
# Measuring the Operational Performance of the Outbound Logistics Process of Brown-Forman Finland

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## Abstract

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Companies generate large amounts of data when performing their business activities. While every company manages data in different ways, efficiency in how they gather, process, and analyse this data may result in a variety of possibilities affecting their end goals and financial performance. In the case of Brown-Forman Finland (BFF), data is generated along its supply chain process and forms an extensive data flow. The current company's data strategy provides various sets of supply chain key performance indicators (KPIs) that managers use to make decisions that will affect Brown-Forman Finland's financial performance.

This thesis analysed the current state of the outbound logistics process of Finlandia Vodka at Brown-Forman Finland and the measuring of its operational performance. The aim was to find the weaknesses in the business process and the possible ways to optimise them. By doing so, the company can bring the best possible service to their customers around the world, while contributing to improve the company's financial performance.

The author decided to focus the research on the interpretation of non-numerical data and on the overall data structure of the business process. Primary data was obtained through the author's experience while working at the company as a Logistics Specialist. Additionally, there were multiple discussions with the Managing Director of the company, Sami Pulkkinen. The secondary data to be analysed consisted of the company's own data, which was related to the performance results of the outbound delivery process of the company.

As a result of the analysis, two main gaps were found: deficient forecast accuracy and an inefficient data strategy. Indeed, the company's traditional data strategy was identified as one of the main reasons why there is a low level of forecast accuracy. The report concluded with the recommendation to establish a new modern, digital and performance-driven data strategy, which intends to close those gaps and improve Brown-Forman's operational performance.

**Key words**
Outbound logistics process, Business Data Management, Data strategy, Performance management, SCOR model

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# 1 Introduction

This is a research bachelor´s thesis for the Degree Programme in International business in the major specialization of supply chain management in the Haaga-Helia University of Applied Sciences. The thesis aims to investigate how improving the operational performance measurement of the case company can positively impact its financial performance. In this first chapter, the research topic, its benefits and delimitation are introduced. Also, key concepts related to the topic are presented to help the reader better understand the ideas discussed along the research. Finally, the commissioning company is briefly introduced.

## 1.1 Background

Companies generate large amounts of data when performing their business activities. While every company manages data in different ways, efficiency in how they gather, process, and analyse this data may result in a variety of possibilities affecting their end goals and financial performance. In the case of Brown-Forman Finland (BFF), data is generated along its supply chain process and forms an extensive data flow. The current company's data strategy provides various sets of supply chain key performance indicators (KPIs) that managers use to make decisions that will affect Brown-Forman Finland's financial performance.

The author got familiarised with the company's business processes thanks to her current job as a Logistics Specialist handling the outbound delivery process of Finlandia Vodka. During the time in this role, the author could learn about the various elements related to the company's outbound logistics, its stakeholders and the way its performance is measured. The experience obtained did not just provided new knowledge, but also there were some aspects that the author considered that could be improved. However, the first natural step before proposing improvements was to analyse the current state of the company's outbound delivery process and its performance measurement methods.

By exploring the current outbound logistics process of BFF and understanding how its performance is related to the company's financial performance, BFF may be able to close some of the gaps along its supply chains and business processes. Thus, this thesis can be used as a base for improvement in the company, which may translate in a stronger competitive advantage. For the author, the thesis shows her capacity of research and analysis, which are to be used through her professional career.

## 1.2 Research questions

This thesis explored the current state the outbound logistics process of Brown-Forman Finland so it can be optimised. The research question of this thesis is "How can the outbound logistics performance of Finlandia Vodka be improved? The research question is divided into investigative questions (IQ) as follows:

IQ 1. How does the company's current outbound delivery process look like?

IQ 2. Why improving the operational logistics performance can benefit the financial performance of the company?

IQ 3. How does the company currently measure the performance of its outbound logistics process?

IQ 4. What major issues or challenges can be identified in this process?

IQ 5. What recommendations can be given to the company?

Table 1 below presents the investigative questions, theoretical framework components, research methods and results chapters for each investigative question.

Table 1. Overlay matrix

| Investigative Questions (IQs) | Theoretical Framework (chapter) | Research Methods | Results (chapter) |
|---|---|---|---|
| IQ 1. How does the company's current outbound delivery process look like? | 2.1 Overview of logistics | Qualitative analysis: author's experience at the company and discussions with the Managing Director | 4.1 Outbound logistics process of Finlandia Vodka |
| IQ 2. Why improving the operational logistics performance can benefit the financial performance of the company? | 2.2 Relationship between logistics operations and corporate financial performance | Quantitative & Qualitative analysis of the company's data and discussions with the Managing Director | 4.2 Operational performance challenges affecting BFF financial performance |
| IQ 3. How does the company currently measure the performance of its outbound logistics process? | 2.3 Measuring operational logistics performance | Qualitative analysis: author's experience at the firm, discussions with the Managing Director and firm's performance data | 4.3 Analysis of BFF's current operational performance measurement method |
| IQ4. What major issues or challenges can be identified in this process? | 2.3 Measuring operational logistics performance | Qualitative analysis: author's experience at the company, company's data and discussions with the Managing Director | 4.2 & 4.3 |
| IQ 5. What recommendations can be given to the company? | 2.3 Measuring operational logistics performance | Author's analysis and discussions with the Managing Director | 5.2 Recommendations |

### 1.3 Delimitation

Data-related topics cover a wide area of knowledge, especially if also combined with other business areas such as supply chain management and finance. Thus, the first delimitation is set in a specific field within the supply chain of Brown-Forman Finland, its outbound logistics process. That excludes the inbound, in-process and reverse logistics. Also, since the outbound logistics includes multiple activities, the various areas directly related to the author's current job position are analysed in general terms in the report. By doing so, the focus is set on how they relate to each other, rather than on exploring each area in deep detail.

Additionally, there are high amounts of performance data gathered along the Brown-Forman's supply chains, that are then analysed. For this reason, during the discussions with the company, it was decided to focus the research analysis to just one set of data, the FY23 Supply Chain – Finlandia Metrics file.

### 1.4 Benefits

Brown-Forman can use the outcomes of the thesis to understand its currents weaknesses in its business processes. By doing so, managers and logistic specialists can modify them and bring the best possible service to their customers around the world, while contributing to improve the company's financial performance. The supply chains have been specially disrupted in the last couple of years. Thus, having a clear analysis of the current state of its outbound logistic process and performance analysis strategy can help the company cope with uncertainty and face future challenges more efficiently. Additionally, Brown-Forman's international customers may benefit by obtaining a better customer service, for example by providing them with more on-time shipments.

For the author of the thesis, it brings a great opportunity to dig into data-related topics for supply chain management. Also, as a current Logistics Specialist in the company, the thesis may bring new professional opportunities and improve the everyday working experience.

### 1.5 Key concepts

In this section, the key concepts mentioned in the thesis a listed below.

**Outbound logistics process** is the phase of logistics in which products leave the manufacturing premises and are transported and delivered to the end customer. There are various logistics activities that need to be performed and that may differ from one company to another, or different industries. In many occasions, this phase includes inventory management, warehousing, transportation, and distribution of finished goods to the end customers. (Sople 2012, 2; Wood, Barone & Murphy 2002, 248.)

**Business Data Management** organises, stores, controls, access and preserves reliable and relevant data for business organisations in particular. An important role linked to it is the quality control of the data and its accessibility. (Henderson 2017, 186; Keith 2007.)

**Data strategy** is the process of obtaining, organising, analysing and delivering data to achieve business objectives (Gartner 2023a).

**Performance management** aims to achieve a business goals and objectives by using a set of metrics and methodologies to define, monitor and optimise the business results (Gartner 2023b). In this report, the focus is on operational and financial performance results.

**SCOR model** is the Supply Chain Operations Reference model. It is a process reference model managed by the Association for Supply Chain Management (ASCM) that evaluates the company's processes and various supply chain activities, quantifies their performance, and compares them to benchmark data. (ASCM 2022a, iv & vi.)

### 1.6 Case company: Brown-Forman Finland

Brown-Forman Corporation (BFC) is a US spirits and wines company. It was stablished 150 years ago, and its headquarters are located in Louisville, Kentucky. It is currently the 5$^{th}$ largest spirits company in the world, and the largest one that is US-owned. Its approximately 5.200 employees are located worldwide to support the selling of products in more than 170 countries. In fiscal year 2022, the company obtained net sales worth $3.9 billion, with and operating income of $1,2 billion. (Brown-Forman 2022a; Brown-Forman 2022d.)

The company owns more than 40 different alcohol beverages brands, such as Jack Daniel's whiskey, Herradura tequila, and Finlandia Vodka (Brown-Forman 2022b; Brown-Forman 2022d). This thesis is focused on this last brand. Finlandia Vodka was introduced in 1970 and is now part of Brown-Forman Finland, which is a branch of BFC. It is produced in Rajamäki and uses local barely and pure spring water, which is naturally filtered thanks to a 10.000 years old moraine. (Brown-Forman 2022b; Brown-Forman 2022c; Finlandia 2022.)

## 2 Theoretical framework

This thesis intends to analyse the current state of Brown-Forman Finland's operational process. That is the outbound delivery process of Finlandia Vodka and its performance measurement, and the financial performance implications that they may have for the company. Thus, Figure 1 shows how supply chain management (SCM) and finance are related and the metric models linked to them. Firstly, the outbound logistics process of the company has an impact on its financial performance. The company uses financial indicators, such as financial ratios, to see how the company is financially in the present, but also what the evolution was and what the forecast looks like. At the same time, the outbound logistics process provides also information about this specific area of the company's supply chain. Related to this, the SCOR model is specifically designed to measure supply chain performance. Hence, by improving the outbound logistics process and the methodology used to measure its performance, a company can positively impact its financial performance.

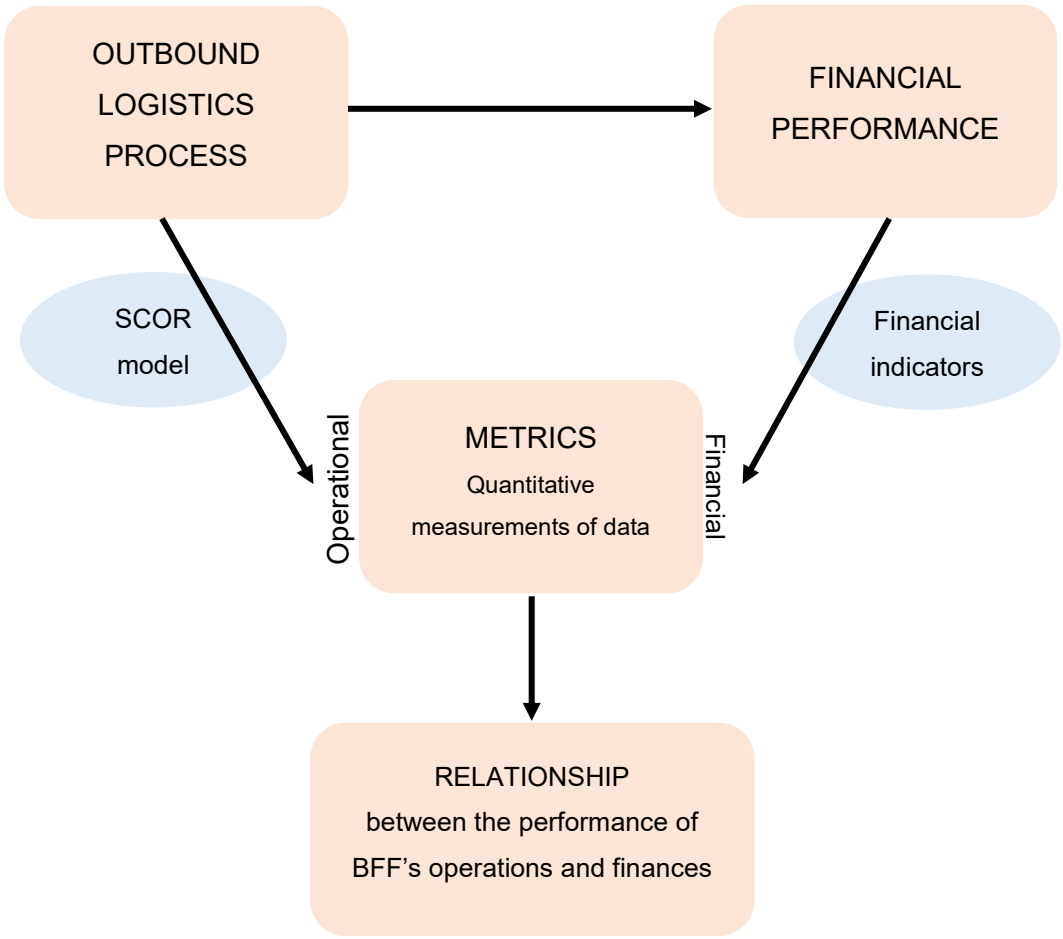


Figure 1. Theoretical framework concept map: linking outbound logistics, finance, and metrics.

## 2.1 Overview of logistics

In this chapter, some definitions of logistics are presented. A special focus is put on outbound logistics process since it the most relevant phase of logistics for this research. Finally, the differences and relationships that exist between logistics and supply chain management will be discussed.

### 2.1.1 Logistics definition

Logistics is a concept that has been defined by many authors over the years. The word derivates from the word “logistikos” in Greek and “logisticus” in Latin, which in both cases mean “the science of computing and calculating” (Sople 2010, 1). In nowadays business context, logistics is mainly understood as the flow of materials and finished goods through the different business operations from suppliers to manufacturing plants until they reach the final customers. That means that it involves the flow of inventory, information and cash by ensuring that the process its cost-efficient, competitive and it meets the customers’ needs and wishes. (Murphy 2017, 21-22.)

The main goal of logistics management is to facilitate the flow of materials, so the right product is available at the right place at the right time, while satisfying customers and keeping the costs at minimum (Sople 2010, 1; Sople 2012, 2). To achieve this primary objective, there are several subsets that need to be accomplished for the logistics system to be effective and efficient:

- **Inventory reduction.** Keeping inventory at the minimum level to reduce funds invested, while guaranteeing continuous and frequent supplies to meet customer service goals.
- **Reliable and consistent delivery performance**. Having a high rate of on-time deliveries by planning properly transport and inventory availability.
- **Freight economy**. Since it is a major cost for logistics, different measures related to transport should be implemented such as route planning, freight consolidation, and load utilizing.
- **Minimum product damages.** Damages will add to logistics costs.
- **Quick response.** The capability of a company to fulfil its customers’ needs in terms of quantities and varieties in the fastest possible way.

(Sople 2010, 1.)

Grant (2012, 2) presents five main logistics activities that belong to the logistics mix and that are related, interdependent and in which coordination is key: inventory management, warehouse management, production management, transportation management, and information technology management. However, as we will see later in next section 2.1.3, a company’s logistical activities expand into the wider supply chain once it actively engages with its stakeholders, such as suppliers and customers (Grant 2012, 3).

