processes involved in the actual physical transportation of commodities from input to output. Integrating the enterprise's value chain with the value chains of its suppliers and customers results in the provision of goods, services, and information that add value for the consumer. Deliveries to final customers bring the chain to an end, beginning with the initial input supplied. The chain covers all operations and value-added activities, such as trash disposal, packaging, and transportation (Christopher, 2016; Fernie, et al., 2019; Björklund, 2021).

The principal objective is to achieve flexibility and cooperation among all business partners, improved data exchange, processes, and transactions, and the greatest

possible optimal satisfaction of the client's needs. The proper operation of the SCM network is also a requirement for the confidence and willingness to work together of all partnering businesses. At every stage of the process, supply chain management requires openness and transparency (Christopher, 2016; Ross, 2015).

1.3 Main and cross-sectional processes

In this section, the main and cross-section logistics processes are divided and described in detail. The main logistics processes include planning, purchase, production management, distribution and backflows. The distribution is further described in more detail in a separate chapter Cross-section processes include transport, storage, handling, picking, packaging and information.

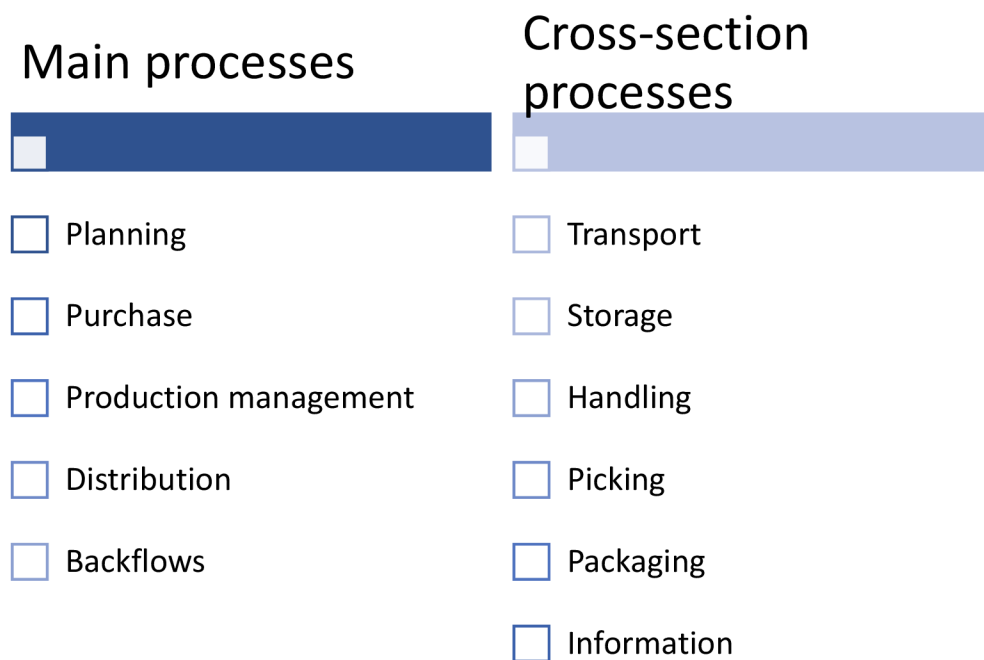


Figure 2: Activities in logistics
Source: own processing

1. Planning

Logistics planning is critical for effective supply chain connectivity because it links and synchronises the whole supply chain as a continuous operation.

2. Purchase

Evaluating the demand for material resources directly related to the company's primary operation and buying, transporting, storing, and ultimately consuming those resources is what is known as purchasing. The primary responsibility of purchasing is to guarantee that basic production and non-production processes run smoothly by providing the essential raw materials, materials, goods, and services at the appropriate time, location, and assortment composition.

As a series of acts, purchasing has a dual nature. On the one hand, it entails tasks performed in the marketplace, i.e. employing efficient instruments to guarantee production materials and services. On the other side, it also involves internal functions like inventory management, material planning, and optimization. Clarifying material needs, determining the size and dates of material deliveries, finding and choosing suitable suppliers, creating orders and related documentation, checking and accounting for deliveries, storing materials, and selecting and monitoring material consumption are the primary purchasing tasks reflecting both of these positions.

The purchasing department frequently works with the manufacturing department as well as other divisions of the business. This is because all corporate activities, including purchasing, must be coordinated. The elements impacting the purchasing activity are then discussed. A company's purchasing decisions are influenced by a variety of factors. The fundamental ones are supplier entity, quality, quantity, pricing, and delivery circumstances (Smriti, 2022).

3. Production management

Production management is a procedure that moves certain materials through production facilities and gradually transforms them into the desired output. It is based on short-term production plans. In this way, it continues final production planning and operative planning, which are based on the annual production plan and augmented by specially inputted production orders and slips from prior periods. The three characteristics of production management are tactical, operational, and strategic. Alternatively, it is possible to use so-called real-time control.

- Strategic management - it is long-term management with a years-long horizon from a time perspective. It focuses on producing favourable conditions for satisfying production objectives and needs.
- Tactical management - from a temporal perspective, it is a medium-term management with a time horizon of months, or at most, a year. Typical examples include plans for production and investments, sales, financial budgets, or plans for a specific production area.
- Operational management (short-term management) and real-time management (at a given moment) - are implemented in the form of so-called workshop management and include the scheduling of production tasks and the management of the production process itself, including the recording of its status (Grant, 2022).

4. Distribution

Distribution is the process that brings a product to market, and this process also includes the storage and transportation operations involved in moving products toward the customer. The distribution is another P from the marketing mix (placement), and it is possible to think about it as a conduit that links the producer and the consumer. This section will be covered in more detail in another chapter (Rushton, et al., 2014).

5. Backflows

Logistics deals not only with the flow of materials and products from the manufacturer to the customer but also with the flow in the opposite direction. Reverse logistics deals with this area. Initially, this part of logistics was perceived from two different perspectives:

- the first view dealt with the flow of goods and products from the customer back to the manufacturer in the form of complaints and returned goods;
- the second view focused on the by-products of production: packaging and waste.

Nowadays, reverse logistics can be understood as managing the flow of materials, products and their parts, which are reused or materially valued, by the principles of a

sustainable resource. Today, reverse logistics integrates the two perspectives mentioned above into one whole (Ghiani et al., 2013; Ross, 2015).

6. Transport

At the beginning of this chapter, it is necessary to distinguish two basic concepts - transport and transportation. Transport is the sum of individual purposeful activities which are used to move means of transport along transport routes. In contrast, means of transport can be defined as all technical equipment through which materials, products or goods are moved. The essential transport function is transporting materials, products and goods and the loading operations associated with this transport. Transportation is the part of transport in which people or materials are moved using designated means of transportation. In contrast, means of transportation are all technical means that enable carriers to use transport (e.g. pallets, crates, roller blinds, etc.).

- Types of the transport

Transport can be divided from several points of view. Since transport is perceived as the movement of transport along transport routes, the emphasis is placed on the type of means of transport.

- a) Breakdown according to the transported object - according to the factor whether the means of transport are intended for transporting goods or people. This type of transport can be divided into passenger and freight transport.
- b) According to the drive - transport is divided into motorized and other. In the other category, we can include, for example, cycling, using a boat, non-motorized vessels, etc.
- c) According to the place of implementation - whether the transport is carried out inside or outside the company premises.
- d) Another territorial point of view - breakdown into local, regional and international transport.
- e) According to the nature of the transport route - the division of transport into land, air and water. Land transport can include, for example, rail transport,

road transport or non-motorized transport. Representatives of water transport are river and sea transport. Air transport is divided into passenger and cargo transport.

Since transport does not take place in isolation but in space and time, it is generally referred to as a transport process, the result of which is transport, i.e. the movement of people or goods (Rushton, et al., 2014).

7. Storage

Storage can be defined as a space for storing material, products and goods in an unchanged form, which forms an essential part of the infrastructure of production, trade and distribution. Among the most basic functions of the warehouse can be included: equalization function, security function, collation function, speculation and refining function.

- The compensating function is used when there is a quantitative or temporal discrepancy in the material flow and consumption.
- The security function is related to frequent fluctuations in the production process, fluctuating needs in the sales markets and time shifts in the supply of supplies.
- A completion function is needed because the materials on the market usually do not correspond to the specific production-technical requirements of the customer. Therefore, the warehouse provides the picking function to create assortment types following the individual needs of the operations.
- The speculative function results from the expectation of an increase in the prices of materials and goods in the supply or sales markets.
- The refining function is related to the quality changes of the stored assortment.

Basic warehouse operations include receiving goods, storing goods, receiving customer orders, picking goods and their subsequent dispatch. During all these operations, it is necessary to keep in mind the primary goals of logistics, which in the case of storage quickly come into conflict, namely the maximum use of space for individual activities and the simultaneous minimization of the time required to perform these activities. The figure below describes separate warehouse operations.



Figure 3: Separate warehouse operations

Source: own processing

- Receipt of the goods

It is an area related to the company's close cooperation with suppliers. This includes several activities, for example, securing the place for material unloading, recording vehicle arrivals and number seals, subsequent breaking of the seal, checking order documents, working with delivery notes, unloading vehicles, physical inspection of incoming goods, quality control and next movement of goods from the area directly to the warehouse (Szymonik, 2016).

- Storage of goods

After receiving the goods in the warehouse, it is necessary to place them within the warehouse. In practice, two basic methods are used to distribute material or goods. These are the static deployment method and random deployment method. With the fixed storage method, the same material has a directly allocated location in advance. In the random placement method, product placement is completely random based on predefined algorithms, which require highly sophisticated input information.

- Orders from customers

Orders from customers are recorded in the relevant company information system and are continuously processed by warehouse workers.

- Goods picking

It can be realized individually from shelves and racks, with the simultaneous grouping of orders together or in batches. We distinguish between three basic picking methods: item picking, picking into crates or boxes and whole pallet picking. Furthermore, picking can be divided into manual and automated (Gwynne, 2017; Rjeb, 2021).

8. Handling (handling unit)

A handling unit is any material (packaged or unpackaged, stored on a means of transport or without it, bundled, etc.) that forms a unit capable of manipulation without needing further modification.

For the picking process, warehouses have access to a variety of different types of handling equipment. These include small, inexpensive trolleys, large conveyor systems, and automated equipment. The equipment utilised in picking operations is examined in this section. To deal with various product kinds and order profiles, businesses use a combination of equipment. This section will be divided on manual and mechanical equipment and high-level order pickers (HLOP). Manual and mechanical handling equipment included trolleys/cages/carts/garment rails, hand pallet trucks, pallet jacks, powered pallet trucks, manual stacker trucks, forklift trucks and low-level order pickers (LLOP) and towing tractors.

- Trolleys/cages/carts/garment rails

These types of equipment contain shelves, compartments, or slots into which the picked objects are inserted or hung and are pushed along picking lanes or shelving by pickers. Both full-carton and item selection involve their use. The aisles are typically at least one metre wide. Pickers spend most of their time moving the

equipment rather than picking, which results in low productivity. Roll cages can also be used for transporting, eliminating the requirement for double-handed work.



Figure 4: Shelf trolley and cart rail
Source: Shelf trolley, 2022; Rail cart, 2022

- Hand pallet truck, pallet jack, powered pallet truck, manual stacker truck

The hydraulic pumps on hand pallet trucks allow the driver to elevate a pallet high enough to carry it across the warehouse floor. They are economical for moving pallets over short distances. Powered pallet trucks are employed for loading, unloading, picking complete cartons, moving pallets to and from receiving and dispatch facilities and other tasks. They can be delivered in seated, stand-on, or pedestrian variants. The selected truck will depend on the warehouse's travel distances and the throughput of pallets per hour. Pallet trucks with a lift capacity of up to 800 mm are one example of this field's advancements. Depending on the model, manual stacker trucks can raise 1 000 kg up to a height of 3 metres.



Figure 5: Pallet jack and manual stacker truck

Source: Pallet truck, 2022; WS manual fork, 2022

- Forklift trucks

Both counterbalance and reach trucks can be used in the picking process without pallet trucks. Each has an advantage over pallet trucks in that it can elevate a pallet to a height where the operator doesn't have to stoop down to insert cartons onto it. Of course, the breadth of the aisle and the volume of orders picked each day will have an impact. Additionally, these vehicles are used to remove complete pallets from the racking.



Figure 6: Forklift truck

Source: Forklifts, 2022

- Low-level order pickers and towing tractors

Electric-powered LLOP trucks may move up to three roll cages or two pallets along picking aisles at once. These trucks can move between the first and second levels, with the driver being raised on a platform. The towing tractors are perfect for LLOP and horizontal transit. These may transport several pallets and cages over great distances from the dispatch sites for reverse storage and picking.



Figure 7: LLOP
Source: LLOP, 2022

- High-level order pickers

Picking from storage slots high above ground level is necessary for operations with many product lines and insufficient floor area to provide enough pallet pick faces. HLOP must be used in these conditions. By using narrow aisle racking, trucks, and pick faces, this system has the advantage of producing a high density of pick faces. If a random storage system is used, it can also reduce restocking.



Figure 8: HLOP
Source: HLOP, 2022

- Conveyors

By using force or gravity, conveyors move cargo. Moving cartons and totes between zones and to the operator workstation is a crucial component of zone-picking and goods-to-picker systems. Longer-distance items are typically transported by powered conveyors, which employ belts, chains, slats, and rollers. Gravity conveyors can move picked things over short distances inside zones or from a mezzanine floor to the despatch area for consolidation with other selected items. They may have belts or rollers that are motorised or unpowered. The latter has the advantage of transporting various boxes and bags without worrying about clogging the conveyor and is likely to be less expensive than powered rollers. Conveyor systems have many drawbacks, including a high initial investment cost, limited flexibility, frequent maintenance requirements, and the fact that they obstruct both trucks and people (Gwynne, 2017; Rushton, et al., 2014).



Figure 9: Conveyor
Source: Conveyor, 2022

9. Picking

This section discusses the various methods of picking to attain reducing waiting time. A picking operation may call for picking individual items, picking whole pallets, picking pallet layers, picking outer or inner cartons, or picking full pallets. The warehouse will typically need to pick a mix of the items mentioned above, and occasionally various combinations will be required in the same order. In the following section, we will examine each of the chosen techniques in turn and go through how they relate to one

another. Three pick techniques can be distinguished: automated picking, picker to goods, and goods to the picker.

a) Picker to goods

Picker-to-goods operations are the norm in the bulk of warehouses, which continue to run with little automation.