Furthermore, logistics is divided into three different phases (Figure 2): inbound logistics, process logistics and outbound logistics. **Inbound logistics** is the process in which raw materials move from suppliers to manufacturing. The **process logistics** adds value to the materials by processing them. This second phase includes the storage of raw materials and their movement along the manufacturing site following a manufacturing schedule. Thus, inventory management is an important part of process logistics. The third logistics phase is **outbound logistics**, which main goal is to move the finished products out of the manufacturing premises and deliver them to the customers. This phase includes warehousing, transportation, and distribution of finished goods to the end customers. However, inventory management is also part of this phase since it monitors the inventory of finished goods. (Sople 2012, 2.)

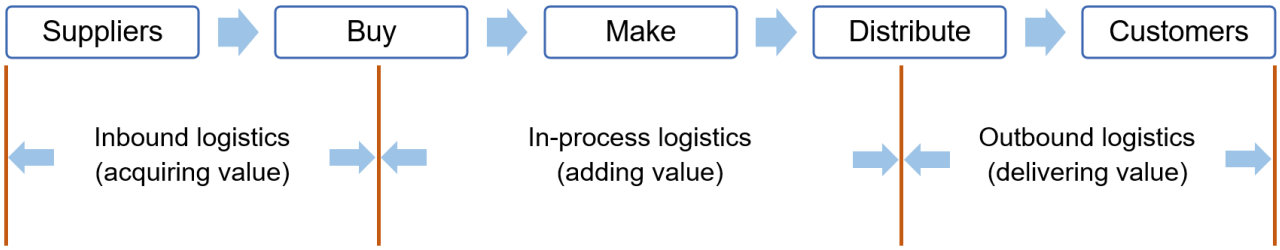


Figure 2. Logistical phases (adapted from Sople 2012, 2)

### 2.1.2 Outbound logistics functions

This research focuses on the outbound logistics process of the case company, which is why the topic will be covered next in a deeper level. As mentioned earlier, outbound logistics is the phase of logistics in which products leave the manufacturing premises and are transported and delivered to the end customer. For this process to be possible, there are various logistics activities that need to be performed and that may differ from one company to another, or different industries (Wood, Barone & Murphy 2002, 248). Due to these differences, the author decided to introduce some of the outbound logistics activities that are related and most relevant for the case company in this research.

Companies use **demand forecasting** to project sales so they can plan production and procurement needs ahead of time. This forecasting is done by the company's supply panners together with the company's marketing department and the distributors outside of the company. While planning the future sales, companies need to plan the deliveries to customers, but also the receipt of raw materials for manufacturing. Thus, inbound logistics is strongly related to this outbound activity. That implies that the free flow of information through all members involved will facilitate an efficient

and effective flow of goods from the beginning until they reach the end customer. (Wood, Barone & Murphy 2002, 248.)

**Order management** is another key activity in outbound logistics. It starts when the company receives a customer's order, which may come through different channels such as: electronically through EDI (electronic data interchange) messages, by email, by the company's salespersons, by telephone, by mail, or through the company's website. Once the order is in the company's system, the order's accuracy is checked and the customer's credit is verified. The prices, payment and terms of sale must be agreed and inventory checked. When the order is confirmed, the company needs to decide from which inventory point the goods are to be shipped, so that warehouse may fill the order. The export specialist prepares the export documents and arranges transportation with carriers. Finally, in the warehouse, the order is picked, packed and ready for pick up on the agreed schedule. (Sople 2010, 1; Wood, Barone & Murphy 2002, 248.)

Another relevant activity is **inventory management**. Its goal is to keep enough stock to meet the customers' needs while keeping costs at minimum. Companies may use two different approaches. On one hand, they may decide to use a cost approach to reduce inventory costs as much as possible. A technique that uses this approach is the JIT (just-in-time) technique in which companies operate on a zero-inventory level. On the other hand, there is the customer satisfaction approach. However, in many cases, businesses try to keep a balance between both approaches so they do not lose market opportunities due to high costs nor because of not meeting their customers' requirements either. (Sople 2010, 1.)

Inventory management is strongly related to **warehousing**. In the outbound logistics phase, finished goods are stored in the warehouse until they are ready to be sold and shipped. Nowadays, many companies use warehousing as a switching facility more than a storage place, one of the reasons being the high costs related to it. Thus, modern logistics focuses more in keeping smaller quantities of inventories and puts special emphasis on matters such as the location of the warehousing facilities, ownership of the warehouse, design of the building, size, and number of facilities. All these considerations are taken while thinking on the companies' objectives and resources available so they can offer the best possible customer service. (Sople 2010, 1; Wood, Barone & Murphy 2002, 255.)

In **transportation**, finished goods are physically moved from the warehousing facilities to the place agreed in the customer's order. When choosing the mode of transportation, a key aspect to consider is the cost. However, companies also need to consider other aspects such as the route and infrastructures of the country or region they are delivering, the urgency of the delivery, and the characteristics of the goods to be transported. Transportation is related to the previous outbound

logistics activities in many ways. For example, from the cost point of view, the location of the warehousing facilities directly affects the transportation costs. Also, the speed and price of transportation affects the way companies manage their inventories since fast modes of transports allow companies to rely on smaller amounts to be stored in their warehousing facilities. Transportation is also related to order management. This is due to the fact that customers may be required to consolidate orders to create larger shipments to be shipped, which would reduce transport costs. (Sople 2010, 1; Murphy & Knemeyer 2017, 222.)

The preparation of **documentation** is also an important task. Shipments are normally accompanied by documents that will be presented together with goods to customs and inspections (Wood, Barone & Murphy 2002, 250). While domestic shipments do not require many documents, exports may do. In this last case, each country may require several export shipments documents that may differ from one country to another (ibid, 250). The most important document in transportation is the bill of lading. It serves as a proof of delivery receipt when the goods have been tendered to carriers and is a contract that states the duties and obligations of both, the shipper, and the carrier (Murphy & Knemeyer 2017, 253).

One last outbound logistics function especially relevant for this research and the case company is **customer service**. It is an element that is crucial for any firm and that can become a key for differentiation among other competitors and, thus, be the company's competitive advantage that will enhance profitability. Customer service is often considered a marketing-related activity. However, there exists a connection between marketing, logistics and customer service since both, marketing and logistics, share the aim to meet customers' needs. (Grant 2012, 16.)

Indeed, as illustrated in Figure 3 below, there are many aspects of these two business areas that are shared. People are the company's stakeholders (such as customers, suppliers and employees) and shareholders. Processes are the required functions needed to deliver the products to the market successfully, together with the other activities specific for each business area. The place of sale or distribution is the physical movement of finished products and is directly linked with logistics. Power means how much market power the company has when providing its goods. Finally, planning and control is the company's ability to commit to its business objectives and strategies by engaging with its stakeholders. (Grant 2012, 21-22.)

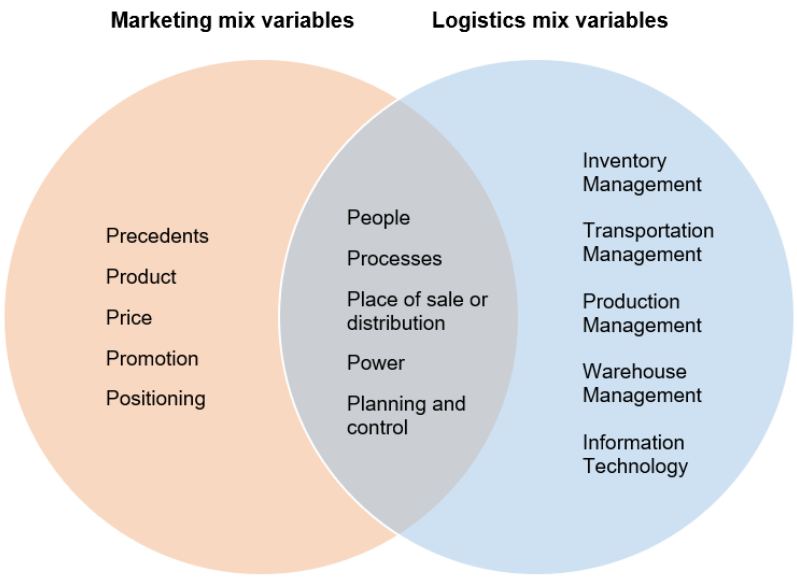


Figure 3. Intersection between Marketing mix variables & Logistics mix variables. (adapted from Grant 2012, 22)

Furthermore, the elements of logistics customer service can be grouped into three different categories depending on which logistics phase the service takes place. The elements may differ from one company to another, or in different industries. Thus, Figure 4 shows the elements that are most frequently researched and used by companies. Pre-order/pre-transaction gathers elements that take place before an order is placed and are mostly related to the ability of the company to fulfil orders with its inventory. Order service and quality/transaction refers to those elements that happen in the order fulfilment stage, which includes the whole phase from suppliers to customers. Suppliers can become key partners with the company if they can consistently success at fulfilling the company's orders. Also, customers may interpret a good rate in these elements an essential decision criteria to choose the company's products among other companies' ones. Finally, post-transaction elements are those that happen after the customer has received the order. Within these elements, we can find two groups: relationship service, which focuses on after-sales support; and relationship quality, which is related to the relation of trust, commitment and integrity between the parties. In conclusion, for companies to develop good relationships with its suppliers and loyal customers, they need to create successful customer service strategies. (Grant 2012, 18 & 20-21.)

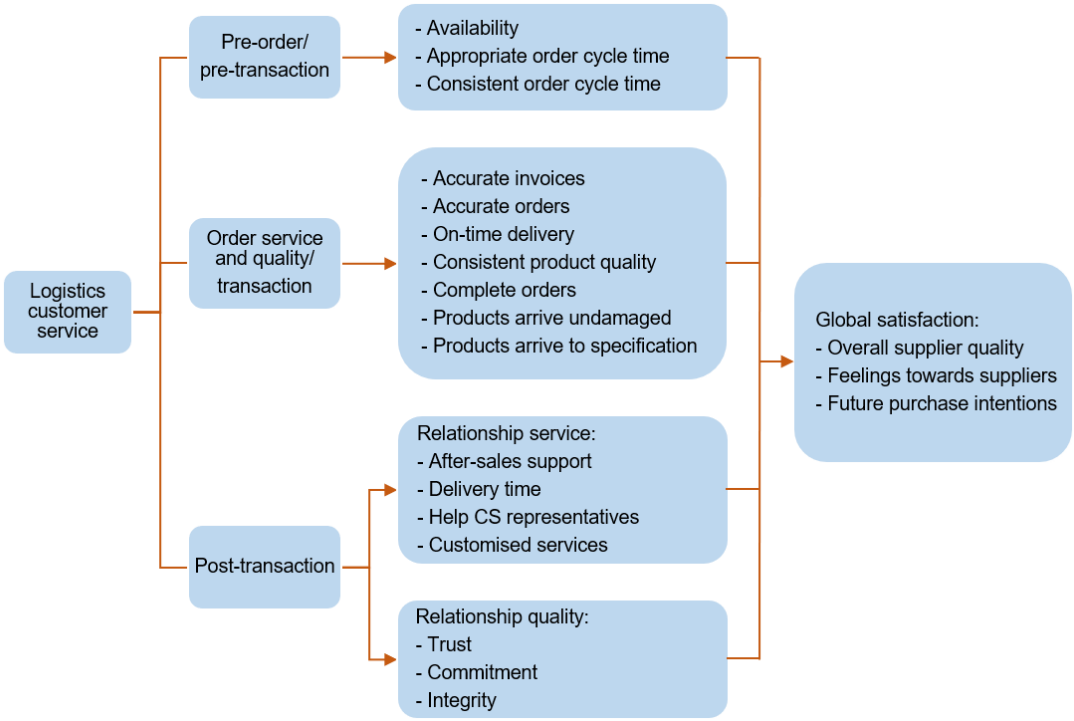


Figure 4. Logistics customer service elements. (adapted from Grant 2012, 22)

### 2.1.3 Relationship and differences between supply chain management and logistics

The concepts of supply chain management and logistics are often used indistinctly. Academics have been discussing the differences of these two terms for many decades. While the concept of logistics had been stablished for a long time, supply chain management appeared for the first time in the 1980s and tackled wider logistical activities in a world that was becoming increasingly globalised. Grant (2012, 3) presents three concepts regarding the relationship between supply chain management and logistics that show the views found in various academic literature sources. Firstly, the **re-labelling concept** considers that supply chain management is just the new name for logistics. This is due to the fact that the academics are struggling to define supply chains and determine what supply chain managers do. The **unionist concept** states that logistics belongs to supply chain management and is indeed a sub-set of it. Finally, there is the **intersection concept**. As the name states, it contemplates the idea of an intersection between both concepts since supply chain management serves as a wide strategy among the supply chain and all business processes in the company. (Grant 2012, 3.)

This lack of consensus may be due to the evolution of logistics in the past decades. From the business point of view, in the 1960s the concept of logistics was understood as a **physical distribution** of finished goods on the outbound side of the business. As previously mentioned, that means the movement of products from manufacturer to the end customer. Thus, logistics was considered

to have a strong relationship with marketing and it was focused on what nowadays represents **downstream** of supply chain management. Later on during the 1980s, logistics concept was extended to include the **upstream** side of supply chain management. The reason was that more focus was put on the importance of delivering materials to manufacturing facilities efficiently, which is known as the inbound logistics. From the 1990s, supply chain management started to be seen in a holistic way that emphasises the importance of the supply chain as a whole. (Sanders 2012, 7.)

Other authors consider that there are four elements that could be considered as differentiating supply chain management from logistics:

- Supply chain management is seen as a whole system rather than a series of elements, and includes suppliers and the end customers.
- It is based on strategic decisions while logistics focuses on operational ones.
- From an inventory point of view, supply chain management utilises inventory to balance the flow of products in a balance way through the chain.
- Supply chain management integrates the information system so all stakeholders in the chain can access the information related to demand and stock levels.

(Farahani, Rezapour & Kardar 2011, 46.)

## 2.2 Relationship between logistics operations and corporate financial performance

Logistics activities affect a corporation's financial performance in several ways. While they enable firms to compete in the marketplace, they also generate substantial costs that should be considered when supply chain strategies are to be designed and implemented. That is because logistics activities require fixed capital and working capital, which affect material cost and use of assets. Nevertheless, these operational activities should also be seen as a revenue generator and a tool to improve the company's valuation. In this chapter, the author will present how logistics impact in different financial aspect in the company and how it affects various drivers of shareholder value: revenue growth, reduction of operating costs, fixed capital and working capital efficiency, and tax minimisation. (Christopher 2011, 57 & 63.)