- Picker to order

The picker takes one order or a portion of an order. It moves through the warehouse on foot with a cage, trolley, or pallet using a forklift or pallet jack, gathering goods until the entire order or assignment is finished. Orders can be placed for single goods, whole cartons, full pallets, or even a mix. By reading instructions from a paper pick list, listening to voice orders, or reading instructions from a radio data terminal, the picker follows a route or picks the path that has been predetermined. Each order line is chosen in turn for a particular customer order. Piece select goods may be kept on shelves, in carousels, or on flow racks, depending on their size. In pick sites, full cartons might be kept on pallets, shelving, or flow racking. Individual choosing has the benefit of requiring minor handling since the product only needs to move from the store to the dispatch in one handling motion.

- Cluster picking

Operators can take several orders into the warehouse and pick them into several compartments on their trolleys or cages to reduce overall travel time. To transport numerous pallets down the picking lanes, some companies use tractors or tugs to pull powered pallet trucks that can carry two pallets simultaneously. Although it has the benefit of allowing for the simultaneous picking of several orders and decreasing overall travel, if a put-to-light system is not used, it does require expert pickers. A check system must be in place to assure picker accuracy because it is possible to insert the incorrect product or quantity of development into a container.

- Batch picking

Operators pick products for a number of orders at once in a process known as batch picking. This is similar to cluster picking, except that instead of having a cluster of individual orders, these orders are combined into a single pick list, which is then divided into the individual orders that made up the pick list. Pickers may be dispatched to the reverse storage area to retrieve whole pallets or layers of pallets in order to fulfil the order quantities.

- Zone picking

Zone picking is selecting products from predetermined locations in a warehouse; each picker is allocated to a particular zone and is only permitted to select items from those zones. As each zone completes its pick, orders are sent from one zone to the next.

- Wave picking

In wave picking, orders are grouped and released at predetermined periods throughout the day or to coincide with truck departures, replenishment cycles, shift changes, product locations, product commonality, value-adding service requirements, and priorities. Wave picking can balance effort by area or time by rationally combining and issuing orders.

b) Goods to picker

A good-to-person system can result in significant advantages. There are numerous ways to customise a system, including reducing labour requirements, eliminating dedicated pick faces, decreasing system footprint, improving product security, altering order profiles, etc.

c) Automated picking

Automation can have a significant impact on a high-volume item pick operation. Automation should be considered for a process that sends out more than 3,000 cartons every day. Automation necessitates extensive planning and time spent on design, assessment, and execution. Accuracy and productivity can both be significantly increased with automation (Gwynne, 2017; Rushton, et al., 2014).

10. Packaging

Packaging is a product whose function is intended to contain one product or a particular group of products or to protect, handle and put products into circulation, regardless of the type and material used. Packaging can be made of different materials. Today we know cardboard, plastic, wooden, glass, metal, paper or textile packaging. Cardboards and cardboard packaging are considered the most ecological, while plastic packaging is the least ecological.

- Product packaging process

The packaging process can be described as a set of operations consisting of dosing, filling into containers, preparing and subsequent use of containers, and handling containers. Different packaging is used for other products according to the product's characteristics, the needs of the seller, distributor or customer, and the cost of packaging, which is a relatively minor criterion at this time (Rushton, et al., 2014; Dreger, et al., 2018).

- Types of packaging

Packaging can be divided into consumer, handling and transport packaging. Consumer packaging is in direct contact with the given product. They are sometimes referred to as primary packaging. These are the packaging in which customers, in the position of a buyer, take products from the shelves and take them home. The most basic function of this packaging is the protective and information-communication function. Handling packaging is secondary packaging and, in practice, is often referred to as like commercial packaging. The role of handling packaging is primarily to protect consumer packaging. Before removing the consumer packaging, it is very often necessary to destroy the handling packaging. Handling packages are placed on pallets or in containers for transport or storage. Transport packaging is designed to prevent damage during transportation. Shipping packaging is also used to store and identify products (Gwynne, 2017; Szymonik, 2016).

1.4 Customer services

It is possible to define the function of customer service as delivering temporal and geographical value throughout the exchange of goods and services between buyer and supplier. Customer service is also a way to gauge how effectively a logistics system performs in terms of generating utility value through time and location, with an emphasis on external clients. The services associated with the product or the stages of its sale are practically represented by customer service. We categorise the customer service elements into three fundamental categories based on the sales process stages: pre-sales or pre-transactional, sales or transactional, and post-sales or post-transactional (Christopher, 2011).

- Pre-sales or pre-transactional - the company's business strategy and policy are directly related to the pre-sales aspects of customer service. They usually have a long-term character. Despite not being specifically targeted at logistics-related topics, specific components significantly impact how customers view the business. Their objective is to establish the circumstances necessary for the provision of services in the future.
- Sales or transactional - from the customer's point of view, these are the essential components of customer service, as they are directly linked to the sale and delivery of goods. Among the sales components of customer service, we include, for example, information about the order status, system accuracy, unique delivery solutions, redistribution, product substitution and ease of ordering.
- Post-sales or posttransactional - customer service elements offer support after the consumer has acquired the products. In practice, this group receives the least attention. However, it significantly affects customer loyalty and satisfaction. Installation, warranties, repairs, spare parts, complaints, refunds, and product replacement are some after-sales components (Christopher, 2011; Rushton, et al., 2014; Lukoszová, 2020).

2. Distribution

This chapter will explain the concept of distribution and distribution costs. Next, distribution strategies will be described and why they are used, and finally, distribution structures will be described.

2.1 Definition of a distribution system and chain

Another crucial function of a logistics company is distribution, in addition to supply and production. Distribution is another P from the marketing mix (placement) and can be considered a connecting path between the manufacturer and the customer. A product is placed on the market through the process of distribution, which also involves procedures for storing and transporting goods as they are moved in the direction of the consumer.

Distribution logistics is primarily concerned with the choice of distribution warehouse locations, the storage procedure, commission management, packaging management, the output of items from the company, and transportation. Distribution can be split into two fundamental categories: direct (direct deliveries) and indirect (warehouse stocks) (Ross, 2015).

2.2 Distribution cost

Distribution costs are the expenses a business has to pay to make its products or services available to consumers or resellers. The majority of the costs are for shipping and logistics. It is essential to distinguish this cost from advertising and marketing expenses. There are various tactics for reducing expenses:

- Avoiding small shipments.
- Working to minimise sales returns to reduce costs.
- Using technology and equipment.
- Automating tasks is a few of them (Chira, 2016).

2.3 Types of distribution strategy

A distribution strategy is a plan to assist in delivering a good or service to the clients that a company is targeting through a supply chain. This strategy encompasses every tactic employed to provide clients with what they want. Distribution channels and the channels of other businesses can both be used. Furthermore, a company can sell through other retail stores or use its unique stores.

2.3.1 Direct distribution

Direct distribution is moving a product directly from the maker to the consumer without the involvement of any middlemen. Its benefit is that the maker keeps in touch with the product and receives crucial client input simultaneously. The manufacturer's limited promotional options, which are frequently out of his price range or ineffective when comparing prices and outcomes, are the disadvantage, on the other hand. Direct deliveries are ideal when a customer orders a significant quantity of goods from one provider (approx. 6 - 8 pallets) or when the products need special handling or transit circumstances. Cross docking is one of the distribution strategies.

The cross-docking strategy is additionally referred to as flow warehouse. It is a logistics technique intended to shorten supply and delivery chains and lower distribution expenses. This technology's primary goal is to move things with minor handling and storage. The core idea behind cross-docking technology is not to keep products but to efficiently integrate them into cars travelling in the right direction. Because there are so few requirements for handling and storage, the goods are not physically piled up in the warehouse but moved through it, meeting the needs for cost efficiency and speed (Indeed Editorial Team, 2021).



Figure 10: Direct distribution
Source: Hitesh, 2021

2.3.2 Indirect distribution

The route taken by a product from the manufacturer to the client via an intermediary distribution connection is known as indirect distribution (retail, wholesale).

- Retail

Unlike wholesale commerce, retail trade involves acquiring products for subsequent, direct sales to customers. Retail can exist in two forms: without stores and with stores.

1. Without stores - in this instance of non-store retailing, sales to the final consumer are made through catalogues, television sales, telephone or possibly internet services. Direct sales and automated sales are two examples of this type of retail.
2. With stores - is further divided into self-service retail, self-selection retail, limited-service retail and full-service retail.

Retail sales can be divided into several retail sales: these are standard stores (offers the broadest possible assortment), specialized stores (focus on one type of goods), narrowly specialized stores (concentrates only on a specific segment of a given category of goods, prices are here higher), discount stores (offers a limited assortment of goods at lower prices, sale of goods from pallets), supermarkets (provides a complete variety of food products and primary non-food products), hypermarkets (offers a diverse composition of food and non-food products), hobby markets, shopping centres and business houses.

- Wholesale

Wholesale is a large-scale trade conducted by a distribution intermediary; it is not aimed at final consumers (individuals, households). Consequently, it is an exchange between commercial entities (B2B). Wholesale can be divided into different types:

1. Classic wholesale – represents independently owned businesses that purchase goods from manufacturers, become the owner of them and resell them on their behalf. Classic wholesale is further divided into a full range of services and a limited range of services.
2. Wholesale with a full range of services – provides services from storage to the offer of credit services to management support. While the product wholesaler offers one or a few product lines on the market, the general wholesaler focuses on a broader range of products.
3. Wholesale with a limited range of services – only provides a small selection of services or a small variety of items frequently in high demand. One such wholesaler is a cash-and-carry wholesaler, which as a standard, offers fast-moving items and sells them for cash while the purchasing retailer arranges for the removal of these goods (Indeed Editorial Team, 2021).

Another example can be a delivery wholesaler, which mainly deals with sales and delivery. It sells its goods to retail units, which it often supplies daily, as these are fast-moving goods.

In addition to traditional wholesale commerce, brokers and agents also conduct business on the market. Their main distinction from conventional distributors is that they do not obtain ownership rights to the products. They have a limited range of activity and only serve as middlemen for these commodities.

4. Brokers – act as a trade mediator between the seller and the buyer, get payment from the party who hired them, and do not keep the products themselves.
5. Agents – can be manufacturer's representatives, sales agents, purchasing agents, or commission-based traders, and unlike brokers, they represent the vendor or buyer over a longer period of time (Indeed Editorial Team, 2021).



Figure 11: Indirect distribution
Source: Hitesh, 2021

2.3.3 Intensive distribution

This method involves a more aggressive and comprehensive marketing strategy. As a result, a number of retail stores are opened in an effort to improve sales and profits while also attracting additional customers.

2.3.4 Exclusive distribution

Companies that sell premium items favour this approach. You must go to their dealership to purchase their goods. BMW and the Mercedes-Benz automaker are two good examples in this regard.

2.3.5 Selective distribution

This method shares certain similarities with intensive and exclusive tactics. This strategy's proponents know that not everyone will be interested in their goods. Because of this, they opened storefronts in a few key locations. Their stores carry nothing else; if they choose outside retailers, they will do so with goods closely tied to their offerings (Hitesh, 2021)

2.4 Distribution structure

The distribution structure consists of a set of organizational units and external intermediaries. It is necessary to ensure the assembly of goods, transport, storage, handling and communication. Transportation is then inversely proportional to the number of warehouses. We distinguish vertical and horizontal distribution structures.

2.4.1 Vertical distribution structure

The vertical structure of goods distribution represents the number of different warehouse levels in the distribution system. In general, four basic types of warehouses are recognized: operational, central, regional, and dispatch.

- Operational warehouse - are found in manufacturing local units, such as operations or facilities, and exclusively hold the assortment made on this site.
- Central warehouse - are superior to operational warehouses in the warehouse hierarchy. Their number is limited. They contain the complete assortment of the company.
- Regional warehouse - their task is to create standby stocks for production needs within a specific sales area consisting of several sales areas. Only part of the company's complete assortment is kept in regional warehouses.
- Dispatch warehouse - they are at the lowest level of the hierarchy. These are organized in a decentralized manner within the sales area. Their task is to divide the quantity into units ordered by the customer and prepare them for supplying the customer. According to the clients headquartered there, you can locate dispatch warehouses within the designated sales districts. Only a portion of the assortment is kept at the dispatch warehouses. Regional product differences can be found here, depending on consumer desire. By default, here is where the items with the highest sales in the specified region are kept (Friedrich, 2013).

Choosing to favour centralised or decentralised warehouses for distribution logistics is a crucial strategic choice for the organisation. Centralised warehouses are a plant-level solution for storing raw materials in one area inside an operation; the decentralised option deploys warehouses in several plant locations and further

separates them based on the focus on resources and consumption. With centralised solutions, it is possible to observe a broad selection of products, adequate delivery times, high product value, and a smaller number of large clients who frequently have a homogeneous character. Decentralised warehouses report a small selection, quick turnaround times, poor product value, and a more significant proportion of heterogeneous clients (Chira, 2016).

2.4.2 Horizontal distribution structure

The horizontal structure differs from the vertical structure in that it considers the number of warehouses per warehouse level, the choice of warehouse sites, and the assignment of warehouses to their respective sales districts. The choice of a warehouse location mainly considers the customer base, the number and size of orders received, customer behaviour, the place of production locations and, of course, costs (warehouse, storage, transport, shipping).

- Dispatch warehouse - is the most numerous forms of the warehouse, the base of which can be distinguished or narrowed relatively quickly.
- Operational warehouse - are set up in each manufacturing facility, and if the corporation deems it a cost-effective option, it may be possible to pool them to some extent.
- Central warehouse - it often serves as a collection point for the entire assortment in the middle of the sales area. Still, it is not a condition, as the demand is rarely distributed evenly throughout the region (Chira, 2016).

2.5 Eshop

This part is focused on the concept of E-shop. Here is a comparison of the terms e-commerce and e-business. Furthermore, the chapter focuses on the advantages and risks of online business.

2.5.1 E-business and e-commerce

Presenting information on the Internet and other ICTs, a vital component of company activities, is something that only some business entities can do today. Information and communication technology produce a business environment that makes it feasible to carry out commercial activities more quickly, effectively, and frequently for less money.

- E-business - signifies an electronic business that implements information and communication technology to improve the effectiveness of relationships between companies and customers.
- E-commerce - symbolises electronic trading, in which all or a portion of communication between the business and the customer occurs via modern electronic communication.

The idea of e-business is much more expansive and encompasses not just buying and selling goods and services but also working with partners or conducting business internally. E-commerce is the process of buying and selling products online. For the same reason, e-business can be considered a subset of e-commerce, the top tier of the e-commerce hierarchy (Rosário, et al., 2021).

- Classic internet trading between company and customer - symbolises the business-to-customer (B2C) business concept. This concept is the internet's analogue to traditional brick-and-mortar retailers. The benefit of e-commerce is that while conducting business with a customer, the business acquires all customer data (address, contact information), which may then be utilised within the organisation's marketing initiatives in line with the GDPR (General Data Protection Regulation).
- E-commerce in distribution and sales networks - the B2B (Business to Business) model is utilised, in which trading and communication occur between manufacturers, branches, distributors, wholesalers, sales agents, and other entities that are not typical customers. In the B2B model, the seller typically has a prior relationship with the buyer and frequently has already negotiated the terms of the sale. A B2B model is the so-called electronic marketplace (e-marketplace).

E-commerce has the same essential elements as traditional commerce: e-supply chain management, e-procurement, e-payment and sales systems, and customer relationship management (CRM). CRM stands for customer relationship management procedure. It is a procedure whereby the customer data that is currently available is gathered, assessed, and then practically applied. It makes it easy to identify these clients' demands, respond appropriately, and predict their future purchase requirements. With the help of the information acquired, customer and business communications can be improved and streamlined (Barnes, 2007).

- Electronic versus physical store - E-commerce is a well-established substitute for traditional brick-and-mortar retailers. Brick-and-mortar stores continue to be the market leaders in the sale of food and apparel, where a contact mode of purchase is still significant for many customers, despite the widespread usage of electronic commerce in the case of consumer gadgets, computers, and their peripherals. However, many businesses now choose the route of running both brick-and-mortar stores and online businesses (Cunningham, 2019).

2.5.2 The course of electronic commerce

Four fundamental steps can be used to categorise the process of e-commerce:

1. Marketing activities and product promotion - this is the first stage. The retailer will use websites, social media platforms, and other technologies to advertise its goods, set prices, include reviews, and enable shoppers to ask clarifying questions.
2. Online order - this second stage is an order placed via remote access. The customer places an order using the online store, which the merchant accepts and begins processing.
3. Payment - represents the third phase of ongoing trade. The last step, the actual delivery of the items, may come before or after this phase. In case of payment in advance, the seller will issue a pro forma invoice. Numerous payment options are available by default, including cash on delivery, bank transfers online, credit card payments online, payments made using bank orders, and electronic wallets (PayPal or Skrill).

4. Delivery - with cash on delivery, the seller produces an invoice, and payment is often made in cash when the items are received. There is considerable variability in these two phases depending not only on the chosen payment method but also on the method of delivery of the goods (Mohamad, 2021).

2.5.3 Benefits and risks

E-commerce has its advantages and disadvantages. The pros and cons are:

- Positive from the buyer's point of view - often a lower price because the assortment is bought straight from the manufacturer or because the items are purchased, and the seller has less overhead operating an online store than a brick-and-mortar store (employees, energy, rent for premises). As a result, it can charge less for goods and services. Additionally, the business is accessible anytime from anywhere in the world thanks to the Internet, which allows customers flexibility regarding their location.
- Positives from the seller's point of view - since communication over the Internet ensures a great degree of flexibility, the key benefit is the lower expenses required to secure a business transaction. At the same time, the seller can quickly receive feedback and readily map out the visits of customers (including potential customers). E-commerce offers smaller businesses a chance to launch, develop, and expand even if they lack the resources to set up a chain of physical storefronts.

On the other hand, online shopping has certain benefits as well as risks. Among them can be included:

- The disadvantage for the customer is that the disappearance of the purchase's anonymity is likely the most frequent. The customer's privacy is somewhat violated because the seller can access his data based on the completed transaction.
- Disadvantages for the seller - result from the way the Internet works. The information system and its operator are intimately connected to electronic commerce, and the greatest risk is the potential for an assault on the information system by an unauthorised person. Another flaw is the fact that many electronic

stores still lack properly designed marketing plans. As the promotion technique only uses the Internet, many of them continue to be virtually concealed from average consumers. However, the number of users to whom the pertinent information is accessible is constrained by the usage of a single promotion medium (the Internet) (Prasanna, 2022).

The organisation can correct, lessen, or even eliminate hazards considerably if it is aware of them. We can discuss so-called risk management in this context, which is concerned with the identification, analysis, and financial control of risks (Alkis, 2022, Sharma et al., 2022).

3. Decathlon company

Decathlon is a family company with more than 40 years of tradition focused on developing, producing and selling sports equipment. Around the world work, more than 105 000 enthusiastic athletes from 80 different nationalities want to fulfil a joint mission every day: "To make sport accessible to as many people as possible.". All employees share a unique corporate culture based on two core values responsibility and zest for life.

The key to the company's success is its experience, which forms the framework of its playing field and its original concept: "All sports under one roof.". The Decathlon relies on innovation in all sectors - research, product conception, design, production, logistics, sales, finance and communication. They have their brands, whose teams work intensively to develop functional, simple and aesthetic products at the lowest possible prices. These products are intended for all sports lovers, from beginners to experienced athletes and are only available in Decathlon.

The company's logo, depicted in figure 12, features the white text Decathlon on a blue background. Apart from a bit of adjustment in the colour of blue, the logo has remained constant and is simple to read and recall. It denotes constancy and dependability. Frequently used in conjunction with the adage "sport for all, all for sport" (Intranet Decathlon, 2022).



Figure 12: Logo of the company
Source: Intranet Decathlon, 2022.

3.1 History of the company

The first Decathlon store opened its doors in the French town of Englos in 1976, beginning the company's existence. Michel Leclercq, the company's creator, had the concept of a sizable sports store where athletes could afford to outfit for sports. His objective was to bring all the sporting goods under one roof and offer these items at the most competitive pricing. At that time, there was no such thing as this kind of business. Six teammates—some of whom had no concept of how retail operated—were gathered around Michel Leclercq. But their shared tenacity and love of sports brought them together. Due to its enormous success, ten years later, in 1986, Decathlon Production, a design and production facility, was established. This allowed the business to start designing and producing its items. It also grew in Germany that year, opening its first branch in Dortmund. The first two companies, the so-called passion brands, were founded in 1996: Quechua (a manufacturer of trekking gear for the mountains) and Tribord (a brand of water sports equipment). In Sao Paulo, Brazil, in 2001, the first Decathlon store opened on the American Continent. The first store debuted in Shanghai, China, two years later.

Decathlon's 45th anniversary was commemorated in 2021. More than 105 000 people work at Decathlon branches, which have 1,747 locations throughout 60 nations (Intranet Decathlon, 2022).

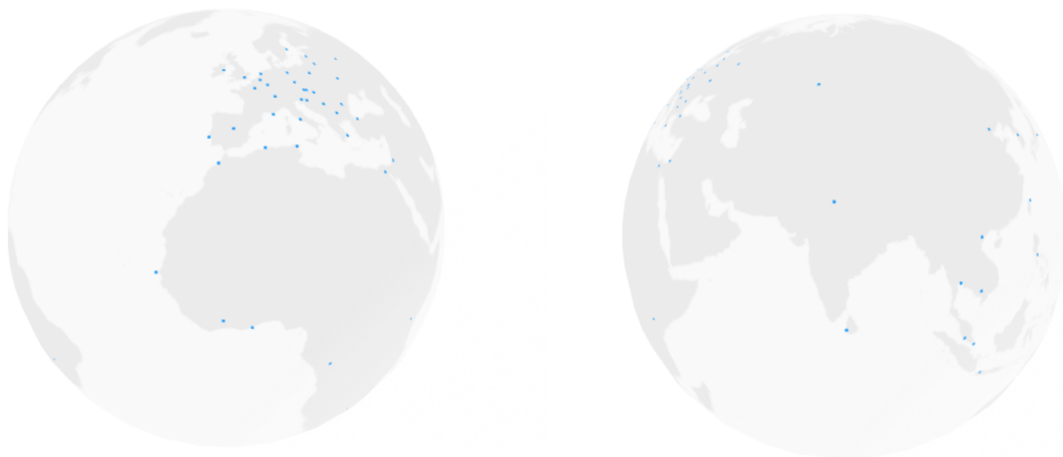


Figure 13: Decathlon company around the world
Source: Intranet Decathlon, 2022

3.2 Decathlon in the Czech Republic

With the opening of its first Czech location in Liberec in 2010 with a 4,500 m² sales area, Decathlon made its entry into the country. In Ostrava, a second store was launched a year later. Stores were established in Olomouc, Černý Most in Prague, Pilsen, Hradec Králové, and České Budějovice in 2013. New stores opened in Brno and Chodov in 2014. The establishment of an online store and a share program for employees in the Czech Republic made 2015 an important year. A store in Zlín and a second in Ostrava opened in 2016. A year later, Jihlava, Mladá Boleslav, and a second store in Brno all opened for business. Five stores simultaneously opened in the cities of Letňany, Zlín, Třebíč, Teplice, and Opava in 2018. 2019 also saw stores opening in Kladno, Tábor, Frýdek-Místek, and Pardubice. The most recent openings were in 2020 in Nový Smíchov in Prague and Karlovy Vary. The Czech Republic now has 25 branches overall, which can be seen in figure 14. At the moment, Decathlon Czech Republic employs around 1,600 teammates (Intranet Decathlon, 2022).



Figure 14: Decathlon in the Czech Republic

Source: Intranet Decathlon, 2022

3.3 The mission, vision and values of Decathlon

The goal of Decathlon is to open up sports to as many people as possible. The mission of Decathlon is currently being approached sustainably. The purpose of Decathlon Czech Republic is to dominate the sports market in the country.

The core principles of the Decathlon are vigour, accountability, generosity, and authenticity. Decathlon's founding father, Michel Leclercq, gave the company its values. But before, there were just two values.

- Vitality is crucial for Decathlon since it shows how employee energy is directed. The sport demands daring and self-overcoming; thus, it's vital for confidence. It is a way of thinking about life that emphasises optimism and participation. It denotes a desire to move forward and provide everything one has.
- Responsibility is the understanding that each employee is a part of the whole and must safeguard the interests of the community and care for interpersonal connections. But everyone's role also carries with it a professional obligation. Engagement, dependability, ecosystem knowledge, a desire to break down boundaries, and a willingness to share team responsibility are all critical.
- To be generous is to cherish life and people. It is similar to solidarity but involves more people. It relates to each person's responsibilities and embodies the core principle of Decathlon.
- The historical value of honesty is followed by authenticity. This refers to speaking clearly and having the guts to express yourself in Decathlon. It relates to speech rights.

The company's guiding principle is "Satisfied or satisfied." Employees of Decathlon assist customers in choosing products, offer guidance and tips, and provide extra services. They do everything to satisfy customers. Products with ratings of less than three stars out of five are later removed from the sale and then revamped to best meet user needs (Intranet Decathlon, 2022).

3.4 Foundation Czech Republic

The Decathlon Foundation was founded in 2005 in general. It stands on two pillars: sports and humans. The purpose is to connect Decathlon and their teammates involved in local organizations aimed at helping the disadvantaged, to offer as many people as possible the chance to grow thanks to sport and its values.

The first Czech project was approved in 2021 by a commission in Italy. The project began to be implemented in 2022. The Czech project is called "EVERYONE IS EQUAL AT THE STARTING LINE". The goal is to support more than 200 children from 13 children's homes. The project aims to integrate disadvantaged children into ordinary society through sports and thereby eliminate the risk of them falling into risky behaviour. The fulfilment of the project is to provide children with sports equipment so they can feel the same as others. Develop their habits for regular sports, not just one time. Each children's home has one representative who works with the house and takes care of the joint involvement of the store and the children's home (Intranet Decathlon, 2022).

3.5 Decathlon product portfolio

Selling sporting goods is the main business of Decathlon. Its unique selling point is that it provides equipment for multiple sports "under one roof," saving the consumer from having to look for separate stores for each sort of sport and allowing them to locate everything in one location. As a result, the product selection is relatively broad. Most of the section comprises its brands, but there is also a selection of other sportswear brands like Adidas, Nike, Merrell, Salomon, Asics, etc. All Decathlon items are separated into product lines based on how frequently they are used: sometimes, frequently, and intensively. These distinct rows are rationally arranged on the shelf so the buyer can advance from novice to professional. Each product's product line is labelled in colour for easier orienting.

Asia is where most own-brand goods are created. The company's headquarters are in France, and production is done there and in Italy, Portugal, Romania, and Ukraine, all of which are European nations. Before the product is produced, a protracted

process starts with observing users in the relevant field. A product will then be developed by a group of programmers, designers, and product managers before being tested in a lab to gauge its safety and comfort during use. Then, these goods are put to use in real-world testing. This completes the loop by allowing for the start of production and subsequent distribution to brick-and-mortar retailers and the online store.

3.6 Work with stock

This chapter is focused on working with stocks at Decathlon. This describes the actions that are taken to set up the correct supply.

3.6.1 Trade policy

Every manager develops a business policy differently. It depends on the area where the store is located. So, it will never happen that one business policy is the same for the stores. The business policy contains the fundamental questions that managers must be able to describe to find out who to sell to, how we sell, what we sell and with whom we trade. If the manager writes down all these questions in detail, he can quickly identify all the information he needs to build the department's operation. Business policy is developed in smaller departments once a year and in larger ones at least twice a year. Depending on how the policy is created, the so-called range is chosen for the products in the given store.

3.6.2 Range choice

Range choice takes place twice a year. There is a selection of product lines for the season by individual departments. Range chooses leaders according to its progressive business policy and sales from previous seasons. As a tool, I use the My offer portal, where the selection takes place, and the catalogue is also available so that the manager has an overview of what items are in the given rank. We have a total of three ranges in the store, and the fourth range is products only available in the e-shop. Thanks to the fact that each store chooses its range in advance, the brand

knows exactly how many products will need to be produced so that there are enough in the stores.

The figure shows the portal, which you can choose below. A selection can be seen where the number means the assortment size and opti or mini customization. You can also see the metrics with the corresponding range on the shelves.

Annual choice	Autumn W36 2023 - W39 2023			Winter W40 2023 - W08 2024			Spring W09 2024 - W14 2024			Summer W15 2024 - W35 2024		
	Dao RB	Range	ML	Dao RB	Range	ML	RB	Range	ML	RB	Range	ML
459 - WOMEN HIKING AND TREKKING			42.42			34.42			51.62			45.82
- 1909 - WOMEN HIKING AND TR			12.7			9.2			23.8			23.8
12091 - WOMEN NATURE H		1 - OPTI	1.5		1 - OPTI	1.5		3 - OPTI	3.5		3 - OPTI	3.5
11495 - WOMEN NATURE H		4 - WEB	0		4 - WEB	0		3 - OPTI	4.5		2 - OPTI	3
12064 - WOMEN APPAREL		1 - OPTI	1.2		1 - OPTI	1.2		2 - OPTI	2.3		2 - OPTI	2.3
12092 - OUTFIT DESERT TR		4 - WEB	0		4 - WEB	0		4 - WEB	0		4 - WEB	0
10807 - WOMEN MOUNTAIN		1 - OPTI	1.5		1 - OPTI	1.5		3 - OPTI	4.5		2 - OPTI	3.5
12069 - WOM MOUNT HIK I		4 - WEB	0		4 - WEB	0		1 - OPTI	0.5		2 - OPTI	2
34051 - WOMEN ULTRALIGI		2 - OPTI	3.5		4 - WEB	0		2 - OPTI	3.5		2 - OPTI	3.5
12117 - WOMEN MOUNTAIN		2 - OPTI	2.5		2 - OPTI	2.5		2 - OPTI	2.5		3 - OPTI	3.5
11634 - WOMEN MERINOS		3 - OPTI	2.5		3 - OPTI	2.5		3 - OPTI	2.5		3 - OPTI	2.5
35013 - HIKING PREGNANC		4 - WEB	0		4 - WEB	0		4 - WEB	0		4 - WEB	0
- 1924 - WOMEN HIKING AND TR			9.7			7.2			10.9			4.2
11268 - WOMEN NATURE H		2 - OPTI	2		2 - OPTI	2		2 - OPTI	2		1 - OPTI	1

Figure 15: Range choice
Source: My offer Decathlon, 2022

The following figures show a comparison of the catalogue, where ranges one (R1) and two (R2) are shown. The experimenter chooses range 2, which has a selection of R1 and R2. So, the items are added.