### 2.2.1 Impact on ROI

Return on investment (ROI) is a profitability ratio commonly used by companies that evaluates the **efficiency of the firms' investment**. It uses the company's net income against its total assets, dividing its profit after taxes by its total investment: ROI = Net Income/Total assets. (Knight & Bertoneche 2001, 78.) This investment, which is the company's total assets, is the capital used to produce the company's profits. The ROI ratio can be displayed in a more detailed way: ROI = Net Income/Sales x Sales/Total assets. (Grant 2012, 101.) For companies to increase their ROI,

companies may focus their attention on these two ratios within the ROI. Firm can focus on increasing their sales margins (first ratio), achieving higher assets turns (second ratio) or both at the same time. (Christopher 2011, 58.)

The way company's manage logistics can affect ROI in various ways. As portrayed in Figure 5, there are many major elements impacting ROI. **Logistics efficiency** affects the company's costs, which in turn impacts on the net income. Thus, firms may decide to reduce the levels of average inventory by increasing the inventory turnover or using the previously mentioned JIT technique. That would imply a reduction of costs deducting from the company's profit, but also a decrease in the amount of capital employed in the form of current assets. In addition, there is another option related to inventory: reducing the cost of goods sold, which would increase ROI. Another logistics implication is that an efficient logistics customer service would increase sales that would help having a higher ROI ratio. Finally, by decreasing the fixed assets owned and using them more efficiently, ROI would also increase since costs would reduce. To do so, many companies decide to lease some of their premises instead of owning them. As we can see, logistics has an important implication in ROI and organisation need to take it into account when pursuing an improvement or their ROI. (Christopher 2011, 58.)

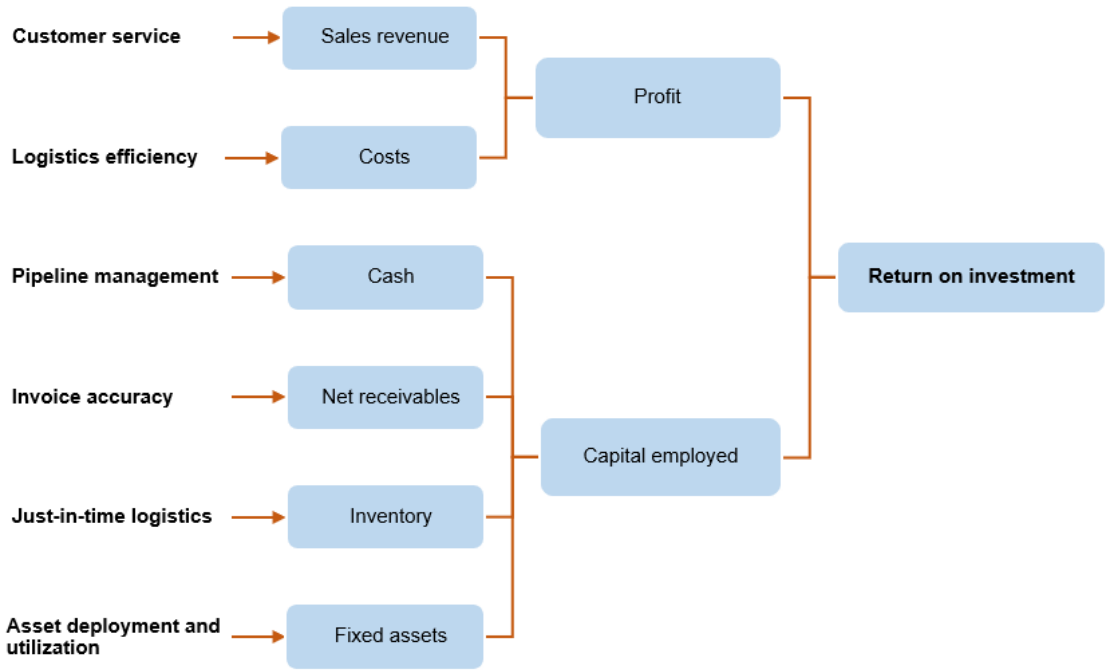


Figure 5. Impact of logistics on company's ROI. (adapted from Christopher 2011, 59)

### 2.2.2 Impact on ROA

Return on assets (ROA) is another financial ratio commonly used by companies to evaluate **the efficiency of asset utilisation** to generate profits. Thus, it indicates the firm's profitability in relation to its total assets. The basic ratio divides the gross revenue (revenue – expenses) between total assets: ROA = Gross revenue/Total assets. Since inventory, warehousing, and transportation are some of the largest capital expenditure in logistics, logistics can significantly affect ROA. This can be done in three different ways that can be combined. Firstly, an increase in revenues would result in a higher ROA. This revenue increase is related to the quality of the firms' logistics customer service. Secondly, logistics may positively affect ROA by decreasing expenses related to the company's assets. Thirdly, and strongly related to the second one, by reducing assets. These two last options can be done by reducing the levels of inventory and outsource the warehouse and transportations activities. When both expenses and assets decreased, there is a positive impact on ROA. (Sanders 2012, 184.)

As an example, Figure 6 and Figure 7 show the implications on ROA when decreasing inventory levels. In both cases, the ROA formula is decomposed by using the DuPont model so it shows its elements in more detail. In the first case scenario in Figure 6, inventory expenses are 30$ and ROA is 1,97%.

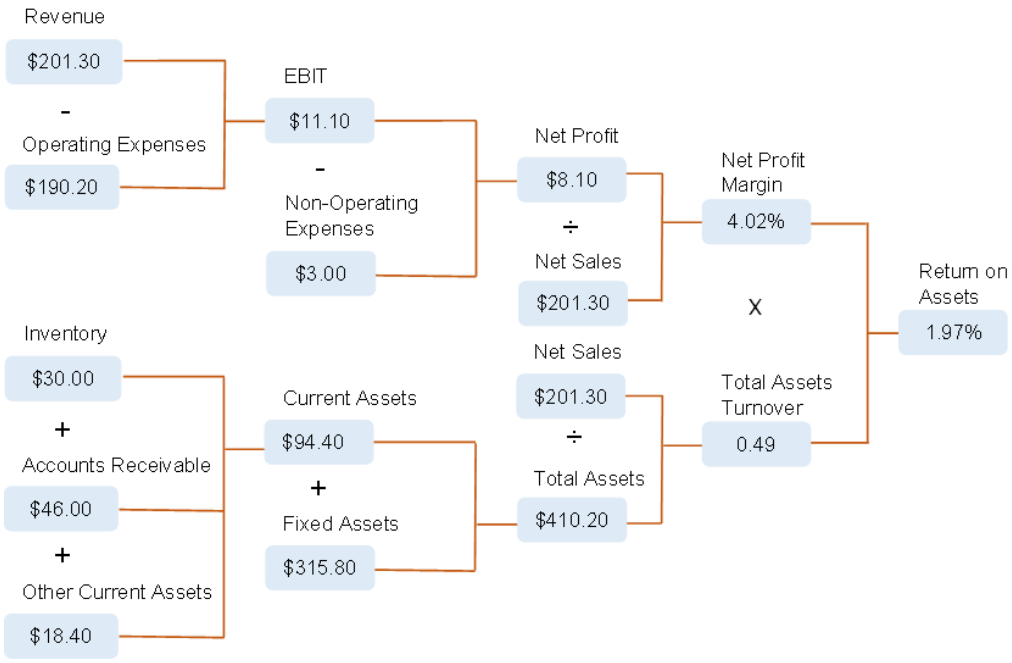


Figure 6. ROA formula using the DuPont model. Scenario 1 – Inventory 30$. (adapted from Leon 2015, 190-191)

In the second case scenario in Figure 7, inventory expenses are decrease to 20$ while revenues and the rest of expenses stay exactly the same. However, ROA is now 2,10%. Even if the cost of goods sold in this example stay the same, the reduction of inventory decreases both, current assets and fixed/long-term assets. While we can expect the reduction in current assets to be a direct implication of reducing the levels of inventory, fixed assets are also decrease since the need for capacity is also reduced. Thus, total assets are now decreased and makes ROA to increase, meaning that now the company is more efficient using its assets. An implication that is not represented in this DuPont model is that for this inventory decrease to happen, inventory turnover needs to increase, while the days in inventory should decrease. (Leon 2015, 190-191.)

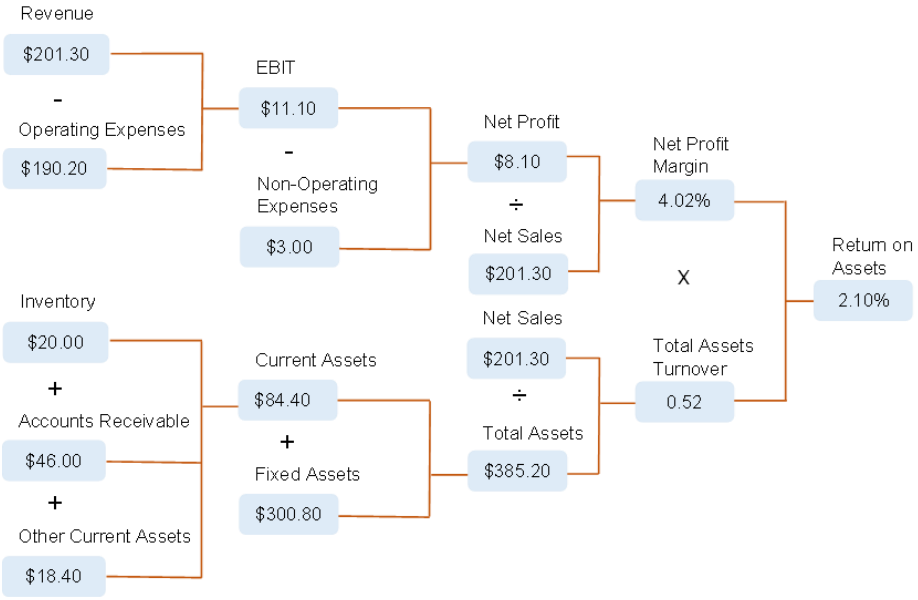


Figure 7. ROA formula using the DuPont model. Scenario 2 – Inventory 20$. (adapted from Leon 2015, 190-191)

### 2.2.3 Impact on EVA

Economic Value Added (EVA) is a measure profitability that shows the relationship between the return on capital used and the cost of capital. Thus, it indicates if the company has made an actual profit: the earnings before interests and after taxes (EBIAT) has to be higher than the cost of the capital used. EVA can also be portrayed using the DuPont model to help identify and isolate those company activities that bring value. When related to supply chain specifically, it can show those activities that bring revenues, costs, and which assets are used for supply chain activities. The company's revenues can be affected by controlling the costs identified in EVA. For that reason, EVA can be used to manage supply chain in a more efficient and effective way that will positively revert on EVA and, thus, in the company's actual profit. (Knight & Bertoneche 2001, 4; Sople 2012, 25.)

### 2.2.4 Impact on the balance sheet

Logistics can also interfere with the company's balance sheet in various ways. The balance sheet is one of the financial statements used by companies. It shows the **assets, liabilities and owners' equity** in a specific moment in time. (Knight & Bertoneche 2001, 1.) Assets owned by the company are divided into two different categories depending on its temporal form. On one hand, current assets are assets and claims that can easily be turned into cash, normally within a financial year. This category includes elements such as cash and inventories. On the other hand, long-term assets are those assets that are intended to be managed by the company for more than a year, such as company-owned buildings. Liabilities are the company's financial obligations owned to other parties. They are also reported separately as current and long-term liabilities, similarly as assets. Finally, owners' equity (also referred as stockholders' equity) represents the net worth of the firm, which is the difference between the company's total assets and its total liabilities at a particular point in time. (Murphy & Knemeyer 2017, 63.)

Companies use the balance sheet to calculate different types of ratios: **solvency, liquidity,** and **profitability**. Thus, the various logistics elements affecting the balance sheet can also have an impact on these three ratios. The current financially challenging business environment requires companies to improve their balance sheets by implementing more efficient ways of using their assets and resources. (Knight & Bertoneche 2001, 1.)

Figure 8 shows the major logistics elements that have interferences with a company's balance sheet. **Current assets** are specially relevant to a company's liquidity. Logistics may affect this category in the balance sheet in different ways. Having a short order cycle time would translate in faster issuing of invoices and, thus, the company could receive cash quicker. Also, a high order completion rate in which the total amount of goods are dispatched would allow invoices to be issued earlier, and that would affect the company's cash flow. Another element affecting the balance sheet in this category is invoice accuracy. That is because the payment lead time increases, if customers find discrepancies in the invoices they receive and cash coming to the company is affected. Finally, **inventories** is one of the most evident logistic elements affecting the balance sheet, which has a direct account for it. Since inventories may be a significant part of current assets, having high levels of inventory would negatively affect the current ratio in which short-term liquidity is revealed. (Christopher 2011, 59-60.)

In the long-term assets category, logistics would affect this account specially with the costs of company's own warehousing, production facilities and vehicles. That is one of the reasons why many companies decide to outsource warehousing activities and transportation. Moving to the liabilities side, **current liabilities** are mostly affected by logistics elements through the purchasing of

materials and components and the debts associated to them. In terms of **long-term debt** and **equity**, the funding of fixed assets such as plant facilities and equipment may significantly decrease those accounts. (Christopher 2011, 61.)

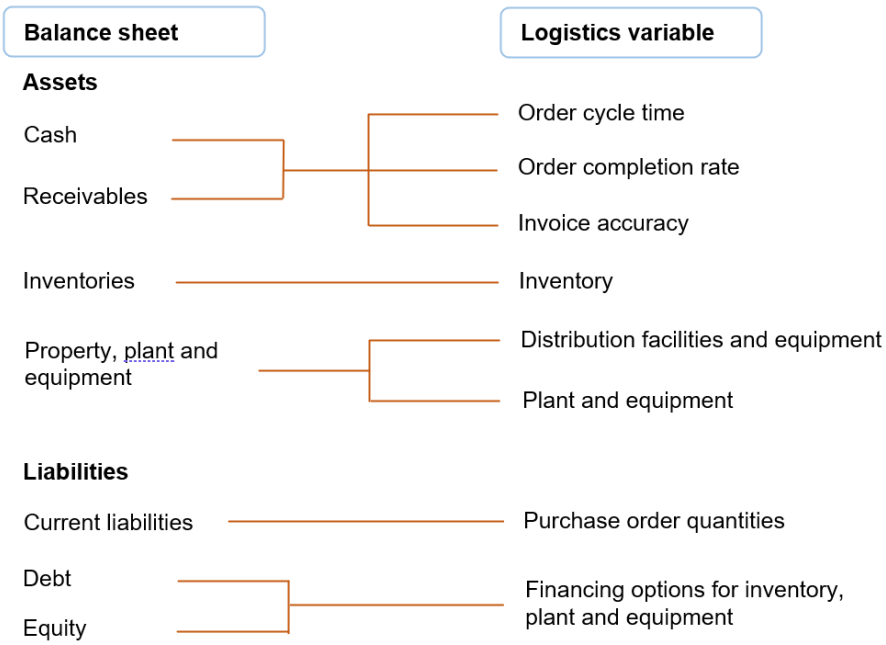


Figure 8. Interference between logistics and the balance sheet. (adapted from Christopher 2011, 60)

### 2.2.5 Impact on the income statement

Lastly, the impact of logistics in the income statement will be briefly explored. The income statement (or profit and loss statement) is another financial statement that shows the firm's revenues, expenses and net income of a certain period of time (Murphy & Knemeyer 2017, 62.). It shows the profitability of the company and has become one of the main driving forces for managers when making decisions (Christopher 2011, 58). **Revenues** are the sales generated by the organisation during that period of time. **Expenses** are then deducted, which include costs related to the cost of goods sold and any other cost incurred in generating revenues, such as transportation and warehousing. Then, **interests** and **taxes** are to be added or subtracted so the company can obtain the **net income** for that period. (Murphy & Knemeyer 2017, 62.)

Figure 9 shows the different implication of logistics in the income statement. An efficient logistics customer service has a positive impact on the revenues obtained by the firm. Additionally, the cost of goods sold (COGS) can be reduced by managing inventory more efficiently, which is related to a better purchasing strategy and scheduling. In terms of other expenses, there are many ways firms can reduce theses costs. As we have already seen in this chapter, expenses related to transport

and warehousing can greatly impact the financial performance of companies. Thus, by reducing those, firms can obtain higher net profit results. (Grant 2012, 161.) Finally, there are also inventory costs that affect the taxation of firms, which is one of the drivers of shareholder value mentioned in the introduction of this chapter. (Grant 2012, 161; Christopher 2011, 63.)

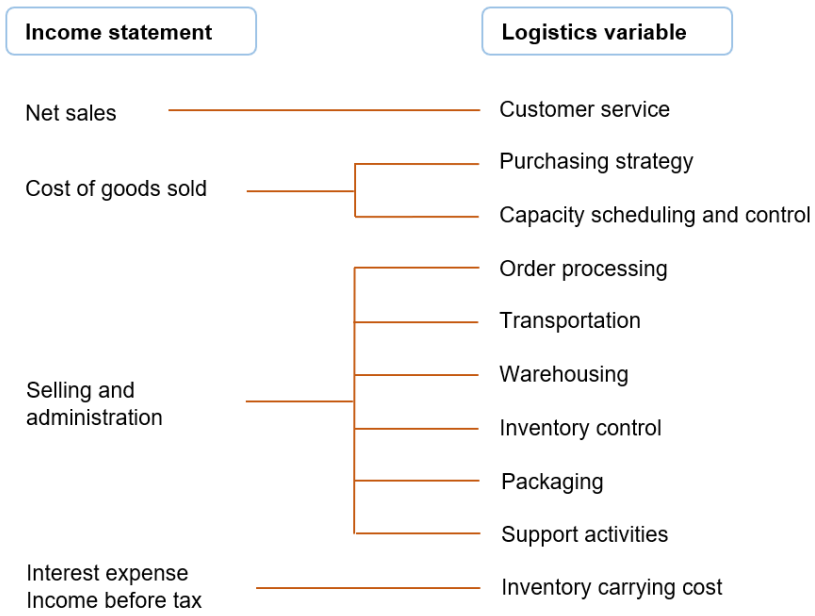


Figure 9. Impact of logistics in the company's income statement. (adapted from Grant 2012, 161)

## 2.3 Measuring operational logistics performance

As it was already presented previously, logistics operations impact corporations' financial performance from several perspectives since the connection between both is important. Thus, for firms to determine if they can generate value, they need to measure their operational and financial performance in a way that they are connected. This is because it is not possible to know if the company is making any profit by just looking at its operational performance, but also the company's financial performance does not indicate if profitability can be sustained in the future. (Leon 2015, 1.)

### 2.3.1 Difficulties

According to Sople (2012, 25), the number of companies that use supply chain management as a tool to boost financial performance is relatively small. Indeed, many authors agree that there are several factors why companies fail to connect supply chain management and logistics. Firstly, there is a **lack of common understanding** between logistics and finance professionals**.** As a consequence, tactical and strategic decisions are hard to make since supply chain measures are

difficult to communicate to the CFO and there is also a lack of supply chain management representation at board level. (Sople 2012, 25; Camerinelli 2009, 68-69.)

Secondly, the use of indicators related to finance such as cash-to-cash cycle or working capital for supply chain, has increased awareness in the finance departments of its potential to decrease costs, but also generate revenue. This increase of the financialization of the supply chain in the past decade highlights the growing need of mutual understanding and coordination between the supply chain and finance departments. (Camman, Fiore, Livolsi, & Querro 2017, 181.) However, Camerinelli (2009, 67-68) points out that there are some difficulties to translate and link some qualitative supply chain metrics into financial indicators, but also **standard metrics and guidelines** to monitor operational targets at corporate level are scarce.

Thirdly, logistics is still often seen as an independent activity rather than a part of the entire supply chain and as a cost-centre activity. In this case, supply chain management should be an important aspect in the business strategy. Thus, tactical and strategic decisions related to supply chain should be made from an **enterprise-wide perspective** that highlights its value, rather than just be seen as operating expenses. (Sople 2012, 25; Camman & al. 2017, 181.)

### 2.3.2 Performance analysis: Supply Chain Operations Reference (SCOR) model

The Supply Chain Operations Reference model (SCOR) is a process reference model created by the Supply Chain Council (SCC) in 1996 (Grant 2012, 158). The SCC is a US independent not-for-profit group founded in 1996 by the industry research company AMR Research and the manufacturing consulting company Pittiglio Rabin Todd & McGrath (PRTM). This group's goal was to find improvements in the business process models related to the supply chain that could be applied to various industries. (Camerinelli 2009, 119.) In 2014, the SCC and APICS merged, and the new corporation was re-named as Association for Supply Chain Management (ASCM), which includes a vast representation of cross-section of industries such as manufacturer, distributors, and retailers. The group regularly updates and adapts the SCOR model according to the advances and changes that supply chain management faces. (ASCM 2022a, iv.)

The SCOR model evaluates the company's processes and various supply chain activities, quantifies their performance and compares them to benchmark data with the aim to 1) make supply chain management more effective, 2) improve the effectiveness of activities related to supply chain, 3) support communication between the different supply chain partners. By providing common definitions and measurements that reach these goals, the SCOR model facilitates better communication and relationships between customers and suppliers, help to adopt common practices faster, and improve software systems used by its members since common terms and measurements are used. The SCOR model presented in this research is the last version available, 14.0 and it

integrates four major sections into a single framework: processes, performance, practices, and people. (ASCM 2022a, iv & vi.)

**Processes** section includes a set of unique predefined descriptions of activities that most companies must execute to achieve the main goal of fulfilling customers' orders. There are 4 different levels. Level-0 process is the Orchestrate process that includes the activities needed to integrate the supply chain strategies. Level-1 process includes six process: Plan, Order, Source, Transform, Fulfill and Return. Level-2 process identifies strategies within level-1 and there are at least three for each level-1 process. Level-3 process identifies supply chain activities within each strategy in level-2. (ASCM 2022a, ix; ASCM 2022d; Camerinelli 2009, 120-121.)

**Performance** measures and assesses the execution results of supply chain process. It describes process performance by using standard metrics to help defining and assessing the company's strategic goals. Within this section, there are three elements that define different aspects of performance and that are distinct from those levels in the Processes section and metrics hierarchies: performance attributes, metrics, and process and practice maturity. (ASCM 2022a, vii; ASCM 2022c.)

Performance attributes focus on the strategic features of supply chain performance. Since attributes themselves cannot be computed, metrics are grouped into categories to measure the ability to achieve strategic directions. For example, a company may decide that strategic direction is to work towards achieving that a specific product they produce lead the competition in responsiveness. As Table 2 shows, there are 3 performance categories and eight performance attributes. (ASCM 2022a, vii; ASCM 2022c.)

Metrics measure discrete performance of a supply chain or process and, in the SCOR model, they belong to different levels. Level 1 metrics are strategic metrics and KPIs that measure the overall state of the supply chain. By benchmarking them, companies may support their strategic directions since they help them establish targets that are realistic. Level 2 metrics are used to diagnose level-1 metrics, meaning that they explain the reasons that cause the performance gaps identified with level-1 metrics. Level 3 metrics diagnose level-2 metrics. Thus, these metrics decomposition serves to better identify and investigate the root causes of performance gaps. There are 20 level-1 metrics (strategic metrics) recognised by the SCOR model, as shown in Table 2. ASCM advises to use at least one level-1 metric for each performance attribute to create balanced supply chain scorecards. (ASCM 2022a, viii-ix; ASCM 2022c.)

Process and practice maturity is an objective tool of reference with specific descriptions to evaluate the state of fusion of supply chain processes and practices so best-practise process models can be executed. It does so by comparing actual business activities to specific descriptions of practice

adoption and implementation at five different levels, from low-maturity process to high-maturity processes. (ASCM 2022a, vii-ix; ASCM 2022c.)

Table 2. SCOR performance categories and performance attributes. (adapted from ASCM 2022a, vii-viii, ASCM 2022c; Camerinelli 2009, 123)

| **Performance categories** | **Performance attributes** | **Level 1 metrics** |
|---|---|---|
| Resilience | Reliability | RL.1.1 Perfect Order Fulfilment<br>RL.1.2 Perfect Supplier Order<br>RL.1.3 Perfect Return Order Fulfilment |
| | Responsiveness | RS.1.1 Order Fulfilment Cycle Time |
| | Agility | AG.1.1 Supply Chain Agility |
| Economic | Cost | CO.1.1 Total Supply Chain Management<br>CO.1.2 Cost of Goods Sold (COGS) |
| | Profit | PR.1.1 Earnings Before Interest and Taxes (EBIT) as a Percent of Revenue<br>PR.1.2 Effective Tax Rate |
| | Assets | AM.1.1 Cash-to-Cash Cycle Time<br>AM.1.2 Return on Fixed Assets<br>AM.1.3 Return on Working Capital |
| Sustainability | Environmental | EV.1.1 Materials Used<br>EV.1.2 Energy Consumed<br>EV.1.3 Water Consumed<br>EV.1.4 GHG Emissions<br>EV.1.5 Waste Generated |
| | Social | SC.1.1 Diversity and Inclusion<br>SC.1.2 Wage Level<br>SC.1.3 Training |

**Practices** in the SCOR model describe a set of industry-neutral processes that are listed as best practices. They have updated, feature clear goals, scope, process and procedures, and it has been demonstrated in work environment that they have a positive impact on supply chain performance in multiple industries and organisations. These practises are grouped in 20 classifications (as listed in Table 3 below) depending on their focus area, and a practice may belong to more than one category. (ASCM 2022a, x; ASCM 2022d.)

Table 3. SCOR Practices classification. (adapted from ASCM 2022d)

| Categories | |
|---|---|
| Business Process Analysis and Improvement | People Management (Including Training) |
| Customer Support | Planning and Forecasting |
| Distribution Management | Product Life Cycle Management |
| Information and Data Management | Purchasing and Procurement |
| Inventory Management | Reverse Logistics |
| Manufacturing and Production | Risk and Security Management |
| Material Handling | Sustainable Supply Chain Management |
| New Product Introduction | Transportation Management |
| Order Engineering | Warehousing |
| Order Management | |

Finally, **People** section did not belong to the original SCOR model, but it was introduced in the version 10. It describes the needed skills to perform tasks in the supply chain and the standards for managing talent. There are three key elements: skills, experiences and training. However, competency levels are not part of the framework descriptions even if the SCOR model recognises five levels: novice, beginner, competent employee, proficient individual, and expert. (ASCM 2022a, x; ASCM 2022e.)

### 2.3.3 Linking the SCOR model to financial performance

The SCOR model is one of the main references used to evaluate the performance of supply chain processes. However, its ability to link operational metrics to financial indicators is limited when used alone even if, as the author has previously presented, there is a strong link between operational performance and companies' financial performance. (Camerinelli 2009, 175.)

According to Sople (2012, 25), strategy is the beginning point when linking supply chain performance and the financial corporate performance. The company's supply chain strategy needs to go hand in hand with its corporate strategy. That means that the process of measuring financial success and supply chain performance need to be related. (Sople 2012, 25.)

While there is not fixed method to link both performances, Camerinelli (2009, 176) proposes a set of steps that companies may use. Step 1 is about identifying and selecting indicators of financial performance. Some of the ones mentioned in the research are ROI, ROA and EVA, but also

financial ratios based on the data in the balance sheet and income statement are useful, such as inventory turnover and liquidity ratios. (Camerinelli 2009, 177.)

In step 2, the company identifies and selects which supply chain practices to focus on. As already mentioned, practices create an operational improvement, which can be gained in different ways and are linked to key metrics. Since every company is different, the chosen practices will be set based on the goals they want to achieve. Thus, depending on the company's objectives, the practices may impact their operations in terms of gain in quality, revenues or speed or a by reducing costs, losses and the utilisation of resources. (Camerinelli 2009, 182-183.)

Then, step 3 consists of stablishing a correlation between the financial indicators and the operational activities. However, there are just three metrics that can be used: inventory turns, COGS as a percentage of revenue, and ROA. Because of this limitation, it is advised that the company's supply chain team and the financial team work together to set shared objectives so they can connect financial and supply chain results and performance. From the practices chosen in step 2, they need to link each practice to financial indicators. For example, the best practice "Available-to-Promise" in the SCOR model can be linked to the income statement with the sales revenue, COGS and operating expenses, but also to the accounts receivable in the balance sheet. (Camerinelli 2009, 184-187.)

Once the correlation is stablished, step 4 follows. Here, the company builds a financial indicators dashboard. The financial performance indicators shown in the dashboard are to be tightly connected to the performance of the company's supply chain management. To do so, step 5 focuses in using the company's current data to quantify the value of the indicators in step 4. They idea is to focus on simplicity of metrics, accessibility to the relevant data sources, and clear linked to the corrective actions to be taken. (Camerinelli 2009, 1995, 199-200.)

Next, step 6 establishes a set of benchmarks. The benchmark data can come from the same company such as different business units, competitors and industry sector average. However, there are some risks when establishing a benchmark reference because comparisons may not be reliable if gaps are too wide or small, or they do not take into consideration specific company's circumstances. Thus, the important idea behind benchmarking is to start discussion among managers, rather than assessing unreasonable targets to reach. (Camerinelli 2009, 200-201.)

The next two steps focus on comparing the company's data with the benchmark data (step 7), and determining the most relevant performance gaps (step 8). By creating a comparative analysis, companies can identify in which areas they are performing worse, so they can further analyse them and look for improvements. (Camerinelli 2009, 202.)