Figure 16: Range one
Source: My offer Decathlon, 2022

Figure 17: Range two
Source: My offer Decathlon, 2022

3.6.3 Display

Fast-track sales and self-service sales govern Decathlon stores. It is essential to have everything all right because the customer could be unsatisfied. On average, 80% of all purchases are made without the help of a salesperson. On average, 70% of customers read the packaging/PLV (additional information on the product). Proper navigation and smooth passage through the store will allow him to find the sport he is looking for quickly. Thanks to the aligned, easy-to-understand and attractive display, the customer will take away the product they are looking for and, what's more – a perfect experience that will make them want to return to the store.

- Quick shop
 1. Free passage, which is also safe;
 2. Clear navigation facilitating orientation;
 3. Simple, attractive and inviting display;
 4. Verticality of the offer
 5. Quality facing.



Figure 18: DAO plan
Source: My offer Decathlon, 2022

In the figure 18 is the merchandising (or DAO) plan that serves as the foundation of the display. Everything is created so the customer can find his way around independently. Representative products at the entrance to the aisle (golf balls). Segmentation tapes (white tapes to separate golf balls, gloves and accessories). Products are sorted in ascending order by price. Product comparators that help customers choose the right product to suit their needs.

- Self-service selection
1. I see the product;
 2. I touch the product;
 3. I read the product information;
 4. I try the product;
 5. I take the product away.

3.6.4 F&R system

F&R abbreviation is combination using for forecast and replenishment and for future instead of history. What is F&R system? F&r system is automatic replenishment of each store based on its future sales thanks to sales history and based on sales potential, by anticipating stock delivery (to smoothen sales peaks), by covering the lead time given by the logistics and by anticipating its end of season.

- How F&R works

F&R comprises three parts: safety stock, sales forecast and mini merchandising. Safety stock must be secure and face unexpected sales and events. Sales forecasts are calculated at the item/store level; it is based on its history (for new articles, it takes the sales history of a reference item) and by integrating business events (OPECO, calendar gap, weather). Mini merchandising is the quantity it wants to present at the end of the day. It is not linked to the article's sales potential.



Figure 19: Consists of F&R
 Source: Intranet Decathlon, 2022

Impact for the store is gain in stock – decrease DVS (inventory turnover) and increase availability, agility – deliveries are adapted to store needs, and the last one is efficiency – less gesture to manage overstock and efficiency of employees. Every store receives only what they will sell. At the end of the season, the system anticipates the closing and switching of range and sends to the store only what they need guaranteeing a stock at the end of the season.

- Manual order

The store could make manual orders for a follow-up article. It can order manually to boost the business thanks to linear heads and create occasional user experiences. Manual order is impossible if there is a temporary and definitive shortage. When the store passes a manual order, it must be sure that it can sell all the products, which quantity consists of order + stock + coming automatic order.

- Logistics

The warehouse will be replenished based on sales of stores attached to it. The warehouse will receive orders with the expected delivery data in store which corresponds to lead time by logistic.

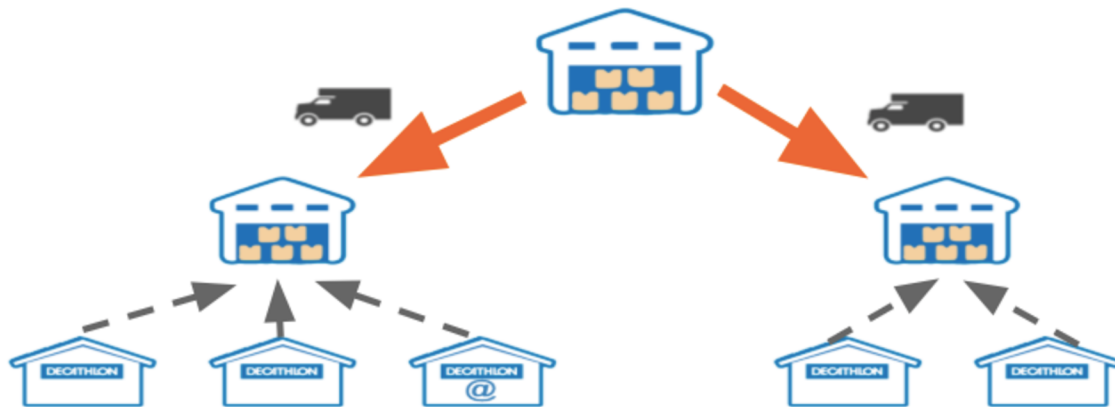


Figure 20: Data flow
Source: Intranet Decathlon, 2022

- F&R forecasting the sales

To calculate a forecast on the article in store, F&R considers the following:

1. Trend (business trend of the product) + seasonality (beginning of the peak, end and flat development) + DIF (manual action to boost or slow down the forecast).
2. F&R smooths the sales – do not reproduce epiphenomenon, secure quantities, or file the activity in logistics and storage.
3. Sales average N-1 and N-2.

Reliable sales history is essential to ensure a quantitative forecast, storage detection and correction, exceptional sales detection and correction. The adjusting the forecast based on several criterias. The forecast profiles enable to adjust the forecast. As the configuration is really complicated, it is managed by the central headquarter. Forecast profiles are affected depending the item typology (Intranet Decathlon, 2022).

3.6.5 Supply

The purpose of supply is to ensure available stock for our customers while reducing inventory turnover time (DVS). Product availability means that customers can buy products anytime, anywhere. For this, we use an omnichannel strategy, where the customer can purchase the product directly in the store or via the e-shop. Inventory

turnover time represents the average time it takes to sell our products. Why supply is essential for Decathlon could be divided into four parts: satisfied customers, higher turnover, business dynamics, and the last one is lower DVS.

- Satisfied customer - a customer who comes to the store, finds his product, makes a purchase and leaves happy. Their commitment to customers is fulfilled because they want them satisfied after visiting them.
- Higher turnover - if a customer finds their product and makes a purchase, it increases the store's turnover. The higher the turnover, the stronger they are economic, have a higher profit, can invest, etc.
- Business dynamics - the ability to identify and highlight the right products depending on the season and marketability, thus increasing the overall turnover (TG, multi-implantation, etc.)
- Lower DVS - through decisions, they reduce inventory turnover time so that they don't stock products that they don't sell as much and instead focus on the products that the stores sell best.

Availability of goods and stock rotation are directly related to their: supply (redistribution) to individual stores. This happens automatically from our warehouses based on the forecast of future sales and how teammates work with stock in stores. The supply system automatically calculates the needs of individual stores and ensures the optimal distribution of stocks throughout the network. Products can also be ordered manually in some instances, but they must be used on the shelf or ordered for a specific purpose (for example, OPECO, nearby plants, etc.). Once the product arrives at the store, it must be made available to customers as soon as possible and ensure that stock information is correct. Product inventory is shared, so it's essential to be a team player to ensure products are available to many people; this means only ordering what will actually sell and not unnecessarily ordering items that won't fit. Since the system works automatically, the system knows when to send the order to the central warehouse, thanks to sales. The steps how to proceed is shown in the figure 21.

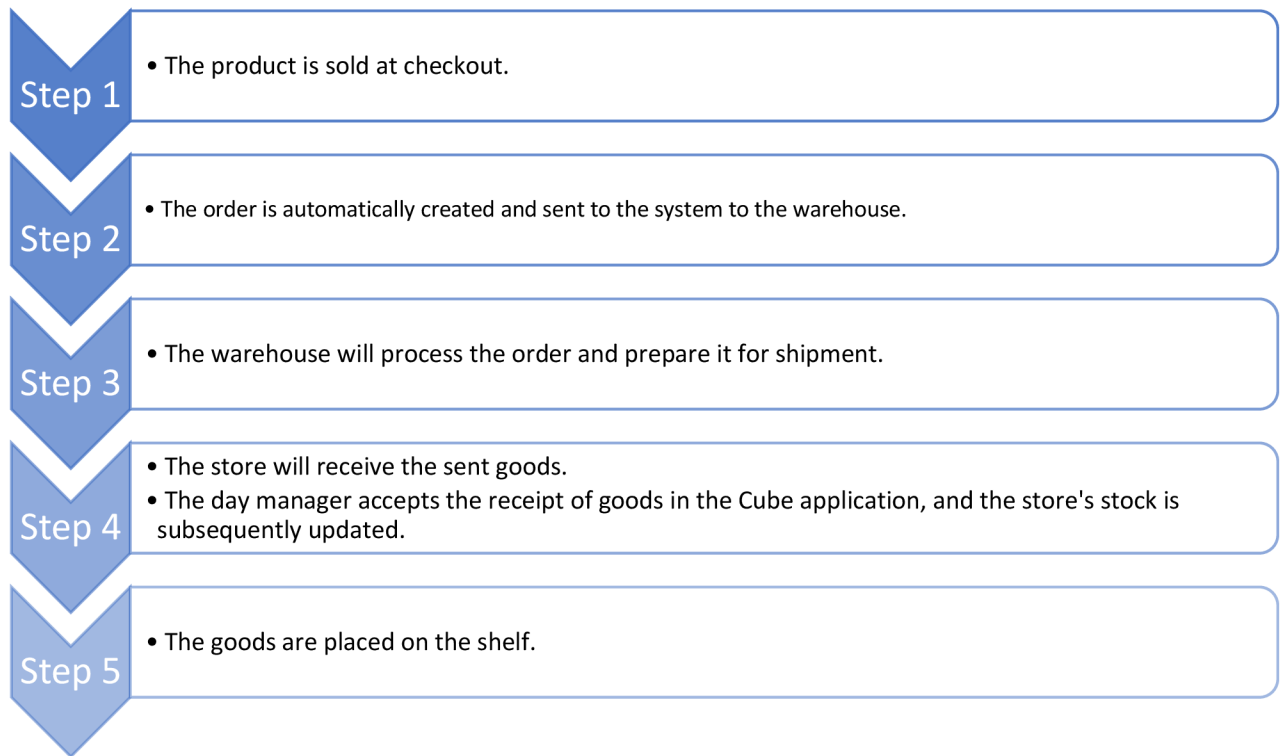


Figure 21: System steps

Source: own processing

Each product is equipped with a unique tag (RFID). When marking, the product is loaded at the cash register, which will update the system's product stock. The logistics staff in the warehouses will prepare the products according to the store's needs. Then they pack the products and send them to the store in a truck. The sent products will then be received at the store. When received in the CUBE application, the inventory information in the system is updated. For customers to have the product available as soon as possible, the workers must put it on the shelf as quickly as possible. (Intranet Decathlon, 2022).

3.6.6 Inventories

The store uses a warehouse and business application to check goods. There are specific stocks and basic in this app. Inventories are taken at the store every month when the entire store should reach at least 95 %. Basic is the inventory created by the system, and only if there is an unusual movement of stock (higher sales than usual etc.). Therefore, there can be a check that the warehouse fits in pieces. A specific inventory is used when something is stolen, and the item needs to be checked. The

already mentioned application and RFID rockets are used for control, which makes the work faster. If things still need to agree upon, it is necessary to recalculate everything manually.

3.7 Decathlon distribution

Decathlon has 25 stores in the Czech Republic. The location of stores is usually on the outskirts of cities in shopping areas or shopping centres (mostly smaller stores). In addition to brick-and-mortar stores, it is possible to purchase products on the e-shop or new this year in the mobile application. From there, customers can have goods delivered either to their homes, to any store or to one of the collection points of the Zásilkovna. Truck transport is used to transport goods from the central warehouse to the stores. All Decathlon stores in the Czech Republic have their central warehouse in Gliwice, Poland.

3.7.1 Sales channels

The Decathlon sales channel is split into two options for sales. The first one is the physical channel and the second one is omnichannel.

- Physical channel – are carried out at the store thanks to the employees and the shelf. An employee is always present at the store, so the customer can advise and choose a suitable product for his needs. If the customer decides his route and wants to select the goods himself, the shelf is adapted for him so that he chooses the goods and takes them away. Another in-store sale is via interstore, where goods are withdrawn from another store because they are no longer available elsewhere. The goods are sent via parcel carrier and arrive at the store within 2-3 days of dispatch.
- Omnichannel –this sale is further divided into instore and outstore. Thanks to Cube in-store, the application for the employees, in-store sales are sales. Thanks to this application, the employee can order the goods from the eshop to the customer. The customer can choose if the order will go to the store, to Zásilkovna or to the address the customer will choose. Another option for the customer is an out-store channel. The out-store channel is split into mobile app and e-shop,

where the customer has two options: click and collect and click and collect one hour. C&C orders from the e-shop are going from the warehouse (Poland or France). This order is prepared in the warehouse, and the delivery time is between three till seven days, depending on the warehouse location. C&C 1H is ordering on the e-shop. Still, the order is picked from the store, and the customer can go for this order on the same day the order is made.

3.7.2 Gliwice warehouse

The warehouse in Poland is one of several central warehouses used to supply stores. The warehouse in Gliwice supplies stores in the Czech Republic and Slovakia (they also prepare shipments for the e-shop) and supplies parts of the Polish stores (west part). The warehouse is 30,000 m², and around 350 employees work per shift. Overall, the warehouse is divided into three main departments: low storage, high storage and e-commerce zone (B2C). The warehouse uses the FIFO method.

The warehouse must compile an annual overview of how many goods will pass through the warehouse, and then the trajectory is adjusted each month thanks to the daily forecast. Automatic orders created from stores are accepted in the system and prepared the next day when the trucks leave in the evening so that the truck can be at the store and start unloading the following day. Less sold items come out of the warehouse from France irregularly. It depends on how long it takes to fill the truck, as the goods from the truck are only transferred in Poland to individual store trucks – cross dock. This product will not reach the warehouse at all. These are personal items or full magnums that are not divided by sport but are called multi. For customers who order fewer shipped goods, extend the delivery period by as much as four days. In most cases, these goods go to the store within seven days of the order (both for the customer and directly for the stores).