Finally, step 9 is focused on identifying which supply chain practices would help in closing the gaps previously identified in step 8, while step 10 is the presentation of the results (Camerinelli 2009, 202). This proposal is then mixing the SCOR model, that is a reliable reference method, with financial indicators, while still allowing companies to adapt the model to its specific needs.

# 3 Research Methodology

The following section introduces the research methodology used to conduct the research that will be presented in chapter 4. It first presents the different phases in the research design and how they relate to each of the investigative questions presented in chapter 1. Then, the data collection process is explained together with the data analysis.

## 3.1 Research design

The research aims to evaluate the current state of the outbound delivery process of Finlandia Vodka at Brown-Forman Finland, its current issues, how its performance measurement is conducted and its margin of improvement. Figure 10 illustrates the research design process. In phase 1, literature review has been explored in the previous chapter. The theory presented the needed concepts to later understand the analysis of the company's state. It introduced topics related to outbound logistics that is related to investigative question 1, financial metrics in connection to IQ2, and supply chain metrics related to IQ3.

The second research phase is about collecting data to answer the investigative questions related to the current outbound delivery process of Brown-Forman Finland and the method they currently use to measure performance of this process. The information obtained in phase 2 set the base upon which phase 3 was built. In this phase, the data collected was organised and analysed. Once the analysis was finished, multiple investigative questions could be effectively answered. That is understanding the company's current outbound delivery process, the way performance is measured and its issues and challenges. Finally, the last phase is number 4, in which conclusions are formed based on the previous analysis and the theory in phase 1. These conclusions derived in some recommendations for the company, that are connected to investigative question 5 and also answer the main research question.

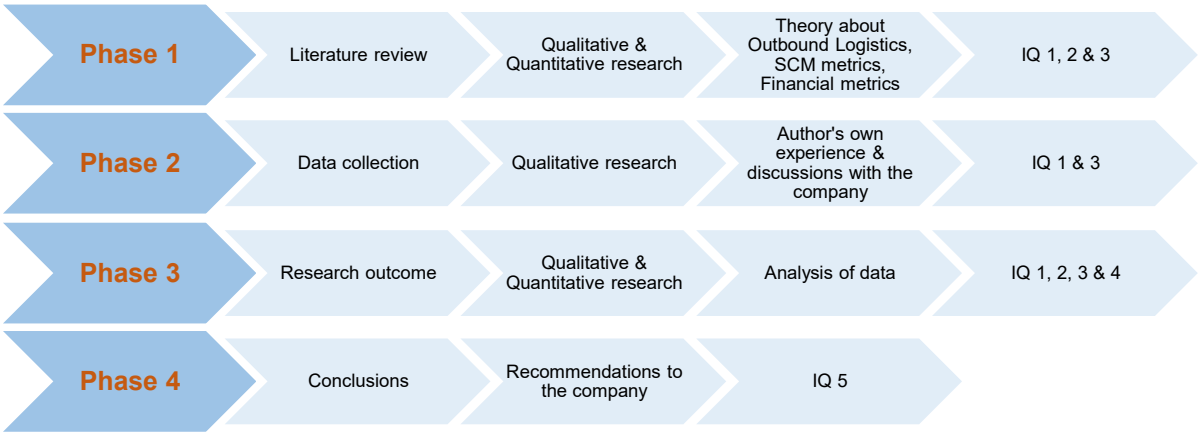


Figure 10. Research design

### 3.2 Research methods

This thesis has used a mix of qualitative and quantitative methods of research. However, even if data and metrics are an important aspect of this research, the focus is not set in the company's performance results themselves but in the overall data structure of the process. Thus, quantitative methods account for a very small part of the research, specifically when relating supply chain and finance performance results, or applied to some numerical data that the company provided, such as key metrics and graphs. However, it was not the goal to analyse the statistical data in a detailed way to determine the business performance itself, but to understand how performance was measured.

Thus, the author decided to focus on the interpretation of non-numerical data. The qualitative research method focuses on understanding and interpreting the data gathered through observation and discussions (Eriksson & Kovalainen, 2008). The idea behind this decision is that the aim of the thesis is not to state how the current outbound delivery process of Brown-Forman Finland is performing, but understanding why it is performing at a certain level. Since the main research question wants to find the ways to improve the business performance, the research needs to focus on the reasons behind its current performance, rather than just on the performance results themselves.

### 3.3 Data collection and analysis

Data collection consisted of primary and secondary data. Primary data was obtained through the author's experience while working at the company as a Logistics Specialist, which provided a closed and familiar idea of the outbound logistics process of Finlandia Vodka at Brown-Forman Finland. Using observation to collect primary data is a business and management research method that has been often neglected, but it can enrich the research data by providing valuable business data (Saunders 2015, 354).

Unstructured interviews were used to obtain a deeper knowledge about the process and the way its performance is measured. This format was chosen because the purpose of this research report is to gain insights about a specific topic and the issues related to it. These kind of interviews do not have a predetermined set of questions, but are based on a freely conversation about the topic to explore. Exploratory research is flexible and can be adapted while the stages of the research move forward. That means that the direction of the research can be changed as new results, data and insights arise. (Saunders 2015, 175, 391.)

Indeed, this method of research was useful in this report since the original analysis target and outcomes to obtain evolved once the author had new company data and insights. There were multiple discussions with the Managing Director of the company, Sami Pulkkinen. Two of these discussions

happened already before the thesis started in an informal and spontaneous way. The author presented the idea to base her thesis topic on the company's relation with data, but she did not have a clear topic. During these meetings, the Managing Director introduced the author to the complexity of the overall business process. After doing some research, the author decided to focus on the outbound logistics process at Brown-Forman Finland and how data was used to improve performance. However, as the theoretical framework was advancing and after the first formal meeting, the research slightly switch due to the new insights from the company. Rather than focusing on analysing the logistics performance of certain markets, it was decided to set the focus on the way the company currently measures the performance of its business processes.

Additionally, the company's own data was used as a secondary data source. That is data collected by people other than the author, being one of its main advantages its validity (Ng & Coakes 2013, 40). This data was related to the performance results of the outbound delivery process of the company. Because of the confidentiality of it, this data cannot be shared in this research, but instead just the conclusions based on it.

Thus, to perform the analysis of the data, the author used various methods: observation, unstructured interviews, and secondary data provided by the own company. First, the author decomposed the different business processes based her own experience and knowledge. Then, graphs and value maps were used to illustrate the process for easier analysis. Secondly, the data analysis focused on the discussions with the company in which some challenges were presented. Finally, the analysis concluded with the analysis of the methodology the company uses to measure its business performance related to Finlandia Vodka outbound delivery process.

### 3.4 Research planning

Appendix 1 illustrates the different phases and tasks in the research process. Phase 1 consisted in working on the theoretical framework and it started at the end of November 2022. During a month, 7 main tasks were performed: finding literature and selecting the content to include in the report, and writing about the different topics related to SCM, finance and operational performance. After finishing this phase, phase 2 started in the beginning of January 2023 and it was based on the collection and analysis of data. First, the author used her knowledge and experience at the company to analyse its current outbound logistics process and graphically illustrate it. Then, this content was presented to the Managing Director during a meeting from which some more insights and conclusions were wrote to light and some company data was provided to the author. A second meeting happened during this phase. The author presented her analysis of the methods the company uses to measure its operational performance. This second phases concluded in mid-February by writing

in the report the different ideas discussed during these two meetings and materials created and analysed.

In the final research phase, number 3, the author prepared some improvements based on her conclusions from the previous phases. These proposals were based on the ideas gathered in the theoretical framework, the analysis performed and the comments from the Managing Director of Brown-Forman Finland. There was a meeting to present the improvement proposals and get the company's point of view. The company's Quality Assurance Manager also joined this meeting and provided her insights related to the topic and data strategy proposal ideas. Finally, the whole thesis was presented in a final meeting in mid-March. The Managing Director and the author went through all the content in the thesis. The author presented the theoretical framework and the company's analysis report, improvements and conclusions.

# 4 Case company analysis: Brown-Forman Finland

This chapter introduces the analysis of the current state of the outbound delivery process of Finlandia Vodka at Brown-Forman Finland. Firstly, the process itself is presented to understand its different steps and various stakeholders. After that, the company's operational mix is introduced, its challenges and the consequences related to financial performance. Finally, the chapter presents Brown-Forman's current operational performance analysis methodology.

## 4.1 Outbound logistics process of Finlandia Vodka

Previously, Figure 2 in section 2.1.1 presented the three logistics phases: inbound, in-process, and outbound logistics. In the case of Brown-Forman Finland, Logistics Specialists mainly focus on the last logistics phase, the outbound logistics of Finlandia Vodka. That is, moving the finished product from the warehouse to its several customers around the world. For this process to happen, various logistics activities are required, as already mentioned in the theoretical framework. In addition, different stakeholders take part along the process.

There are many documents related to the current logistics process of Finlandia Vodka owned by the company. However, there is not a description of the overall process nor a graphic representation of the Finlandia Vodka logistics process flow. Hence, it is difficult to communicate the overview of the process to people that are unfamiliar with it or that just take part in very specific steps of the process. For this reason, the author decided to create a visual process flow based on the experience obtained during the time working at the company.

Hence, Figure 11 illustrates a basic representation of the main logistics activities and processes related to Finlandia Vodka. The supply planners' from each market (such as Germany, Bulgaria, and Australia) create a forecast of the amount of goods they expect to distribute in their respective countries. They send their new orders periodically to Brown-Forman Corporation (BFC) in USA. Once BFC receives those orders, they enter the information in the company's data base. After the orders are approved, Brown-Forman Finland's logistics team get the confirmation to start processing them. From that moment, logistics specialists in Finland are in charge of organising the delivery of the orders and, as it will later be explained in more detail, they are responsible to overview many key activities within the outbound logistics process. An important aspect that BFF does is the production forecasting. This is done periodically and it plans the production of future orders. This forecast is then shared with the production site, Anora. This later one also needs to create a forecast to know the amount of raw materials needed for production, so they can be purchased ahead of time. Once Finlandia Vodka is produced and bottled, Anora moves the stock to their warehouse facilities and the goods enter in stock in BFF's system. Some of these goods, may also be transferred to the company´s warehouse in Latvia. From the warehouse, the goods will be then picked,

loaded and transported in the agreed means of transport to the countries assigned, and finally delivered to the final customers. Thus, Brown-Forman Finland focuses specially in the outbound logistics process of Finlandia Vodka, while Anora is more directly related to the inbound and in-process logistics activities. However, they are co-dependent and need to cooperate for the whole logistics process to be as efficient as possible.

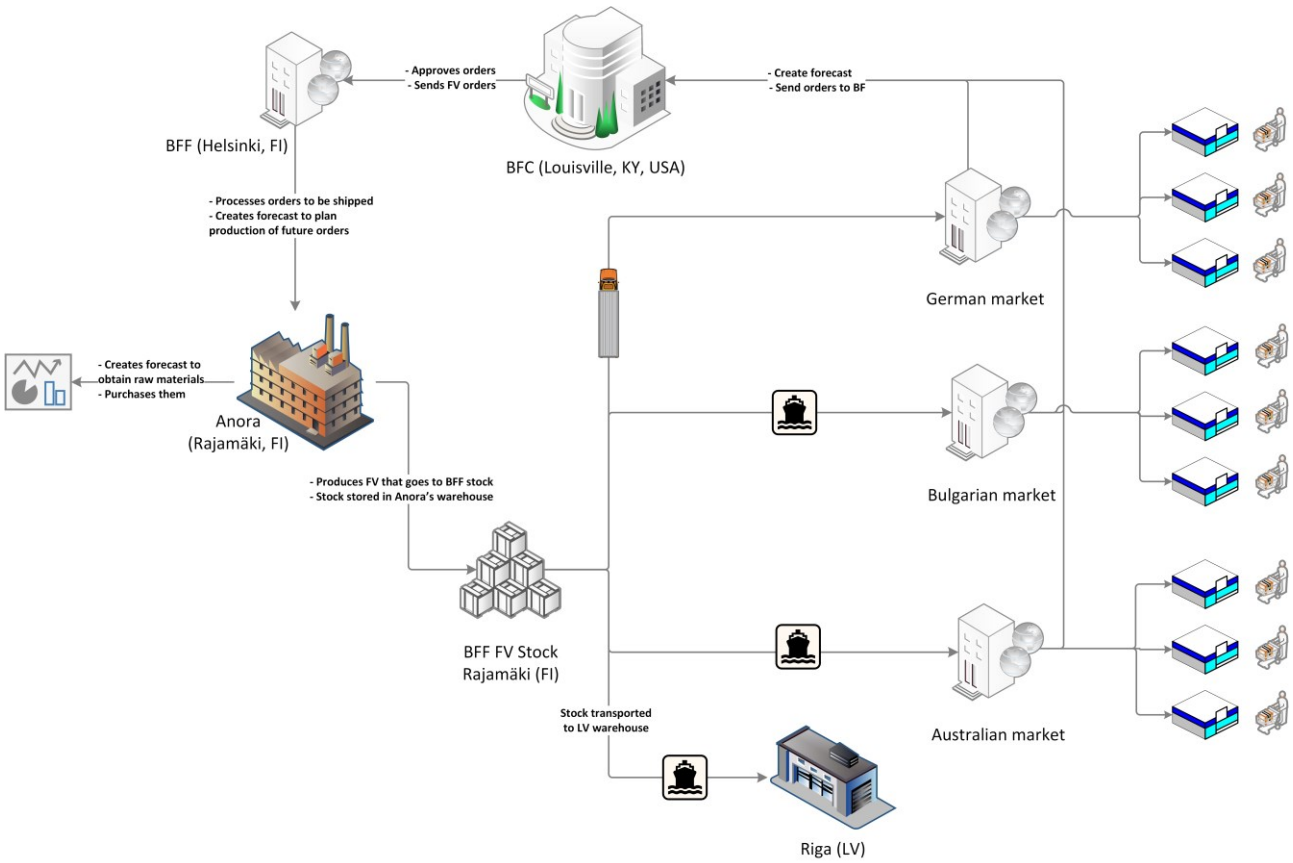


Figure 11. Finlandia Vodka logistics process flow.

Once the basic activities in the logistics process are understood, it is possible to start to break the process further in the specific steps we want to analyse. Thus, in order to measure the operational performance of the outbound logistics process, first the process itself needs to be understood and break down in detail. To do so, the author created an outbound delivery processing flowchart located in Appendix 2. It shows the general Finlandia Vodka outbound delivery processing from the moment customers send the order to BFC to the moment the goods are delivered to them.

Firstly, the customers in the different markets send their orders to BFC in the US. The supply chain specialists in Louisville enter the orders in the company's SAP and the purchase/sales order confirmation is created. For the orders to be processed, the finance department needs to check the credit of each customer first. In case the customer's credit is good, the order is ready for delivery

creation. However, if the customer's credit is not approved, the finance department puts the order on credit hold and asks the customer to fix its credit situation with Brown-Forman. Once the credit is fixed and checked, the finance department releases the order from credit hold and it is ready for delivery creation.

During the second phase of the outbound logistics process of Finlandia Vodka, BFF logistics specialists work together with two main partners outside of the company: the carriers and the warehouse. When the orders are waiting for delivery creation, BFF logistics specialists check the date that the customer would like to receive the goods to the agreed location, which is based on incoterms. They check the inventory to confirm whether the goods are on stock and ready for delivery in the customer's desired date. If stock is available, they add the date by which the goods shall be shipped to the customer. In case the goods are not in stock, the production schedule needs to be checked and a later date will be chosen. Thus, BFF logistics specialists contact BFC supply chain specialist to inform them about the postponed order, so the customer is aware of.

Once the date is set, logistics specialists book a loading time slot in the warehouse's loading calendar and contact the carriers to schedule the shipment. The carriers check the availability of the desire means of transport, book it and send the booking confirmation document to BFF logistics team. In case the carrier cannot book the transport in the desired date, they contact the logistics specialist to reschedule the order. Just after the logistics specialist receives the booking confirmation, they create the delivery and shipment in the company's system between 2-6 days before the loading date.

The delivery document created contains the goods description, SKUs for all the goods to be shipped, the quantities, pallets or slip sheets if needed, and the information about the means of transport and carrier. The shipment created in SAP sends an EDI (Electronic data interchange) message to the warehouse with the delivery information and the confirmed date and time of loading, so the goods can be prepared in advance. Each order needs to be submitted to the EMCS (Excise Movement and Control System) to get assigned an ARC number (Administrative Reference Code). This is a requirement for alcohol beverages in the EU to monitor their movement. Then, a proforma document is created for each order. In case the order is being delivered outside of the EU (export), an MRN (Movement Reference Numbers) needs to be assigned by the Finnish Customs (Tulli). The carrier needs to provide the truck details that will load the order. Once Logistics Specialists have this information and sent it to the warehouse, the order is ready to be loaded.

Note that depending on the means of transport for each market, scheduling transportation with carriers may happen in different moments during the outbound logistics process of Finlandia Vodka. Generally, for orders shipping by boat, the delivery is processed and the documents created after

the carrier sends the booking confirmation to the logistics specialist. However, the transportation for orders going by truck happens after the delivery and documents are created.

In the third phase of the outbound logistics process, the goods are loaded at the warehouse and the carrier transports and delivers them to the customer. The warehouse sends a packing list to the BFF logistics specialist after loading with the goods sent. In case the order is shipping by boat, the information in the packing list is provided to the carrier, together with some other details if needed. With this information, the carrier will prepare a sea way bill and send it to the logistics specialists. The BFF logistics team prepares a document set, which may include different documents depending on the market, such as sea way bill, packing list, certificate of origin, and certificate of analysis. The outbound logistics process of Finlandia Vodka ends when the documents and the goods are delivered to the customer.

### 4.2 BFF challenges: operational performance areas affecting BFF financial performance

Previously in chapter 2, the link between a company's logistics operations and its financial performance was already discussed in general terms. For the specific case of Brown-Forman Finland, its operational process can be grouped in 4 main areas, as illustrated in

Table 4. The discussions with the company provided some insights related to the efficiency of each of these operational areas.

Table 4. Brown-Forman Finland's operational mix

| | |
|---|---|
| Customer Service<br>EXCELLENT | Forecast accuracy<br>DEFICIENT |
| Dependency on<br>Safety stock | Production<br>EXCELLENT |

According to the company, customer service is currently at an excellent level of performance (Pulkkinen 2023). As mentioned in chapter 2, customer service is a crucial element for companies and can be used as a competitive advantage that would differentiate the company from its competitors.

On the other hand, the production performance is also at an excellent level that allows the company to provide with the right product, at the right time (Pulkkinen 2023). These two areas of performance are strongly related since lower performance rates of production could negatively affect the customer service rate.

However, the company states that the main issue with the operational performance related to Finlandia Vodka is the **forecast accuracy** (Pulkkinen 2023). Forecast is a key element in logistics, as presented in chapter 2. Table 4 shows that the level of forecast accuracy is considered deficient by the company. Interestingly, forecast is present in various steps along the Finlandia Vodka logistics process flow, as Figure 11 in the previous sub-chapter illustrated. Hence, we were to expect, that this area of the operational performance would be reinforced somehow, since deficient forecast accuracy directly affects the company's financial performance by affecting both, revenues and costs.

Low forecast accuracy has consequences either if it is too optimistic or pessimistic compared to the actual need of goods. In case of forecast being too optimistic, too many goods would be produced and would end up sitting in the warehouses with no customers to sell to. On the other hand, a pessimistic forecast would turn into producing less goods than required to fully satisfy customers, meaning that the company would not be able to provide the right quantity of goods in the right time. Consequently, the levels of customer service performance would decrease, but also the company's financial performance level would be negatively affected since revenues would be lower.

For this reason, there is a fourth area of operational performance as shown in

Table 4, **safety stock**. Safety stock tries to guarantee that goods will be available to customers and prevents losing the revenues associated to the forecast being more pessimistic than reality. Brown-Forman Finland has a high dependency on its safety stock. While producing below the needed level can be appeased with safety stock, chapter 2 already mentioned some issues related to having too much inventory. For Brown-Forman Finland, some costs related to safety stock are:

- Warehousing storing.
- Product waste and destruction in case of expiring goods, since goods may sit in the warehouse for long periods of time.
- Production costs for destructed goods.
- Human resource use because of personnel having to handle safety stock-related activities.

There are many ways in which BFF's financial performance is affected due to a deficient forecast accuracy and its consequent dependency on safety stock. Without going into deep detail about all the financial implications, the author decided to present some of them. In the case of **ROI**, safety stock decreases the efficiency of BFF's investment because producing goods and keeping them on inventory is a cost for the company, while capital employed is also increased. Also, if some of the

produced goods end up being disposed because of expiration, the company would have invested capital in goods that do not create sales revenues, but just costs. Hence, ROI would decrease. In regard to **ROA,** inventory and warehousing are the main expense related to safety stock. If these costs are high, they decrease the efficiency of asset utilisation to generate profit. That is because they increase the operating expenses of BFF, which decreases EBIT (Earnings Before Interest and Taxes).

In addition, there would be consequences also affecting the company's financial statements. On one hand, it would affect the **balance sheet** since to produce the company's safety stock, the company has incurred in debt with its suppliers. However, by not selling these goods and keeping them in stock, the company's liquidity lowers. That is because inventory is a current asset, while debt with suppliers is a current liability in the balance sheet. On the other hand, the i**ncome statement** would also be affected**.** That is because high COGS and operating expenses (such as warehousing, production and packaging) due to excessive products kept on inventory lower BFF's gross profit and operating income.

### 4.3 Analysis of the company's current operational performance measurement method

Forecast accuracy is strongly linked to data. By analysing the company's current operational performance measurement method and spotting its current gaps, the author aims to explain what prevents BFF from obtaining good forecast accuracy results, while the levels of customer service and production are excellent. Thus, this chapter focuses on the data management that the company uses, rather than on the performance results themselves.

Brown-Forman Finland uses a set of tools and reports to measure the performance of its supply chains related to Finlandia Vodka. The author of this thesis had various meetings with the Managing Director of the company to get familiarised with the methodologies and set of measurements used. During these meetings, the current company's supply chain performance measurement was discussed. Due to confidentiality, the company's performance data are not disclosed in this report.

#### 4.3.1 Data source

The company uses different sources to gather data which is consolidated periodically in a set of documents shared with various managers within the company. As the author could notice during the meetings, there are multiple files that present large amounts of data that measure the performance of the company's supply chain in different stages. For the purpose of this thesis, the focus will be set on analysing just one the files: FY23 Supply Chain – Finlandia Metrics (BFF 2022). This Excel file gathers raw and processed data from 2010 until July 2022, which reveals a metric summary of the Finlandia Vodka performance.

As shown in Appendix 3, the various KPIs on the FY23 Supply Chain – Finlandia Metrics file (BFF 2022) are grouped in 6 different categories: Service/Quality, Volume, Trends, Orders, Production, and Quality. The data in this file comes from various sources within the company: the Logistics Manager and the Sales and operations planning (S&OP). However, some data related to the production and quality categories come from the production site, which does not belong to BFF. The exact source that each party used to gather the data is not disclosed in the document, which may present an issue in terms of **information reliability**. From personal experience and learnings from the meetings with the company, it can be stated that most data related to volumes and orders come from the SAP software that the company uses to manage its outbound delivery process. SAP stores the company's orders information and, thus, large amounts of data can be extracted from it. Nevertheless, it is uncertain from which exact source the data provided by other parties comes from.

In addition to the limited details about the source of this file's data, information reliability may be compromised again due to the **lack of contrasted data** since, in many cases, just one person oversees the collection, checking and analysis of a particular data set. Since each person may have a different approach when collecting and analysing the same data set, the results may vary accordingly. This variation when analysing the performance of the company's supply chain could potentially influence decision making done by managers.

### 4.3.2 Data collection and manipulation

In regard to the data collection, it was already mentioned that most data obtained by the logistics team of BFF comes from the SAP software used in the company. There are many reports that the logistics team periodically creates. As an example, Appendix 4 illustrates the data collection process that the BFF logistics team uses to obtain the needed data to create the Daily Report. The process starts with the stored data in SAP. Logistics specialists need to obtain three different SAP data sets:

- The orders already shipped during the current month.
- The total amount of orders that are schedule to ship in the future (Open orders).
- The current stock at the warehouses.

SAP gathers the required data in a process that may take some time. In the case of the stock data set, the time may vary between 10 to 15 minutes depending on many variables, such as the laptop speed. Once the data is gathered, SAP creates a spreadsheet for each data set that the logistics specialists need to download as an Excel file to their personal computer. Since each data set is stored in a different Excel file, the logistics specialists will need to move all the files into a common Excel file, in which each data set uses a different sheet. This common file is known as the Daily

Report. Some data from each data set is then selected according to the instructions and a pivot table is created for each of them. Once the specific variables in the pivot tables are chosen, the logistics specialists obtain three different pivot tables that show some data values that need to be moved to other Excel files.

Some values from the Past shipment pivot table and the Open orders pivot table are to be manually selected and copied. They are then pasted into a separate Excel file: the Shipment status file. When the values are added to this file, the formulas in the Excel file automatically update the current values. The logistics specialists need to check that the final data is correct, in which case, they mark it in the file. Otherwise, the mistake needs to be spotted, which may take some time due to the difficulty to know the reason behind it. Then, the updated data in the Shipment status file provides a value that is copied and then pasted to another Excel file, the Order volume by day file. Some values from the Open order pivot table are also added into this file. Next, the logistics specialist manually updates some formulas to show the data from the present day. Lastly, a value from the Current stock pivot table is manually copied and then pasted to the Stock development file, which also uses Excel formulas to update the data automatically.

Altogether, the process is **time consuming** since SAP takes some time to gather the required data for each data set. Also the data must be manually copied and pasted into different files in a **traditional way**, which takes time and may lead to errors. On one side, that generates an **inefficient use of human resources**. Since the process of obtaining all the data needed for the various reports is time consuming, employees may be spending excessive amounts of time in these duties, instead of performing their main responsibilities. That may translate into a lower performance and increasing mistakes in their core activities, because their attention is spread among a variety of tasks. On the other side, manual work easily leads to human mistakes in the spreadsheets that would translate into wrong data. Since reports in SAP are downloaded in the form of spreadsheets, that implies manually managing large amounts of **raw data** that do not provide relevant information on itself. To analyse this data, it is common to use manually added Excel formulas in those files. However, using the wrong formulas or selecting the wrong cells would result in incorrect data later used for business interpretation.

Indeed, Excel software presents some limitations to analyse data. Spreadsheets as the ones used in the Excel may compromise data accuracy and reliability which decision making are based on, because they have many limitations. Firstly, it provides a **static set of information**. Unless a person is very familiarised with the sets of data in the spreadsheet, it may be tricky to modify the analysis or highlight certain details. The reason being that spreadsheets such as the FY23 Supply Chain – Finlandia Metrics (BFF 2022) show large amounts of selected raw data. For a person that

was not part of the spreadsheet creation process, it is not possible to get data other than the one in the present file, nor easily and quickly create new analysis and interpretations if needed.

Secondly, there is no **real-time data nor automatic updates.** The data in the company's Excel spreadsheets is not updated in real-time, but they need to be updated manually periodically. Thus, updating and modifying the data is time consuming and just shows past events. Additionally, spreadsheets are **prone to errors** since the data is rarely checked or verified in detail and the data sets may be too large to be double-checked by a person. Also, these errors are difficult to spot, especially when incorrect results are produced but at first glance they look correct. That creates situations such as the oversold of 10.000 tickets during the London Olympics, or the loss of $24 million to TransAlta (IBM 2018, 6). Lastly, Excel provides **limited future projections**. Indeed, even if new functions have been created to compute future projections, the data shown in Excel is not always fully reliable or accurate (IBM 2018, 11). Thus, the company is relying most of its data analysis on a software as Excel that is obsolete and limited for that purpose.

Alternatively, SAP is not used at its fullest capacity, even if it has more potential than its current use in the company. This can be explained by the fact that the current use of IT is focused on the storage of data in the cloud rather than adapting this data to the modern technologies. Because of that, the company's logistics team currently uses SAP 1) to handle the outbound delivery process of Finlandia Vodka, and 2) as a database to store the large amounts of data generated during this process; while a lot of work is still performed outside the SAP software in the form of manual work in Excel. However, SAP products offer many features to plan supply chains, but also analytics and Business Intelligence thanks to SAP Analytics Cloud (SAP 2023a & SAP 2023b). These products are easily scalable, tailored to the users and show real time data, performance, and simulations. They also use advance machine learning algorithms to create **reliable statistical models** that can be used in many supply chain business planning, such as forecast management and inventory optimization. (ibid.) Hence, the company is currently using SAP at a basic level and is mostly relaying in manual work prone to errors rather than an advance technology that would generate more reliable and accurate data.

### 4.3.3 Data analysis and interpretation: KPIs, targets and benchmarks

There are three main issues related to the data interpretation of Finlandia Vodka Supply Chains: the criteria of chosen data, the focus on past events, and the ability to understand the level of performance. As previously mentioned, the FY23 Supply Chain – Finlandia Metrics file (BFF 2022) gathers a large set of data and some KPIs that can be seen in Appendix 3. They are grouped in 6 different categories that focus in two separate activities:

- Focus on Customer service: Service/Quality, Quality

- Focus on Production: Volume, Trends, Orders, and Production

However, it is unclear which **criteria** was used to gather the chosen large amounts of data in the file and which purpose they are meant to fulfil. Not stablishing a clear strategy and goal for those data sets may lead to focus on **irrelevant information**, while ignoring useful one. Also, that implies an inefficient use of time and resources. A similar case can be found with the criteria when choosing the KPIs in the file. There are some KPIs in the file, but their purpose is unclear: while the information they provide is mostly limited to show the evolution of performance in the past, it is not necessarily useful to help improve the performance results in the future. Also, the connection between different KPIs could be questionable in some cases because the chosen criteria may have been a one-person's decision, and not part of a common strategy. This **lack of purpose** in data and KPIs creates bias and unreliable analysis results since the information chosen and analysed relies solely on one person or a small circle of people that may exclude relevant information for decision making. Thus, the KPI strategy is weak and may not be properly aligned among the different parties that take part in the data management related to Finlandia Vodka, but also with the company's overall strategy.