- Storage and picking

As mentioned above, the warehouse is divided into three departments: low storage, high storage and e-commerce. Items up to 30 kilograms are stored in low storage. This warehouse is divided by sports, and for big sports (such as hiking or winter sports), it is further divided by gender. Minor sports (for example, walking) are

assigned to similar sports and are usually placed together as in stores. The most sold sports are at the beginning of the storage. This section only includes some of the items in the warehouse, but only the area from which the goods are taken so that one thing only takes up a little space. Since the warehouse uses the FIFO method, one grey box (storage box) is divided and taken from it. When the system scans the last items from this box, it sends an automatic sector replenishment notification, so the goods are replaced from reserve zone to the picking zone.

High storage is used for items that are more than 30 kilograms, bulky, and wheels. Here, goods are sorted by location (not sorted by sports) and are marked according to the sections in which they are located.

Orders for customers are taken from low storage and packed separately in the e-commerce department, where they are sorted by transport. The order for the customer is split into two types, depending on the number of items in the order. It is divided into mono orders (one order – one thing) and multi-standard (more items inside). These orders go to the stores together with the goods, but with another label (for these orders, they use another colour of the label and label with the name of the customer). Orders in the system are selected with the help of a tablet and prepared in boxes that are later sent for packing.

- Handling

Handling units are used differently in each warehouse. A conveyor, pallet jack and racking trucks are used in low warehouses. In high storage, they additionally operate the forklift and do not use a conveyor. When the employee ends the order in the low storage, they put boxes on the conveyor. After everything is ready, the orders are moved to the expedition zone of the warehouse, where another part of the employees sort everything from the conveyor and give it to the pallet, depending on the store where the goods go. The vast orders are put to the magnums and are moved, thanks to the forklift, to the expedition zone, where they are sorting it depending on the store. They carry everything to the loading zone and the truck if the order is prepared.

- Packaging

In the warehouse, there are products either originally packed or in plastic packaging and classified into sections in boxes of several pieces. Orders are sent to stores packed in paper boxes, grey boxes (smaller plastic boxes), magnums or on pallets, where products that have their original box are usually loaded.

Customer orders are then packed in paper boxes, paper bags and, exceptionally, plastic bags (for bulky orders that do not fit in paper bags). Several stores are already testing reusable packaging, which comes in several sizes. The customer unpacks the goods immediately at the store and returns the packaging (the customer does not leave the store with the packaging). It is then sent back to the warehouse. Customers usually take the paper packaging home.

3.8 Decathlon Liberec

Decathlon Liberec was the first open store in the Czech Republic, which was opened in 2010. Decathlon Liberec is located near Globus. It is 10 minutes by bus from the centre. The store has a total of 4,500 square meters. In total, there are 11 departments, which are divided by store according to sales. According to customer flow, the store is divided into a hot zone, where the most sold sports are located, and a cold area, where fewer customers go.

The store has four seasons, according to which it is remodelled. Twice a year, there are significant reconstructions of the streets when the two most profitable sports, which are winter sports and hiking, rotate between them. Furthermore, the entrance alley is modified four times a year, when it is expanded in the summer season, so it is possible to build a large showroom for tourism in the front of the store. The store layout shows the figure 22. Another example by season can be found in the attachment.

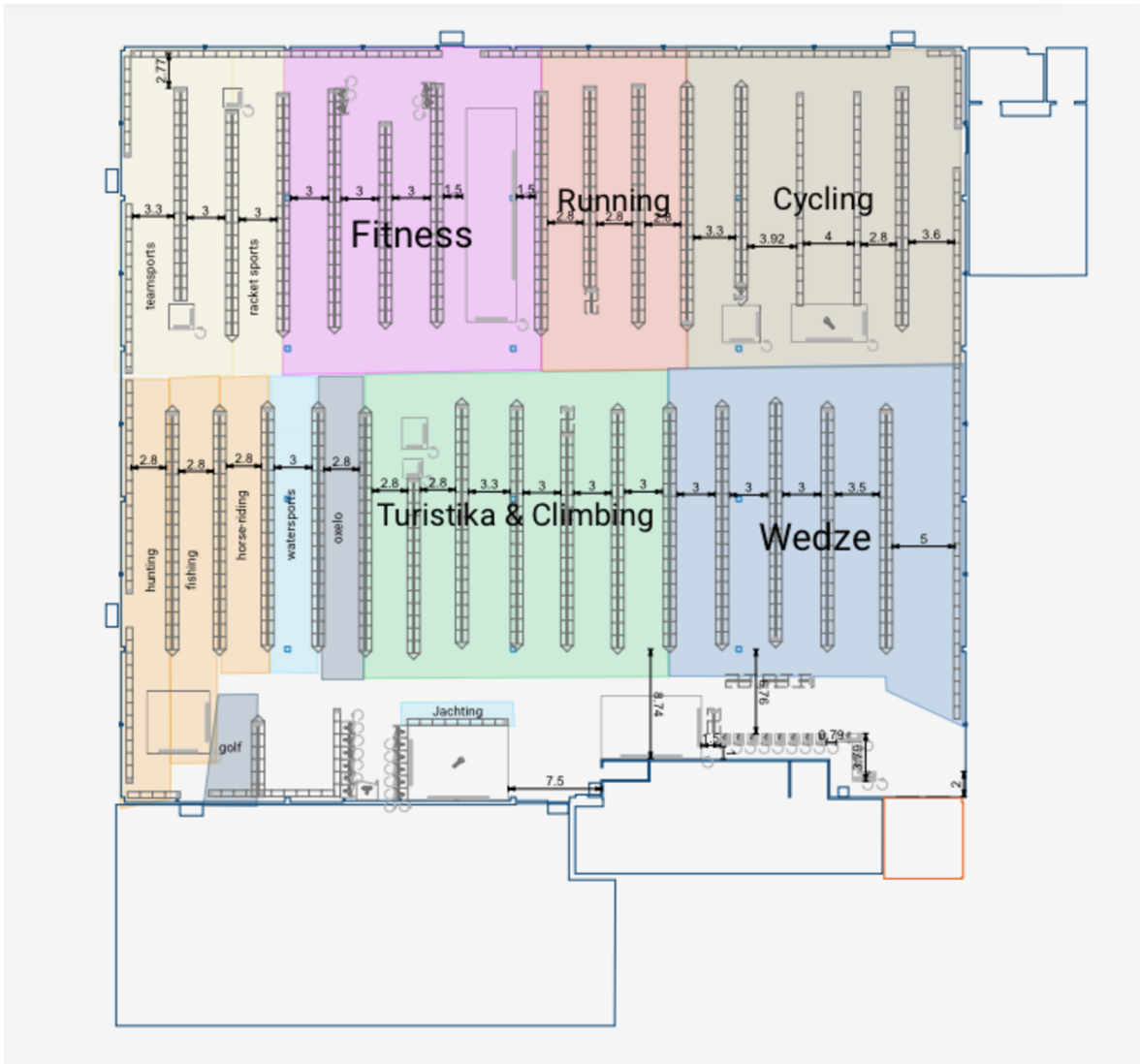


Figure 22: Winter 2022
 Source: My offer Decathlon, 2022

The store manager is responsible for the store. For individual departments, then the manager deals with all matters related to the department. The store also has a sports manager and sales assistant. The Liberec store has around 100 employees. Almost everyone has the main employment relationship, which is differentiated only by the number of hours. Then there are a few employees (only around five) on an agreement to perform the work. Other working hours are not possible.

3.8.1 Planning in the store

Trade planning can be divided into several parts. It can be divided into the human and economic sides, where we also include goods. Each department head must prepare an annual plan according to his business policy. This trajectory consists of the number of hours and turnover for months. The leader must consider the seasonality of his sport so that he can cover his department. All documents from all departments must be approved by the store manager and the economic manager for the store, who assists the store manager in evaluating whether the prepared papers are correctly assessed. Furthermore, according to sales development, everyone must adjust their trajectories monthly and weekly. The turnover, the number of hours and the productivity calculated from this are generally monitored.

The My Game application records economic plans and results, where each leader plans weekly turnovers and hours. The week is always evaluated from Sunday to Saturday. After the data is considered, the results for that week will be displayed in My Game.

Employee changes are planned in the Tria portal. Shifts are scheduled for each week, and then the hours are checked, which should also correspond to the planned hours for the month. Each department has a different number as they make additional turnovers and have different seasons.

Transporting goods from the warehouse must also be planned for a year. There is the truck planning and calculating the total price for the year for transportation. Later, there are monthly adjustments. The whole month must be planned for the day when holidays must be counted, both in the Czech Republic and Poland. During the holidays, it must be taken into account that traffic is more limited on the weekend – no large trucks are allowed to drive (because of this, the price of transport is higher). A sample transport plan is attached in the attachment.

3.8.2 Transport

The Liberec store is open almost daily (except the days after a holiday in Poland). There are off-season adjustments when, for example, goods are not imported on

Saturdays. Some days are shared with the store in Mladá Boleslav, which uses shared transport due to a better price for both stores.

The reception of goods starts every day around 8 a.m. when the truck is parked at the ramp. The manager of the day must check the papers from the driver and the seal number on the truck. The last check before starting the receipt of goods relates to the cargo. Whether anything in the truck is damaged and what part of the truck is filled. For later claims, photographs are taken, which are then assigned to individual receipts in the folders. A sample receipt is shown in the attachment.

- Delivery correction

Unfortunately, errors can occur during receipt, and the ticketing tool, which the store and warehouse use, is used for this purpose. The store uses this tool if a damaged product arrives, the product does not arrive (but an IT flow comes), or a product arrives that the store is not supposed to have (there is any IT flow for it). In this case, it is a problem that needs to be solved quickly because, in the first case, the customer can search for the product (it is loaded in the system and shows it is in stock). In the second case, such a product may not be placed in the store or sold, as the product is not stocked in the system. So, the product is left in logistics at the store and has to be returned to the warehouse.

- Backflows

Returnable packaging is sent back to the warehouse twice a week. Magnums, grey boxes, euro pallets and plastic hangers are sent back, packed in paper boxes. In addition, customer orders that have been cancelled or returned by customers are shipped. Another option for reverse flow is a recalled product that is returned to stock. At the very least, the store returns damaged goods from the receipt, which will arrive but must be resolved with the warehouse. Therefore, the next deadline is when the packaging material is returned to the warehouse.

3.8.3 Storage

At Decathlon, they use the JIT method, thanks to which all goods should go to the shelf immediately. Therefore, there is no need to have a warehouse. Decathlon Liberec has an extensive logistics department where reception is done, out-of-season goods are stored here, and shelving is needed for remodelling the shelves. In addition, returnable and residual packaging is kept here, taking away the waste once a week.

Logistics is divided into three main parts, on a pallet rack on the floor, low storage and then high storage. The above items that are out of season are stored in high storage, and the remaining shelves are only used for specific products, seasons and trial things. On the one hand, there is a particular place on the backflow. There is an excess inventory on the pallet rack on the floor (sometimes, a store receives more products that can be stored on the shelf).

- Handling

It is used for handling warehouse box carts, receiving baskets, wardrobe rails and pallet jacks. The box carts can be put into the trail and manipulated with more numbers. These things are used when the store processes the receipt. In logistics, it uses a battery-operated forklift due to the high warehouse.

- Packaging

The receipt of goods is packed in magnums, grey boxes and pallets. The goods are packed either in the original packaging (foreign brands) or plastic packaging (at the moment, this packaging is already limited). According to the order, the goods are placed in grey boxes or magnums. Large pieces are placed on euro pallets. All goods go to the shelf without packaging (for example, only the packaging that is part of the product is kept). So everything is complete on the shelf and ready for direct sale.

3.8.4 Goods

The goods in the store are divided by sports. It is included in the relevant shelf, adapted directly to the interests in question. The products are displayed in shelf, making them easily accessible to customers. Technical products or packaged products are displayed for customers to try and see at all times.

The goods are sorted on the shelf from the lowest price (products for beginners) to the highest (products for experts). Lower-priced products are not of lower quality but are adapted to the novice user. This means that, for example, a different material is used, and the cut is less sophisticated. In goods for beginners, the emphasis is mainly on the user's comfort.

3.8.5 Picking the orders in the store

In the store, orders from the e-shop are being prepared, which the customer wants to pick up on the same day. Orders can only be made for the goods that are in the store. The customer creates an order where he specifies that he wants to pick up the order in just one hour. The order is processed in the system and sent it to the store in the Cube application, which every worker uses. After the system has accepted the order, you will be notified of a new order created. In the Liberec store, each department checks the orders. So, if the order is for hiking boots, the order is prepared by a hiking department employee. After receiving the order, the worker has one hour to prepare. When you click on the order, all the information you need is available. When an order is picking, RFID readers are used where the items have to be scanned; thus, their RFID is deactivated. The prepared order is placed in the sector and ready for pick-up. When confirming, an SMS message and an email are automatically sent to the customer, which is used for identification at pick-up. The customer then has 24 hours from confirmation to pick up the order. Orders are picked up at customer service using the order number or QR code. The customer service employee uses the application to identify the order and, based on the entered location, finds where it is located.