In regard to the interpretation of the data, just around 16% of the data sets has a **target level** stated in the FY23 Supply Chain – Finlandia Metrics file (BFF 2022). The rest of data is just raw data that the user needs to interpret without any guidance. While it mostly shows the evolution of performance, it is not possible to know for sure if a result is good unless it is compared to another related value. For example, a high value in volume can be considered a good result on its own, but a weak result if compared to a certain target level. Benchmarks are also a tool to compare the results obtained from KPIs. In the case of Finlandia Vodka, there is a slightly use of those when comparing the total number of shipments between Finlandia Vodka Classic and Finlandia Vodka Flavors. However, the benchmark is very limited and is not used in a way that provides high value information.

Thus, the current focus of the data analysis strategy of the company is set on tracking how the past performance was, instead of how the company can obtain better performance results. That means that the company is not selecting the performance data and KPIs with the idea of improving its current performance gaps, such as its forecast accuracy.

### 4.3.4 Data visualisation

Data visualisation can be considered as important as the way the data is collected and analysed. Even if data was correct, an inefficient way of communicating it can lead to provide with the wrong information on which the company's decisions are based. The method of data visualisation used in the FY23 Supply Chain – Finlandia Metrics (BFF 2022) is a set of bar charts created from selected

data available in the same file. Because of confidentiality, most of the values in the charts in this section of the research will be hidden. There are 15 bar charts in the file:

- Volume - shipments from Finland current vs. previous years
- 12 months rolling volume 9l cases
- 9l cs Shipment vs Depletions vs Production
- Production 9l cs vs Shipments 9lcs
- End of month inventory in 9lcs
- Pallet inventory
- Inventory turn
- Order information
- On-time shipments
- Daily shipments 9lcs (avg)
- Production OEE
- Average batch size in bottles
- Average 9L cs/batch
- SKUs Active – Produced – Shipped
- Complaints (pcs)

After reviewing the set of bar charts, some of them have been chosen to illustrate some data visualisation problems to be highlighted that are frequent among various charts. Firstly, the main purpose of the charts is to illustrate past performance. However, all the graphics are bar charts which difficult the correct interpretation of the evolution of results. Figure 12 illustrates the amount of monthly shipments from Finland in the current fiscal year 2023 and compares it to the past performance in fiscal years 2019, 2020, 2021 and 2022. However, having too many bars in the same chart difficulties the interpretation of the evolution. Another problem with this chart is the units of measure, since they are not stated. Users need to go to the raw data and look for the data set related to this bar chart. They will then find out that the volume of shipments is measured in 9-liter cases. In terms of the scale used, the bar chart starts from the value 0. While this could be a feasible option if small values would follow, having big values in the bar chart requires starting the scale in a higher level to illustrate meaningful information.

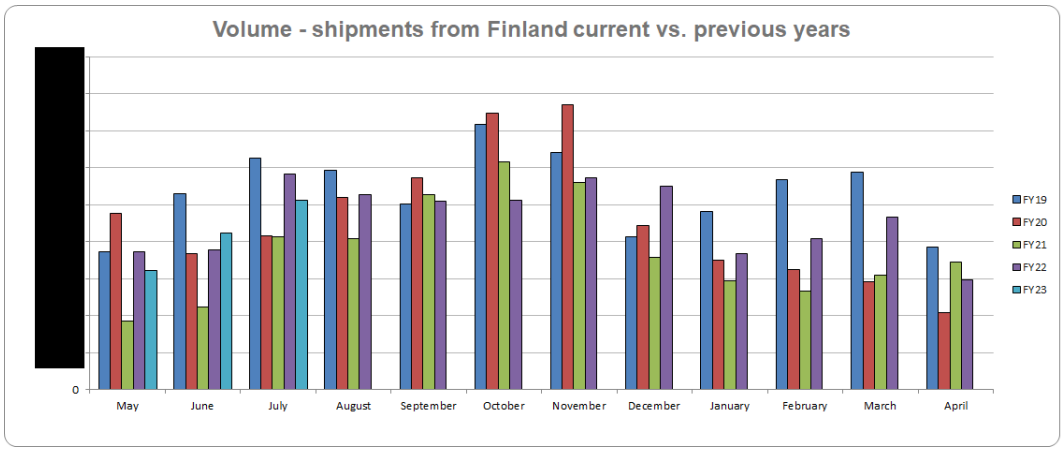


Figure 12. Volume - shipments from Finland current vs. previous years. (BFF 2022)

Figure 13 shows the company's 12 months rolling volume of 9-liter cases per month, from May 2020 until July 2022. It has similar visualisation issues as the ones mentioned for Figure 12: users may have difficulties to interpret the evolution because of the use of bar charts, and the scale starts from 0 even if values are quite high.

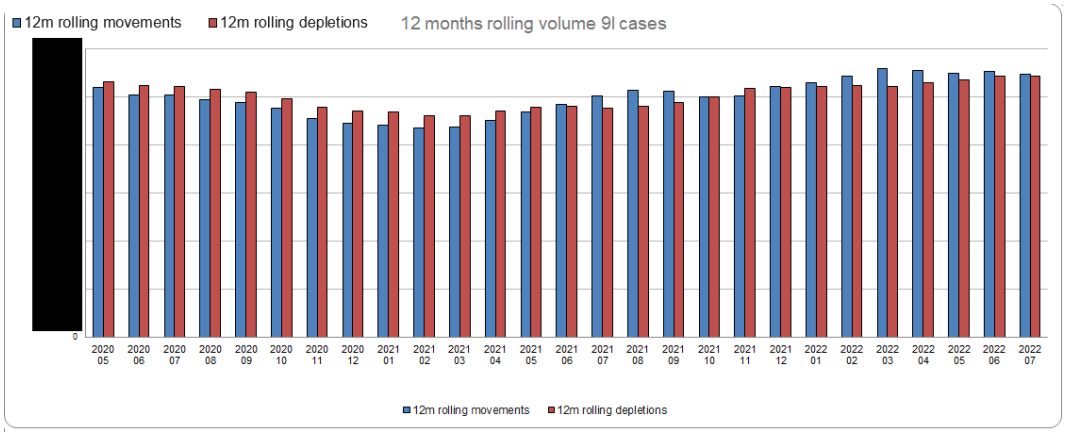


Figure 13. 12 months rolling volume 9l cases. (BFF 2022)

A different problem than the ones previously illustrated can be seen in Figure 14 and Figure 15. While both graphs could be interpreted easier by using line charts instead of bar charts, the main issue with them is the information they are trying to disclose. Figure 14 shows the relation and evolution of shipment, depletion and production of 9-liter cases from May 2020 until July 2022. In the case of Figure 15, it also shows similar information for the same period of time, but without the depletions. However, the values in the y-axis are completely different (hidden because of confidentiality) even if the unit of measurement is 9-liter cases in both graphs. Since no information is available on how the calculations were performed, it is difficult to understand the different between these two figures. Thus, the data presents again an issue in terms of **information reliability**, as previously mentioned in the 4.2.1 Data source section.

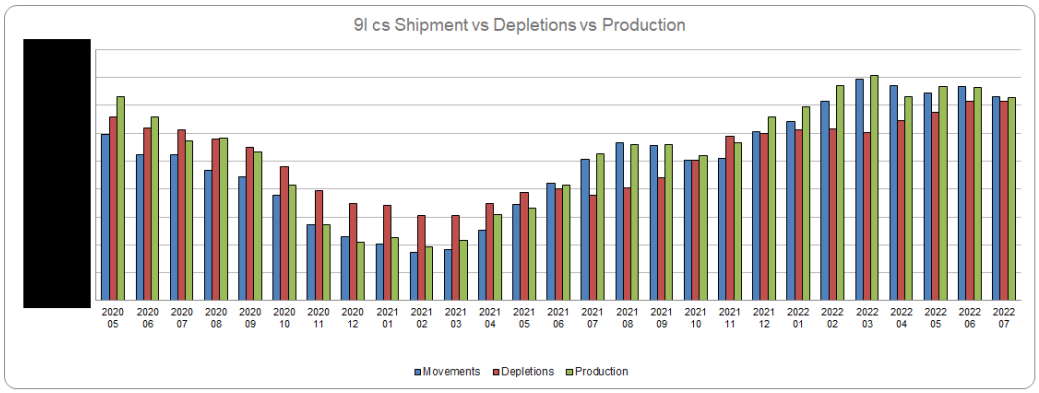


Figure 14. 9l cs Shipment vs Depletions vs Production. (BFF 2022)

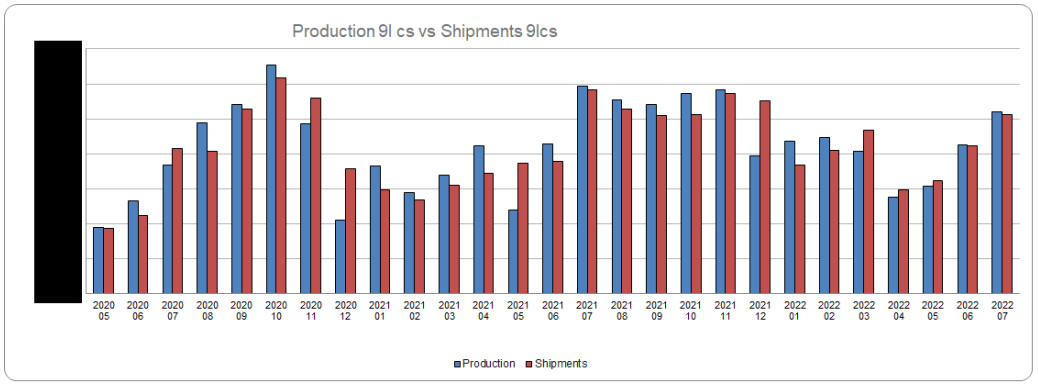


Figure 15. Production 9l cs vs Shipments 9l cs. (BFF 2022)

Also related to information reliability and data manipulation is Figure 16. This graph tries to stablish a connection between the number of monthly orders and the number of 9-liter cases per order on average, for the period July 2019 - July 2022. Thus, it is mixing two different units of measurement in the same axis of the graph. By looking at the y-axis, someone familiar with the data can suppose that it shows the number of monthly orders. The purpose of the graph may be to illustrate the correlation between the number of orders and the number of cases per order (ex. to see if there are a lot of small quantity orders). However, the current method of visualisation chosen is **not reliable nor accurate** from an objective point of view, since different units of measurement should not be in the same axis as they are.

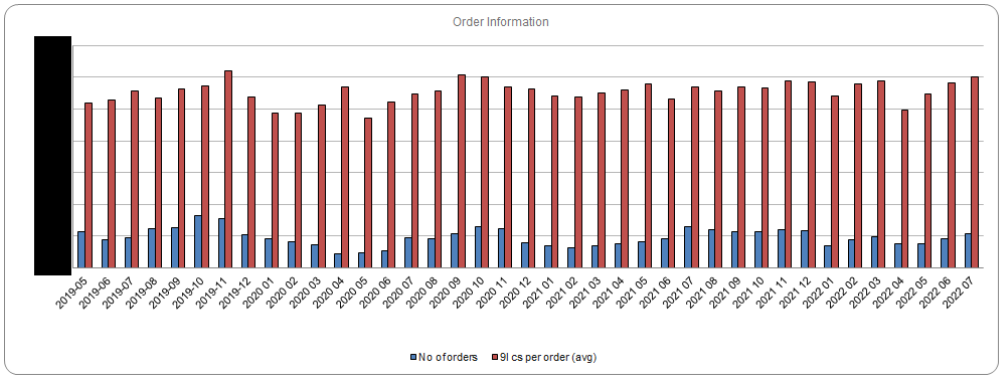


Figure 16. Order information. (BFF 2022)

In regard to target achievement, the author decided to choose two graphs that illustrate how it is currently illustrated in the company. Figure 17 shows the monthly level of pallet inventory from May 2019 to July 2022. While it is not disclosed whether the amount of pallets stated in the bar chart illustrates the amount at the beginning or end of the month, or if it is on average, it is possible to observe that the maximum level of inventory is set at a certain point. However, the excessive amount of bars may difficult its visualisation and interpretation of the evolution over time. Similarly, Figure 18 also uses a bar chart to illustrate a target achievement. This figure, shows the evolution of on-time shipments from May 2019 until July 2022 and sets a target level at some point. The same way as for Figure 17, the amount of bars in Figure 18 is not an ideal way of illustration the required data in a visual way.

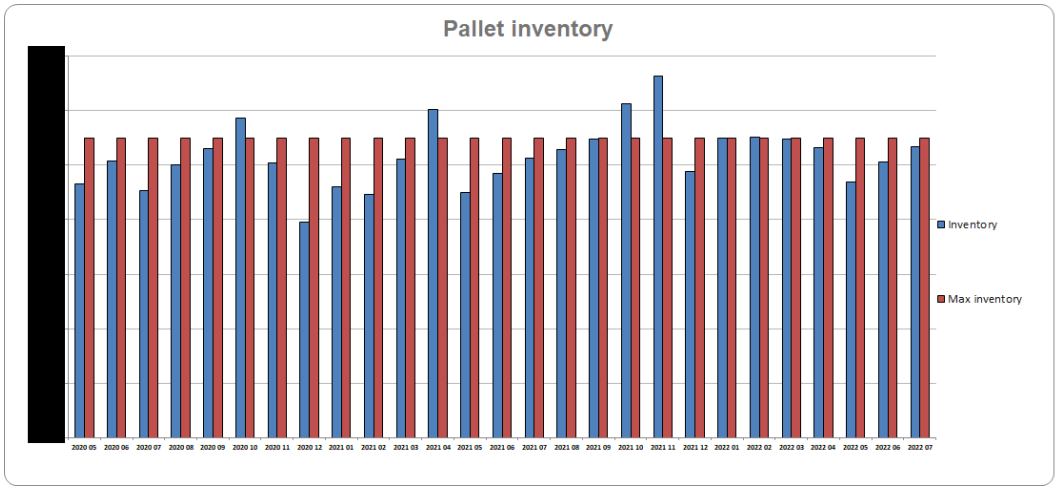


Figure 17. Pallet inventory. (BFF 2022)


Figure 18. On time shipments. (BFF 2022)

The last aspect to be highlighted related to data visualisation is the **criteria** used behind it. Similarly, as was previously mentioned in section 4.2.3. Data interpretation: KPIs, targets and benchmarks, the criteria to choose the data to be analysed is unclear, which also applies to the visualisation aspect of it. There is not a company consensus on which data needs to be collected, analysed

and visualised. Thus, there is not information about why the 15 bar charts in the FY23 Supply Chain – Finlandia Metrics file were chosen over other potential charts. Because of this, there exists the risk that a small amount of people are deciding about what data is to be visualized and shared, which could prevent more important information to be disclosed. This creates **bias** that may potentially affect decision making.