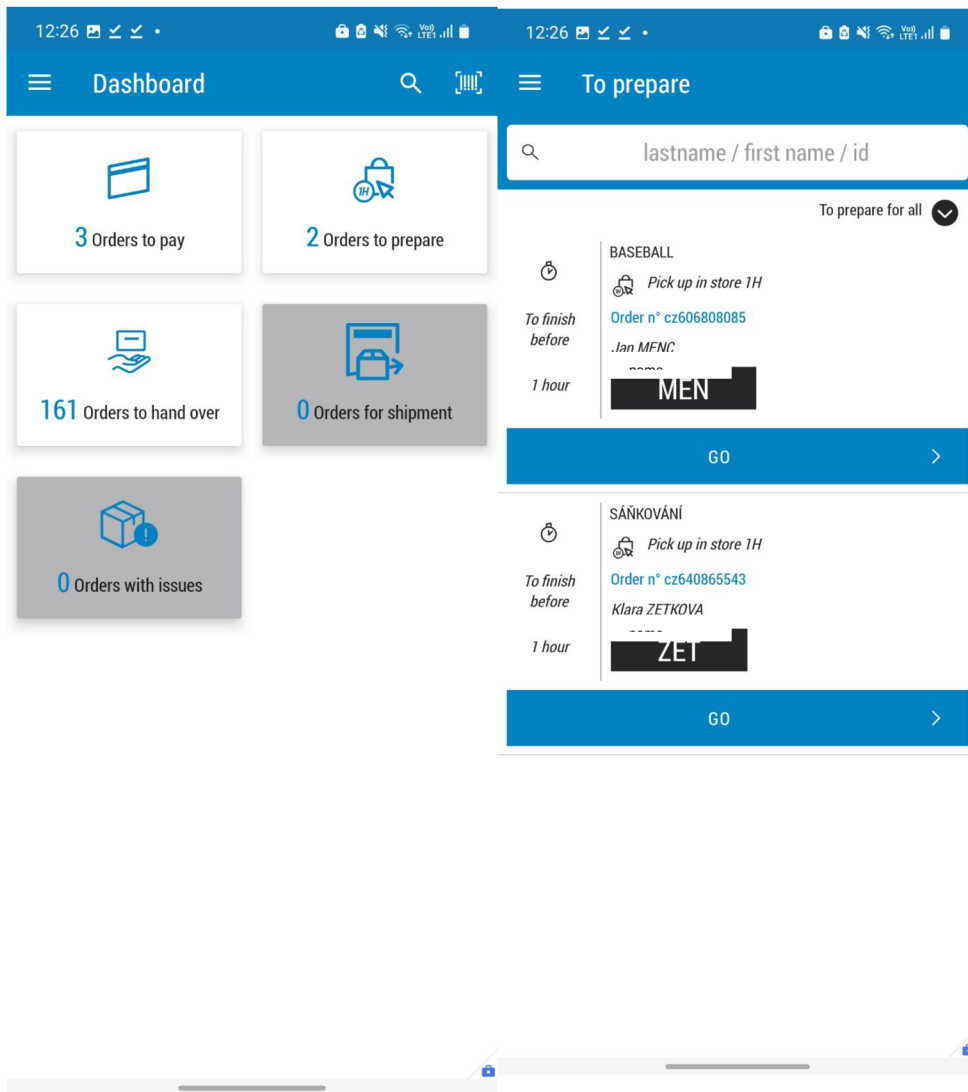


Figure 23: Orders in the application
Source: own

4. Analysis

The analysis deals with the efficiency of distribution channels. These compares receiving goods at the store, receiving shipments for customers and picking orders for the customer. This work aims to calculate the efficiency of selected distribution channels, to compare the methods of receipt of two stores.

4.1 Click and collect Liberec

To begin with, all customer service processes need to be described to understand how it works. Customer order packages are received at customer service and then issued to the customer. The next part will discuss individual processes' effectiveness, including customer orders. Click and collect effectivity could be compared with store efficiency in the last part of this work. The click-and-collect 1H is compared with store České Budějovice. The comparison is the target of the promised time.

- Welcome desk

Customer service is the first place the customer comes into contact with the store. Customer service, therefore, serves primarily as a welcome to the customer. Complaints, exchanges of goods, creation of customer cards, interstore solutions (sending goods from another store), loyalty programs and, last but not least, customer orders and packages are handled here.

The workload is slightly different for the morning and afternoon shifts. The morning shift is in charge of receiving new packages, sorting unpicked orders and taking care of the customer. The afternoon shift then receives interstors and unpicked packages (according to whether they are left over from the morning), and the main task is the customer when the main flow of customers starts around 3 pm on a weekday.

Customer service staffing varies in season and off-season. In season, there are always two workers in the morning and two in the afternoon. In the off-season, there is one worker in the morning and one in the afternoon. On the weekend, one worker goes on a mid-shift, when he is present from 9 a.m. to 5 p.m...

The customer service worker receives the income packages (only click and collect) in the morning around 8 a.m... After the worker receives the packages, the next step is to put them in the sectors and write the location on the notes in the application. The package area, which is divided into sectors, is located next to the Welcome desk. Bulky packages are then included in logistics.

4.1.1 Click and collect

Customer service efficiency in receiving and sorting packages includes a calculation from the total time, considering the number of people working with the boxes and the number of packets received at the store that day. This is the pure time associated only with this activity, as customer service has to deal with other tasks after opening the store. Therefore, if the entire process is completed before the store's opening, this time is not affected by paying attention to customers and handling their requests.

Observations showed that receiving shipments is usually completed either before the store opens or within an hour after (with some exceptions). If there are two workers on a shift, they split the work, with one worker focusing on shipments and the other on customer service. At this stage, the efficiency of both processes is satisfactory.

The observation was carried out in the off-season, which also affected the results to a large extent. In the season, the number of customer packages is often twice as high, and thus the efficiency deteriorates as the customer service workload is more significant at that time. Another problem arises if the truck is delayed, packages arrive at the store after opening, and there is only one customer service employee.

The detailed efficiency of individual days can be seen in the table below. The average efficiency per month is 64.03 packages per one person per one hour.

Table 1: Efficiency click and collect October

day	orders	employees	time	minutes	efficiency
1.10.	157	1	2:55:00	175	53.83
2.10.	0				
3.10.	85	2	0:42:00	42	60.71
4.10.	93	1	1:18:00	78	71.54
5.10.	61	2	0:36:00	36	50.83
6.10.	70	2	0:40:00	40	52.50
7.10.	65	1	0:56:00	56	69.64
8.10.	55	1	0:41:00	41	80.49
9.10.	0				
10.10.	47	1	0:38:00	38	74.21
11.10.	69	2	0:36:00	36	57.50
12.10.	27	1	0:20:00	20	81.00
13.10.	78	2	0:40:00	40	58.50
14.10.	51	2	0:29:00	29	52.76
15.10.	43	1	0:38:00	38	67.89
16.10.	0				
17.10.	73	1	1:09:00	69	63.48
18.10.	14	1	0:19:00	19	44.21
19.10.	107	1	1:33:00	93	69.03
20.10.	79	1	1:11:00	71	66.76
21.10.	47	1	0:45:00	45	62.67
22.10.	32	2	0:14:00	14	68.57
23.10.	0				
24.10.	35	1	0:32:00	32	65.63
25.10.	69	2	0:34:00	34	60.88
26.10.	76	2	0:40:00	40	57.00
27.10.	43	2	0:18:00	18	71.67
28.10.	0				
29.10.	18	1	0:20:00	20	54.00
30.10.	0				
31.10.	37	1	0:26:00	26	85.38

Source: own processing

- The second part of the process

The second part of the process is after the packages are listed for release. The customer arrives at customer service with an order number or QR code, and the employee issues an order. The order can be paid in advance; therefore, the package will only be delivered in the application. If the customer wants to pay cash on delivery,

in most cases, the payment is sent to the terminal via the application and the price is made by card. In this case, the customer already has an invoice in his email, and upon receipt, a confirmation of payment and receipt of the shipment arrives. The process is a bit more complicated if the customer wants to pay in cash. The order must first be cancelled, the goods will be stored in the store, and then they can be sold via the cash register at the store. In this case, an employee issues a bill to the customer, and a correction invoice is sent to his email.

The handover process is brief if no other workload is included (return to the e-shop, return of goods, exchange, etc.). This then extends the entire process until the customer checks in overall. The total time of the entire process can be seen in the measured data in the table 2. Complaints and returns to the e-shop were especially measured, as this process was not done at the time of the measurement and took the most time. If a claim is accepted for assessment, it is extended for up to 10 minutes. If a complaint is assessed on the spot, then the return to the e-shop is affected according to the number of items. If there were only one order with three things, the process would be extended to less than 5 minutes, as the return form must be filled out with the customer.

It can be seen from the table that an order that is paid in advance and submitted in the system takes the least time. Another is the reservation, which the customer can either pay directly and take away or can request a trial when the system puts the order into trial status (and thus cancels it), and the customer can try the goods and then either leave the goods at the booths or buy goods at the checkout.

It can be read from the application system that it takes 1.62 days to deliver the package to the customer. This number is from the application when the package is received at the store's warehouse and issued to the customer.

An average of 88 delivered packages per day comes out when calculating packages per day, which would mean that this action takes 99,43 minutes a day on average. Packages per day were calculated from November by taking the total number of packages handed over and bookings and dividing it by the number of days in the month.

Table 2: Forwarding orders

receiving the order number	process	customer exit	process time
11:30:58	reservation and exchange	11:33:40	0:02:42
11:35:48	reservation	11:36:55	0:01:07
11:39:04	e-shop – paid	11:39:21	0:00:17
11:43:45	e-shop – not paid	11:44:57	0:01:12
11:45:25	reservation	11:47:00	0:01:35
12:03:34	reservation	12:04:45	0:01:11
12:04:11	reservation	12:04:43	0:00:32
12:17:37	reservation	12:19:15	0:01:38
12:24:17	reservation and exchange	12:26:30	0:02:13
12:26:50	e-shop – not paid	12:27:53	0:01:03
12:33:04	reservation	12:34:13	0:01:09
12:35:45	reservation and exchange	12:37:10	0:01:25
13:36:13	e-shop – not paid	13:37:30	0:01:17
13:45:15	e-shop – not paid	13:46:21	0:01:06
13:49:10	e-shop – not paid	13:49:55	0:00:45
13:55:47	reservation	13:56:14	0:00:27
13:57:04	reservation	13:58:10	0:01:06
13:58:30	e-shop – not paid	13:59:01	0:00:31
14:02:45	reservation	14:03:10	0:00:25
14:05:41	reservation	14:06:43	0:01:02
average			0:01:08

Source: own processing

- Cost efficiency of the whole process

If the process is recalculated, we can calculate the total receipts and delivery of parcels to customers. The process takes an average of 2 hours and 39 minutes, which at an average hourly rate of 317 CZK (amount including surcharges and benefits) comes to 843 CZK per person. This sum is for an average reception efficiency of 64.03 packages per hour per person and 88 packages per day, which takes an

average of 99.43 minutes per day. The total amount of the process is 317 CZK for us for 64.03 packages and 526 CZK for issuing packages to the customer.

- Suggestion for improvement

This section recommends measures for the season when at least two workers must reinforce shifts. Another recommendation is to separate the customer service itself and only the pickup point. There would then be an overall increase in efficiency and a better focus on customers when the queue would be diluted to only customer service and orders. This recommendation is based on the observation that there was a long waiting time for customers in the queue due to longer processes, for example, when the same employee must do the whole complaint process.

4.1.2 Click and collect 1h

In this part, it was difficult to directly calculate the number of goods processed per person, as orders go into the system and can be prepared by anyone in the store. Therefore, the efficiency of order preparation time between the store in Liberec and České Budějovice will be compared here. The preparation time data for one order will be compared to whether the store could prepare the order on time. If the preparation time is not met, it can be deduced whether the store is working with this distribution channel efficiently. In case of non-fulfilment, an unpleasant situation arises for the customer, who relied on the preparation time and thus on the Welcome desk, where the customer can arrive and ask questions about his order.

We will analyze the store in Liberec in detail. Overall, the table and graph show that in some months (especially during the season), it is difficult for employees to keep track of orders. Since the employee is not only in charge of orders but also does other processes in the store, it is evident that orders are only sometimes the number one priority.

The total order preparation time can be affected by the number of employees in the department, the number of items in the store and the day of the week. If there is the last piece of a product in the store, it is sometimes difficult to find it (the product may

be in the cart by another customer), or, unfortunately, it is incorrectly entered in the system and is no longer in the store.

In the table below, you can compare individual months since the beginning of the year. Here, the store's seasonality difference is noticeable when the time to prepare orders increases during the summer season.

Table 3: Preparation promise C&C 1h Liberec

Month (2022)	Prepared on time	Delayed up to 30 min	Delayed 30-60 min	Delayed more than 1 hour
January	88.67%	9.33%	1.33%	2.67%
February	89.01%	7.14%	2.75%	1.1%
March	77.59%	11.49%	5.75%	5.17%
April	70.21%	15.33%	7.29%	7.17%
May	69.12%	13.79%	7.1%	9.99%
June	72.56%	13.98%	6.95%	6.5%
July	75.21%	13.37%	6.54%	4.88%
August	74.06%	14.32%	6.03%	5.59%
September	75.47%	14.84%	5.79%	3.89%
October	81.45%	12.71%	3.94%	1.91%

Source: own processing according to company internal information

A detailed representation of the individual days can be seen in the table and on the figure below, where October 2022 is shown in detail. On October 28, the store was closed due to a public holiday, so the number of orders is zero. The next day, the number of orders is reduced by the time the service was turned off for customers all morning.

Table 4: Preparation promise October day by day

Date	Prepared on time	Delayed up to 30 min	Delayed 30-60 min	Delayed more than 1 hour	total
1.10.	18	8	3	2	31
2.10.	22	5	0	1	28
3.10.	12	6	3	1	22
4.10.	16	4	3	2	25
5.10.	33	3	0	0	36
6.10.	21	3	1	0	25
7.10.	32	4	1	2	39
8.10.	17	3	1	1	22
9.10.	14	1	3	0	18
10.10.	19	6	3	0	28
11.10.	19	2	1	0	22
12.10.	42	3	0	0	45
13.10.	29	3	0	0	32
14.10.	27	2	0	0	29
15.10.	26	1	0	0	27
16.10.	25	3	3	0	31
17.10.	19	5	3	0	27
18.10.	32	4	0	0	36
19.10.	19	3	1	1	24
20.10.	24	5	1	1	31
21.10.	23	1	1	0	25
22.10.	28	1	0	0	29
23.10.	12	3	1	1	17
24.10.	19	3	0	1	23
25.10.	24	2	1	0	27
26.10.	17	1	1	1	20
27.10.	6	5	0	0	11
28.10.					
29.10.	2	3	0	1	6
30.10.	17	4	0	0	21
31.10.	27	5	0	0	32

Source: own processing according to company internal information

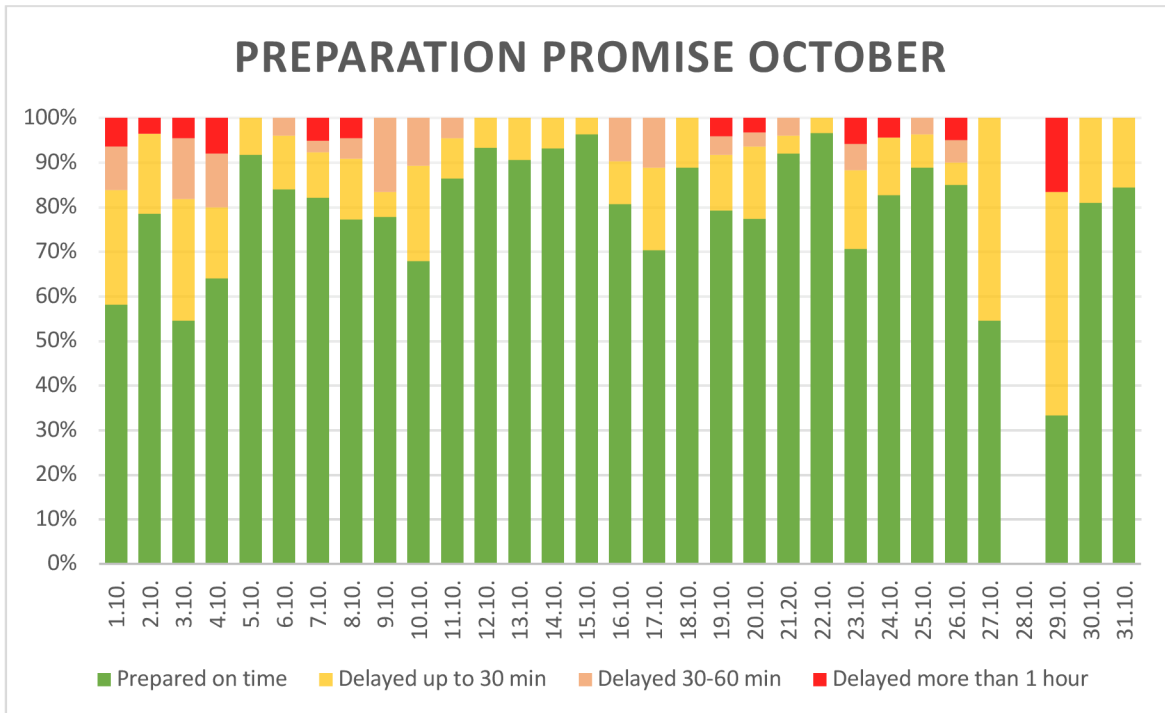


Figure 24: Preparation C&C 1h October

Source: own processing according to company internal information

From the available data, it can be seen that the highest percentage of orders are ready on time within one hour, and a large number of orders are being prepared with a delay of 30 minutes. It can be seen from the attached data that some orders are still not picked up after 30 minutes delay, which should happen at least. Unfortunately, some days this number of orders is high, which is a bad indicator for the business overall.

Table 5: Store comparison October

store	Prepared on time	Delayed up to 30 min	Delayed 30-60 min	Delayed more than 1 hour
Liberec	81.45 %	12.71 %	3.94 %	1.91 %
České Budějovice	87.83 %	8.42 %	2.81 %	0.94 %

Source: own processing according to company internal information

When comparing the data from the Liberec store and České Budějovice, it is evident that the Liberec store is not as efficient when working with orders.

- Suggestion for improvement

One of the proposals to prepare orders more efficiently is to designate a responsible person from each department who will primarily deal with the preparation of orders

and always ensure that they are picked up on time. I also recommend having a representative of the day manager review orders passed and delegate work, as a representative from the department will not pursue the work, and help will be needed. If someone were to check the orders this way, it would only happen that the order would be in the system for an hour and a half. The main focus is, therefore, to eliminate lost orders over 30 minutes.

4.2 Stores

This section compares the process of processing the receipt of goods, which is done differently at the two stores. The work is focused on comparing the efficiency of logistics, the store and the efficiency of the entire process. First, the receipt process is described and then the comparison of trades.

4.2.1 Liberec store

In the Liberec store, the receipt of goods starts at 8 a.m. The size of the receipt can be seen in the system already the evening before the receipt, so the manager of the day can already estimate how many employees he needs. Next, the manager of the day chooses a representative from the department that goes to the logistics reception that month (it is divided according to the season). Since you can also see which department has the enormous income and which goods will arrive, it is a good idea to hire employees accordingly (for example, when receiving heavier items, hire someone who can take them to the store).

Receipt processing is divided into two phases, logistics and in-the-store. The Liberec store uses a process where the goods are handled minimally in logistics, and everything is taken to the store. If it is a reception of a magnum, where there are goods for only one department, the magnum is taken directly to the department and into the aisle. The box is divided into carts if it is a pallet where there are things for several departments. Only the mix in the magnum or the boxes is distributed to the income bins for the given departments.

Individual employees of the department process goods delivered to the store. If it is a receipt basket and carts, handling is more straightforward, and the worker can transport it to individual parts of his department, depending on the items. If the magnum is in some part of the aisle, the worker unpacks the goods at the magnum and sorts everything into baskets according to how he needs to distribute the goods. Then everything is manipulated, thanks the baskets and moves to the right place. Only after all the goods are picked to the shelf is the magnum folded and taken back to logistics, where is put to the backflow's location.



Figure 25: Sample receipt at the store Liberec
Source: own

4.2.2 České Budějovice store

In České Budějovice, the receipt of goods begins at 9 a.m. The manager of the day chooses a representative based on department availability. In high season, reception starts an hour earlier, i.e. at 8 a.m., and the leader is also elected the leader. They also try to determine according to the season but specify that if a department has a high income, then they do not take representatives from that department. This is why the employee has time to prepare for the reception at the department and can start putting the goods on the shelf as soon as possible.

Even in České Budějovice, income is divided into two parts. The first part is logistics, and the second part is business. At this store, however, most of the process is in logistics, where a more significant number of products are handled. In logistics, all goods are unpacked into the receiving baskets of the respective departments. Baskets are assigned to departments and individual aisles, for example, hiking footwear for adults, hiking children, and hiking clothing for men and women. Everything is sorted so that the relevant basket is sorted as little as possible at the store. No magnum will even make it to the store, which has to be handled later. Therefore, all returnable packaging remains in place in logistics. During the reception, full baskets are exported to the store and filled with empty ones.

Since the goods are taken out to the store only in receipt baskets, handling is easier for employees and everything is placed directly from the basket. The employee sorts the goods one by one into the relevant shelf. After completion, the receipt baskets are taken back to logistics to their place and are thus ready for the next receipt day.



Figure 26: Sample receipt at the store

Source: own

4.2.3 Comparing of the stores

This part is focused on the actual evaluation of the income efficiency of the store in Liberec and the store in České Budějovice. The attached tables show the data that was measured at the respective stores with the help of the managers of the day. The information was recorded in Google spreadsheets, which Decathlon uses. Thanks to this, everyone who was supposed to record data had access to the table.

The data collection took place in the off-season, so fewer items came to the store during this period. During the season, it can be about 7-9 thousand. Unfortunately, the recording took place twice, as the first time, there needed to be more data, and insufficient data was being recorded. Therefore, the first attempt was evaluated as

unsuccessful when the connection with the stores took place, and the data that must be recorded was clarified.

The second data collection was successful, and it was possible to evaluate these data. Data from both stores are attached in the tables below. Other data that can help to compare results better are the size of income, which is similar for both stores. Thanks to this, the receipt should be equally time-consuming at both stores (if we do not consider the chosen methods). The tables describe the individual data collected, and the efficiency result is recalculated per person. The total number represents placing goods on the shelf by one employee per hour (or handling goods by one employee).

Table 6: Reception data Liberec

START	STOP (reception the delivery)	STOP (last article on the shelf)	Number of articles	Number of people reception	Number of people - store	Time of reception the delivery	Time on store	Time of the whole process
9:35	10:15	11:45	1119	3	18	0:40:00	1:30:00	2:10:00
9:30	9:49	12:38	1341	4	19	0:19:00	2:49:00	3:08:00
9:35	9:56	12:20	2452	5	12	0:21:00	2:24:00	2:45:00
9:35	10:00	15:00:00	2286	4	13	0:25:00	5:00:00	5:25:00
11:29:00	11:50:00	15:00:00	1073	3	11	0:21:00	3:10:00	3:31:00
9:30:00	10:07:00	12:40:00	1618	4	17	0:37:00	2:33:00	3:10:00
9:35:00	10:03:00	12:15:00	1435	5	15	0:28:00	2:12:00	2:40:00
9:33:00	10:22:00	15:05:00	2222	5	20	0:49:00	4:43:00	5:32:00
9:30:00	9:55:00	12:00:00	1765	4	19	0:25:00	2:05:00	2:30:00
9:20:00	9:53:00	12:58:00	1067	3	12	0:33:00	3:05:00	3:38:00
9:30:00	10:05:00	13:30:00	1573	3	11	0:35:00	3:25:00	4:00:00
9:30:00	9:45:00	12:45:00	1426	3	11	0:15:00	3:00:00	3:15:00
9:30:00	9:55:00	13:10:00	1712	3	12	0:25:00	3:15:00	3:40:00
9:05:00	9:30:00	12:10:00	1757	3	13	0:25:00	2:40:00	3:05:00
9:09:00	9:50:00	12:20:00	1231	3	14	0:41:00	2:30:00	3:11:00

Source: own processing

Table 7: Efficiency Liberec

Efficiency reception	Efficiency store	Efficiency whole process
559,5	41,4	28,7
1 058,7	25,1	22,5
1 401,1	85,1	74,3
1 371,6	35,2	32,5
1 021,9	30,8	27,7
655,9	37,3	30,1
615	43,5	35,9
544,2	23,6	20,1
1 059,0	44,6	37,2
646,7	28,8	24,5
898,9	41,9	35,8
1 901,3	43,2	39,9
1 369,6	43,9	38,9
1 405,6	50,7	43,8
600,5	35,2	27,6

Source: own processing

Table 8: Reception data České Budějovice

START	STOP (reception the delivery)	STOP (last article on the shelf)	Number of articles	Number of people reception	Number of people – store	Time of reception the delivery	Time on store	Time of the whole process
9:06	9:45:00	11:01	1784	5	16	0:39:00	1:16:00	1:55:00
9:06:00	9:27:00	10:57:00	1241	5	17	0:21:00	1:30:00	1:51:00
8:02:00	9:05:00	9:45:00	1493	5	18	1:03:00	0:40:00	1:43:00
9:05:00	9:45:00	11:45:00	2854	13	15	0:40:00	2:00:00	2:40:00
9:03:00	9:45:00	10:45:00	1751	5	15	0:42:00	1:00:00	1:42:00
9:00:00	9:45:00	12:15:00	2480	5	13	0:45:00	2:30:00	3:15:00
9:05:00	9:35:00	10:25:00	1080	5	12	0:30:00	0:50:00	1:20:00
9:00:00	9:15:00	10:35:00	1670	8	18	0:15:00	1:20:00	1:35:00
8:00:00	8:40:00	9:56:00	1898	5	13	0:40:00	1:16:00	0:56:00
9:00:00	9:55:00	10:23:00	2676	5	15	0:55:00	0:28:00	1:23:00

Source: own processing

Table 9: Efficiency České Budějovice

Efficiency reception	Efficiency store	Efficiency whole process
548,9	88	58,2
709,1	48,7	39,5
284,4	124,4	48,3
329,3	95,1	71,4
500,3	116,7	68,7
661,3	76,3	58,7
432	108	67,5
835	69,6	58,6
569,4	115,3	156,4
583,9	382,3	129

Source: own processing

In the table of the Liberec store, it can be seen that the time spent in logistics is lower, as the goods are only taken to the store, and the goods are minimally handled in logistics. In České Budějovice, on the other hand, the time spent in logistics is more prolonged because all income is regrouped into income baskets. It can already be seen from these tables that, despite the longer time spent in logistics, České Budějovice manages to work more efficiently with goods.

The result below was evaluated from the tables found above. The average efficiency was calculated from the total efficiency of the stores divided by the number of days from which the store had data collected.

Table 10: Results of the efficiency

Store	Average Efficiency reception	Average Efficiency store	Average Whole efficiency	Average time Reception	Average time Store	Average time Whole process
Liberec	1 007,3	40,7	34,6	0:29:16	2:57:24	3:26:40
České Budějovice	545,4	122,4	75,6	0:37:13	1:22:27	1:53:00

Source: own processing

If we evaluate the data from the left side of the table, we can see that the less efficient work in logistics is worst for České Budějovice. Still, we must consider that this store manipulates the goods to the receiving basket. Another figure is the efficiency at the store, where the Liberec store is worse by about 80 items. Thanks to this, the Liberec

store's overall efficiency decreases and is worse by about 40 articles per employee per hour. In the last part of the table, the average time spent in logistics, in the store and the total time spent on income are to be evaluated. If we focus on the entire time, this difference is enormous, as the store in České Budějovice manages to process the receipt an hour and a half faster on average.

If we focus on the processes themselves and their efficiency when comparing stores, it was noticeable from the observation that the use of receive baskets in České Budějovice reduced handling when unpacking goods at the store. The employee had better handling of the goods between the shelves thanks to the more minor receiving baskets and could take the goods to where they needed. The Liberec store exported large magnums to the store. The efficiency was visibly reduced, as the employee sorted everything in a given aisle and delivered it in shopping baskets to the respective aisles. The employee could always elaborate on only a tiny part of the content.

From the results, it can be concluded that České Budějovice processes the receipt more efficiently than the Liberec store. The next focus should be on the Liberec store and its efficiency.

- Cost efficiency comparison

In the overall efficiency comparison, we can calculate what sales have on average to process the entire income per person. The Liberec store has a total average efficiency of 34.6 products per person. České Budějovice has an average efficiency of 75.6 products per person. The total cost is calculated for the whole time per person. Liberec has a real average reception time of 3 hours and 26 minutes, which comes to a price of CZK 1,087 at a rate of CZK 317 per hour per person. České Budějovice has an average of 1 hour and 53 minutes, which works out to 596 CZK per person. This means the Liberec store pays CZK 491 more per person for the method used.

4.2.4 Suggestion for improvement – Liberec store

From the results achieved, it can be read that the Liberec store should focus on its chosen income method and consider whether it is not appropriate to use the

technique used by the other store. This thesis proposes to compare the efficiency in only one store and evaluate the data on whether the method used in České Budějovice will also be suitable for the Liberec store. The forms can be replaced after a month when it should always be the exact implementation time and similar incomes (do not implement one method in the season and compare with the data outside the season).

Before implementation, it is necessary to consider what opportunities and threats a change in the method may bring.

- Opportunities

Improved efficiency time, allowing employees to focus on more customers and other tasks. Previously accessible goods for customers. By using only receipt baskets in the store, the risk of injury and the handling of returnable packaging will also be reduced.

- Threats

A significant threat can be the deployment itself. Introducing a new method will be more time-consuming and may be less effective at that moment before the employees learn the new procedure. Another threat could be the space in the logistics for the receipt bins. On some days when more returnable packaging is ready for return, these packagings take up the space needed for a more significant number of receive baskets.

Conclusion

This thesis aims to compare the efficiency of logistics processes in the company's distribution system using an appropriately chosen methodology and, based on the calculations, to evaluate the efficiency and compare the efficiency of the methods of selected stores. The goal was to compare the three distribution channels the company works with to assess their effectiveness and calculate the associated costs.

The work was created in cooperation with Decathlon staff, who provided all the information needed for development and enabled the necessary data to be measured. Decathlon is a foreign company based in France engaged in producing and selling sports equipment. The measurements took place at the store in Liberec and České Budějovice. This measurement evaluated a more effective method of one of the distribution channels. Thanks to the obtained data, it was possible to consider a more effective reception method and propose possible measures. The next part of the research measured the efficiency of receiving customer orders and passing them on to customers. In this section, the evaluation was recalculated for individual orders so that it was possible to compare the efficiency of the income. Unfortunately, reaching the last distribution channel was impossible, as the obtained data could not be compared with other efficiency measures due to the impossibility of accurately recalculating the efficiency per person.

In the theoretical research, the author focused on the concept of logistics and related topics, which were subsequently discussed in the analytical part of the work. Based on the information obtained, a brief history of the company, basic information, the focus of the company and an overall description of the activities in individual stores were first described. In the next part of the thesis, the personality characteristics of the activities associated with the good functioning of the store and the correct setting of stocks are described. The following detail describes the processes on which the analytical part of the work was focused.

In the analytical part, the main emphasis was placed on comparing distribution channels, where orders for customers and sales were achieved. The data collection was carried out at a store in Liberec, where there was also a comparison of the effectiveness and observation of the actions associated with this work. This research

shows that receiving customer orders, which averaged 64 sorted packages per person per hour, is more efficient than placing goods from receiving on the shelf. Furthermore, the work was focused on comparing the effectiveness of the chosen methods when the already mentioned stores in Liberec and České Budějovice were selected. This part was more challenging to measure as it involved a store that measured the data. The first measurement was unsuccessful due to a lack of data from the store in České Budějovice. The second measurement was already successful, and it was possible to evaluate the obtained data. The results show that the method chosen by the store in České Budějovice is more efficient and safer for customers.

When comparing stores, the obtained data were averaged over the entire period and converted to classified goods per person and hour. The store calculation was divided into two parts: one was dedicated to the logistics process, and the other to the store. From the overall result, the store in České Budějovice was faster on average by more than an hour and a half. If the store in Liberec chose the same method as the other store, the efficiency of receiving and the efficiency of receiving parcels would be almost at the same level.

The last part compares the costs of individual processes and stores. The whole process at the Welcome Desk costs 843 CZK. It takes 2 hours and 39 minutes (from the inclusion of the package to handing it over to the customer), which is faster than the actual sorting of receipts at the store in Liberec, which takes an average of 3 hours and 26 minutes. When comparing the Liberec store and České Budějovice, it turns out that Liberec pays an average of CZK 491 more per employee than České Budějovice thanks to the chosen method.

After completing the work, it is proposed to remeasure both methods at selected stores and implement a more advantageous method to improve efficiency and align the efficiency of receiving customer orders with the receipt of goods at the store.

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Attachment – Decathlon Store Liberec

Attached is another Store map where you can see the difference in seasons. This is a sample from the Liberec store for summer 2022 and the prepared map and changes for summer 2023.

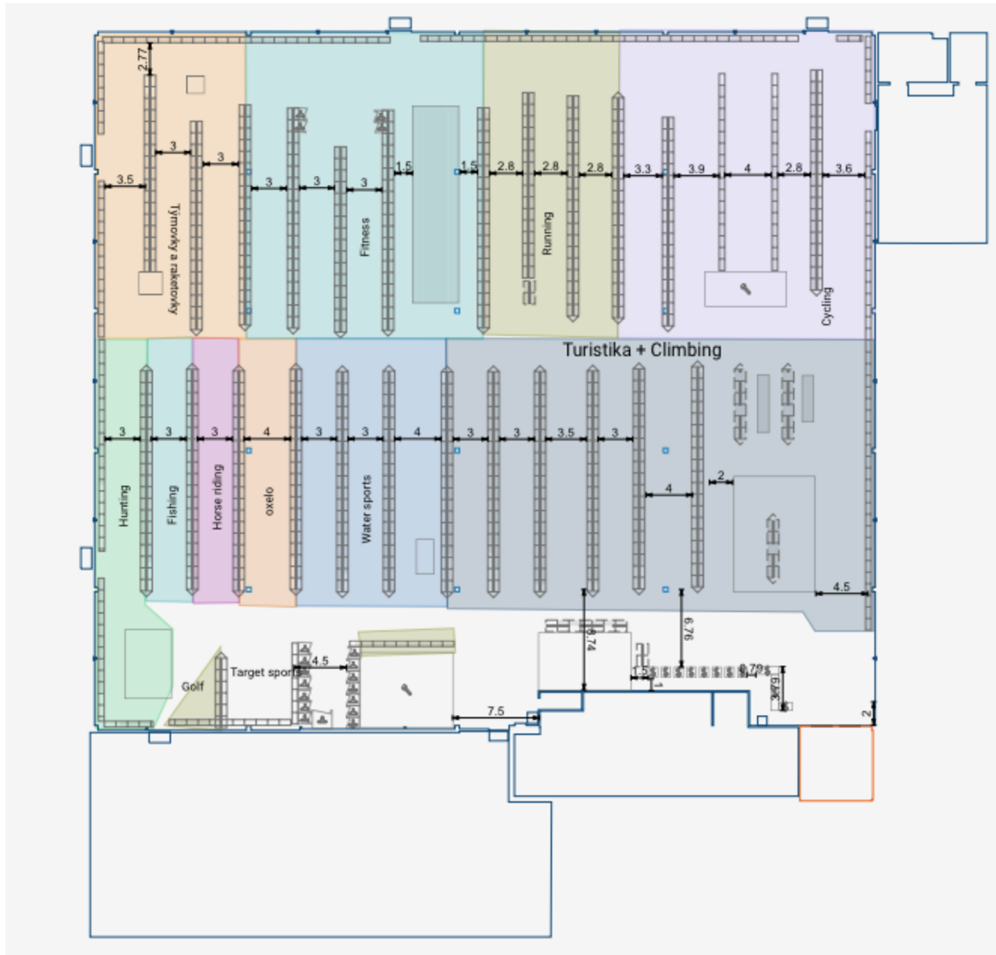


Figure 27: Summer 2022
Source: My offer Decathlon, 2022

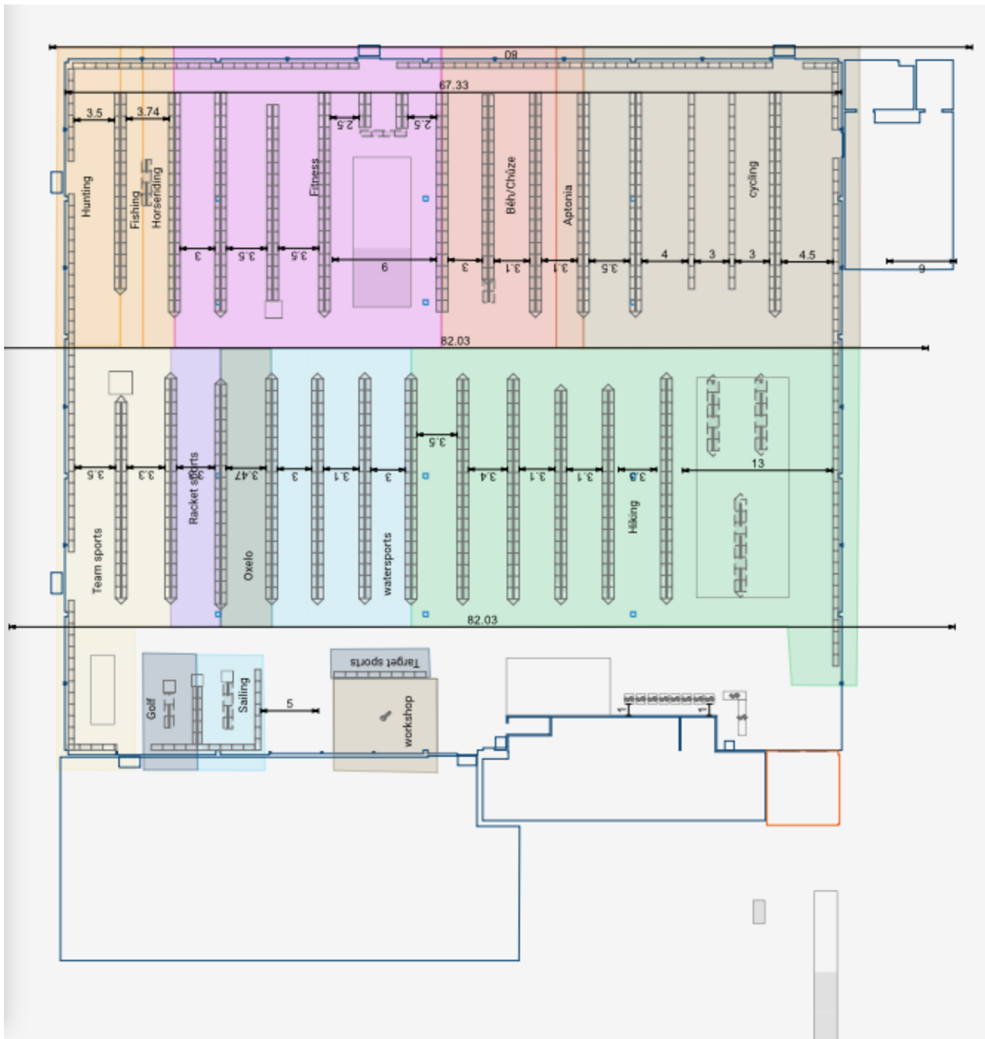


Figure 28: Summer 2023
Source: My offer Decathlon, 2022

In the next part, there is an example of the transport plan that the store prepares in advance for the whole year. After that, adjustments are made every month. Thanks to this, the manager of the day knows when return packages are being sent and when shared transport to Mladá Boleslav can be used. Figure 29 shows the schedule of planned transportation for the size of the trucks. In exceptional situations, this plan can be modified directly in the warehouse when they inform about the change by email. These changes occur, for example, if there is a larger quantity of goods, a truck breakdown or a shortage of a given size truck.

	01.08	02.08	03.08	04.08	05.08	06.08	07.08	08.08	09.08	10.08	11.08	12.08	13.08	14.08	15.08	16.08	17.08	18.08	19.08	20.08	21.08	22.08	23.08	24.08	25.08	26.08	27.08	28.08	29.08	30.08		
CZ O. Avion	BT-RT	ST	BT	ST-RT	BT	ST-RT	ST-SP	BT	ST-RT	BT	ST-RT	BT	ST-RT	ST-SP	BT-RT	ST	BT-RT	BT	ST-RT	BT	ST-RT	ST	BT	ST-RT	BT	ST-RT	BT	ST-RT	ST-SP	BT	ST-RT	
CZ Frydek M. O. Centrum Opava	BT-RT	BT	ST	BT-RT	BT	ST-SP	ST-SP	BT-RT	BT	ST	BT-RT	BT	ST-SP	ST-SP	BT	ST	BT-RT	BT	ST-SP	ST-SP	BT-RT	BT	ST	BT-RT	BT	ST-SP	ST-SP	BT-RT	BT	ST	ST	
CZ Olomouc	ST	BT	ST-RT	BT-SP	ST-SP	ST-SP	ST-SP	BT-RT	BT	ST	BT-RT	BT	ST-RT	BT-SP	ST-SP	BT	BT	ST-RT	BT-SP	ST-SP	ST-SP	BT-RT	ST	BT	ST-RT	ST-SP	ST-SP	BT-RT	BT	ST	ST	
CZ E-commerce PPL/OLOMOUC	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	
CZ E-commerce DHL/OSTRAVA	BT-RT	BT	BT	ST	ST	ST	ST	BT-RT	BT	BT	ST	ST	ST	ST	BT-RT	BT	ST	ST	ST	ST	ST	BT-RT	ST	ST	ST	ST	ST	ST	BT-RT	BT	ST	
CZ E-commerce DHL/OSTRAVA															ST																	
CZ Letnany																																
CZ Letnany_Kladno		BT	BT	BT-RT	BT-SP				BT	BT	BT-RT								ST-SP				ST					ST-SP			ST	
CZ Letnany						ST-SP	ST-RT	ST				ST-SP	ST-SP	ST-RT	ST		ST	ST-RT		ST-SP	ST-RT	ST		ST	ST-RT		ST-SP	ST-RT	ST		ST	
CZ Kladno																																
CZ Kladno_Mlada B.						ST-SP	ST-RT	ST				ST-SP	ST-SP	ST-RT	ST		ST	ST-RT		ST-SP	ST-RT	ST		ST	ST-RT		ST-SP	ST-RT	ST		ST	
CZ Teplice_Karlove Vary		BT	BT-RT	BT	BT-SP	ST-SP	ST-RT	BT	BT	BT-RT	BT	BT-SP	ST-SP	ST-RT	BT			BT	BT-SP	ST-SP	ST-RT	ST	BT	BT-RT	BT	BT-SP	ST-RT	ST	BT	BT	BT	
CZ Teplice							ST-RT	ST						ST-RT	BT		BT-RT				ST-RT	ST	BT	BT-RT	BT	BT-SP	ST-RT	ST	BT	BT	BT	
CZ Karlove Vary							ST-RT	ST						ST-RT	BT		ST-RT				ST-RT	ST	BT	BT-RT	BT	BT-SP	ST-RT	ST	BT	BT	BT	
CZ Liberec_Mlada B.		BT	BT	BT-RT	BT-SP			BT	BT	BT	BT-RT	BT-SP	ST-SP	ST-RT	BT			BT-RT	BT-SP				BT	BT	BT	BT-RT	BT-SP	ST-RT	BT	BT	BT	
CZ Liberec						ST-SP	ST-RT	ST					ST-SP	ST-RT	BT		BT				ST-SP	ST-RT	ST					ST-RT	BT	BT	BT	
CZ Mlada B.															ST																	ST

Figure 29: Transport plan, trucks
Source: own processing according to company internal information

SEPTEMBER 2022										
STORE	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	HOURS	SATURDAY	HOURS	SUNDAY	HOURS
OSTRAVA AVION FRYDEK MISTEK / OSTRAVA CENTRUM / OPAVA	BT-RT	ST	ST	BT-RT	ST	09:00	ST	09:00	ST	09:00
MLADA BOLESLAV / LETNANY / Kladno Kladno / MLADA BOLESLAV LETNANY / Kladno LETNANY Kladno	BT	BT	BT	BT-RT	BT	09:00	BT	08:00	ST-RT	08:00
MLADA BOLESLAV LIBEREC LIBEREC / MLADA BOLESLAV	BT-RT	BT	BT	BT-RT	BT	08:00	BT		ST	
LIBEREC / TEPLICE / KARLOVE VARY TEPLICE / KARLOVE VARY TEPLICE KARLOVE VARY LIBEREC / TEPLICE	BT	ST	BT-RT	ST	BT	8:00, KV ASAP	NO TRUCK		BT-RT	8:00, KV ASAP

Figure 30: Transport plan
Source: own processing according to company internal information

The last part of the appendix is focused on a sample of income and how products go to the store. The first picture is a photo of the truck, which must be stored in a folder due to later possible complaints about the quality of the receipt (damaged goods, size of the truck etc.).



Figure 31: Receipt in truck
Source: own



Figure 32: Receipt the goods, palette
Source: own



Figure 33: Receipt the C&C, pallet
Source: own



Figure 34: Receipt the C&C, magnum
Source: own