### 4.4 Finlandia Vodka operational performance issues: summary

As this chapter analysed, there are two issues with the operational performance of the outbound delivery of Finlandia Vodka at Brown-Forman Finland. On one hand, the company stated that **a deficient level of forecast accuracy** makes them rely on safety stock. As it was discussed, there are some financial implications for this since it generates costs for the company that do not necessarily revert on profits. Thus, forecast accuracy is the main challenge for Brown-Forman Finland negatively affecting its operational performance and, simultaneously, the company's financial performance such as its return on investment, the profitability of assets, the liquidity, and profits.

On the other hand, the analysis concluded that the company currently uses an **obsolete and inefficient data strategy**, which could be one of the main reasons why forecast accuracy levels are low. Related to this, the chapter disclosed various issues that translate into multiple consequences and risks for the company:

- Time-consuming traditional method prone to mistakes
- Decision making based on bias data
- Questionable information reliability and accuracy (lack of contrasted data and methodologies)
- Lack of real-time data and focus on the past
- Lack of analytical purpose
- Inefficient use of human and IT resources
- Inefficient visuals

Table 5 shows a summary of the various processes discussed in this chapter related to Brown-Forman Finland's operational performance data strategy. Each process is related to multiple issues, which are also linked to various consequences and risks highlighted from the discussion.

Table 5. Brown-Forman Finland's data strategy. Issues, consequences, and risks. Summary.

| Process | Issue | Consequences/Risks |
|---|---|---|
| **Data source** | Various unspecified sources | - Questionable **information reliability**<br>- Lack of contrasted data and methodologies<br>- Potential risk of making **decisions based on bias data** |
| | Multiple files | - Difficulty to find the desired data |
| **Data collection and manipulation** | Time consuming | - **Inefficient use of human resources**<br>- Lower performance in core activities |
| | Traditional system | - **Mistakes** hard to spot and correct:<br>too large amounts of raw data to double-check<br>- **Data inaccuracy:** decisions based on wrong data |
| | Excel: limited for data analysis | - Compromised data accuracy and reliability<br>- Static set of information and **lack of real-time data**<br>- Limited future projections |
| | SAP: not used at its fullest potential | - Inefficient use of a powerful IT resource providing **machine learning algorithms** to create reliable statistical models |
| **Data analysis and interpretation** | Raw data | - Difficult to interpret and not providing relevant data on itself |
| | Unclear criteria | - **Bias analysis:** risk of focusing on irrelevant information, while ignoring useful one |
| | Large amount of KPIs | - **Lack of purpose**: unreliable analysis results<br>- Strategy behind KPIs not aligned among different parties |
| | Target levels and benchmarks | - Difficulty to interpret the performance if no comparison level available<br>- Focus on past performance, rather than in performance efficiency |
| **Data visualisation** | Excessive use of bar charts | - Difficult to interpret and see the evolution of performance |
| | Methodology | - Wrong visualisation methods, scales and units of measurement affect information reliability and decision making |
| | Criteria and purpose | - Bias visualisation results |

# 5 Improvement proposal

This chapter aims to present various proposals for the improvement the outbound logistics process of Finlandia Vodka at Brown-Forman Finland. These proposals are based on the theoretical framework, the company's data collected and analysed, and the various meetings with the company. The proposals are focused on the data-related side of the outbound logistics process. Hence, they do not give recommendations related to the planning and organisation of each process within the company's outbound logistics.

## 5.1 Data strategy

The main issue with the current data strategy of Brown-Forman Finland is its traditional approach. As the report discussed, there are various consequences that may lead to making decisions based on wrong, unreliable, and inaccurate data. For the company to improve its current business process, the main gap identified needs to be fixed. At the moment, two areas of the company's operational mix are at excellent levels, but its low forecast accuracy makes the company relay on safety stock. That means that the current traditional data strategy used is deficient to achieve higher levels of forecast accuracy. Thus, the company needs to switch from a traditional data strategy to a **modern data strategy**.

There are many implications to modernise its data strategy. The first fundamental step is to understand the **company's overall objectives**, not just the ones of Brown-Forman Finland but the global corporate objectives in the whole organisation, Brown-Forman Corporation. Once the objectives are clear, the company should identify the challenges that prevents them to achieve those objectives. Finally, the data created along the business processes needs to be understood as a corporate asset that can be used as a powerful competitive advantage. By changing the current data strategy to a **performance-driven strategy**, Brown-Forman will be able to adapt its business strategies to face future challenges more efficiently, rather than focusing on past events.

The second step is to create a modern data strategy is to set its purpose. As the analysis already explored, the current company's data strategy is not just traditional, but also weak due to a lack of clear purpose. Thus, for Brown-Forman Finland's modern data strategy to work, it needs to **be aligned to the business objectives** they want to achieve, which would stablish the main objective of the company's new modernised data strategy. As the theoretical framework explored, there are many supply chain practices in the SCOR model that can create operational improvements when applied. By having a clear purpose behind the data strategy and choosing the correlated supply chain best practices, the outbound delivery process of Finlandia Vodka at Brown-Forman Finland can work towards achieving the desired company's objectives set and closing the spotted gaps in its performance.

During the discussions with the company, it was stated that there might some resilience to modernise the current data strategy because of the fear to changes. Thus, for the new strategy to be implemented and work properly, the company needs to involve the different teams and stakeholders that are part of the process. For this reason, the data communication strategy needs to inform about why a new strategy is needed in a clear and transparent way. Fear to change might be decreased by sharing the current data strategy issues and consequences with the different teams, and presenting the potential benefits of making changes.

### 5.2 Data governance

Once Brown-Forman sets its data strategy objectives, they should need to work towards stablishing a set of principles and practices that guarantee the quality and consistency of data across the whole Brown-Forman Corporation and throughout the entire data lifecycle. That means that data governance needs to guarantee that not just Brown-Forman Finland uses those principles or practices, but the entire corporation. To do so, the company needs to use **standardization** practices, such as: the use of a common glossary across the entire company to ensure that everyone understands the same concepts in the same way, and a clear method of data storage, collection and analysis. Also, data governance would ensure that there is **data transparency** and bias are eliminated along the data lifecycle. As it was previously mentioned, using machine learning instead of highly relying on manual work can provide more reliable and accurate data.

### 5.3 Performance measurement

Just after the data strategy is aligned with the company's objectives, clear data goals are set and data governance is established, the company can start focusing on which data is needed to achieve the company's goals. Indeed, when selecting the data, BFF needs to consider the company's objectives, but also who the end-users of this data are so the data provided is simple, accessible and connected to a clear purpose. By stablishing first the objectives behind the data strategy and guaranteeing its quality and reliability, the company can avoid having excessive amounts of data that do not bring any relevant nor reliable data. Thus, all the data collected and analysed would have a clear purpose, a quality standard, and a linked action of improvement. Also, managers may find easier to focus their attention to less, but more relevant data. That can translate in faster and better decision making for improvement so gaps in the outbound delivery process can be fixed more efficiently. A way to focus the performance measurement on relevant data is by using the SCOR model reference. By using the key metrics directly related to the supply chain best practices, Brown-Forman can simplify its current measurement method and track the performance of just the significant operations along its outbound delivery process of Finlandia Vodka.

In regard to the data collection, the new data strategy needs to clearly stablish which sources the data is taken from to avoid bias data analysis results. Since the main weakness in the Finlandia Vodka performance mix is the forecast accuracy, the author recommends using real-time data instead of static sets of data that focuses on the past performance. Supply chains are in constant change and, thus, focusing the attention on past performance does not always bring relevant value for decision making. Alternatively, obtaining **automatic real-time data** allows managers to know the situation of their supply chain at any moment and can anticipate to future events more efficiently.

### 5.4 IT resources

The two main issues with the current use of IT resources at the company are the reliance on the obsolete Excel and the use of SAP in its basic capacities. In the analysis, some consequences were already discussed, such as the human mistakes linked to Excel and the static information provided in it. Also, some advance SAP functions were mentions such as the use of machine learning algorithms to create reliable statical models.

For the Brown-Forman modern data strategy to work properly, it must be aligned to the company's digital strategy. That is, considering IT as a powerful tool to bring the data strategy to the next level. However, this cannot happen unless the supply chain team and the ICT team work together to understand and agree on 1) what the needs of the supply chain team are, 2) which IT infrastructure are the best to achieve success, and 3) how the ICT can help to use these technologies at its maximum potential, while still keep them simple and accessible.

The more knowledge both teams have of each other needs and capabilities, the easier will be to both strategies to success. At the moment, the digital strategy has mostly worked independently from the data strategy and the outbound delivery process of the company. This causes that softwares in the company are being used as a place to store data in the cloud, while manual work processes this data. Hence, there are two main aspects that Brown-Forman's modernised digital data strategy should consider: IT tools employed and its utilisation.

Previously in the analysis, it was stated that Excel is an obsolete tool and limited tool to analyse data. Thus, if the goal of the company is to fix forecast accuracy, using a deficient data tool for future projections as Excel is a poor choice. In this case, it is the ICT team responsibility to look for the best IT tools for this purpose and make it accessible for supply chain teams to efficiently use. Alternatively, SAP is currently being used in a limited way. This software has many functionalities that may be beneficial for supply chain, such as forecast. By understanding the needs of the supply chain team, ICT should provide guidance on the best SAP products to be added to the data

strategy, or any other IT tool that can help towards achieving the company's goals in a more efficient way.

In regard to the utilisation of IT tools, ICT team should provide with the correct tools for people to learn about the capabilities of the IT systems used. Thus, it is a must to understand the company's data users, their needs and capabilities. That includes assessing the staff current IT skillsets, and providing ongoing training if gaps are to be fixed. As the IT industry changes at a fast pace, Brown-Forman employees should acquire the needed knowledge related to data literacy, expertise and IT accordingly. Additionally, standardisation set by the company's data governance must also be applied in the digitalisation of the data strategy. By stablishing common guidelines to use IT systems, bias data can be eliminated.

### 5.5 Data visualisation

There main issues related to data visualisation were mentioned in its analysis in the previous chapter. Firstly, the company currently uses bar charts excessively, which makes difficult the visualisation and interpretation of the evolution of performance. Secondly, the methodology used to create the visuals presents is not appropriate since large scales in the charts provide with little insights of the results. Also, some of the units of measurement are wrongly used and this negatively affects the information reliability of the data illustrated in the graphs and, thus, decision making. Lastly, the unclear criteria and purpose behind the 15 bar charts chosen in the analysed file is unclear. This can create bias analysis that would hide meaningful information.

The way data is visualised is as important as the data itself. The same way data strategy has a purpose behind, data visualisation should also be linked to a goal. BFF should identify the final end-users of their data and adapt the way the data is visualized to their needs. Using new IT tools may greatly improve the data visualisation that the company currently uses. It is, again, the ICT team responsibility to work together with other teams to provide the best tools to visualise data. Also, if the data measurement is based on real-time data, its visualisation should be made the same way.

In regard to the current way the company visualised its performance data, the main improvements to do in the charts in the file analyse are: changing them to line charts that easily show trends, increasing the scale in the y-axis to show more relevant details, choosing common units of measurement, and stablishing a clear methodology, purpose and criteria behind each bar. Data governance should standardised these aspects to keep the highest levels of data quality and reliability.

In order to illustrate how some of the visual issues would look like, the author presents alternative graphs based on the ones previously presented in 4.3.4 Data visualisation sub-chapter. Figure 19 shows the exact same data as in Figure 12 (in 4.3.4 Data visualisation), but the graphic has some changes. First of all, it is a line chart, which facilitates seeing the trends that the volume of shipments followed during the various fiscal years. Users may also easily compare different years since it is a much clearer graph than the original bar chart. The scale has also been changed to start in a higher level, rather than starting from 0. Lastly, the unit of measurement has been added to the title so users always know what the values in the y-axis mean.

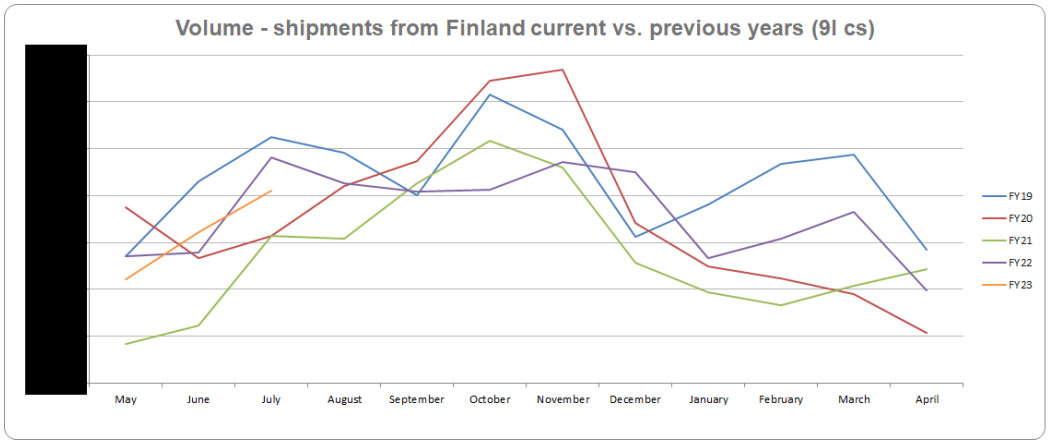


Figure 19. Volume - shipments from Finland current vs. previous years. Line chart version. (author's work based on BFF 2022)

While Figure 19 shows a visual improvement over Figure 12, the author created Figure 20 that illustrates another alternative with a combination of the original raw data and some hypothetical data for the purpose of the example. The past trends illustrated are limited to just the previous fiscal year and an average of past performances. Also, the current fiscal year 2023 does not suddenly disappears in the month of July, as it does in the previous Figure 12 and Figure 19. In this case, the volume of shipments for fiscal year 2023 continues showing the current forecast for the following months. Thus, it is easier to compare the results for fiscal year 2023 in

Figure 20 than in the previous figures, since users just compare the trend line to two more lines. However, there is still margin of improvement that could be provided by 1) having access to real-time data, and 2) users having the option to create the graphs with the data and visuals they personal need, rather than depending on someone else's static graphs.

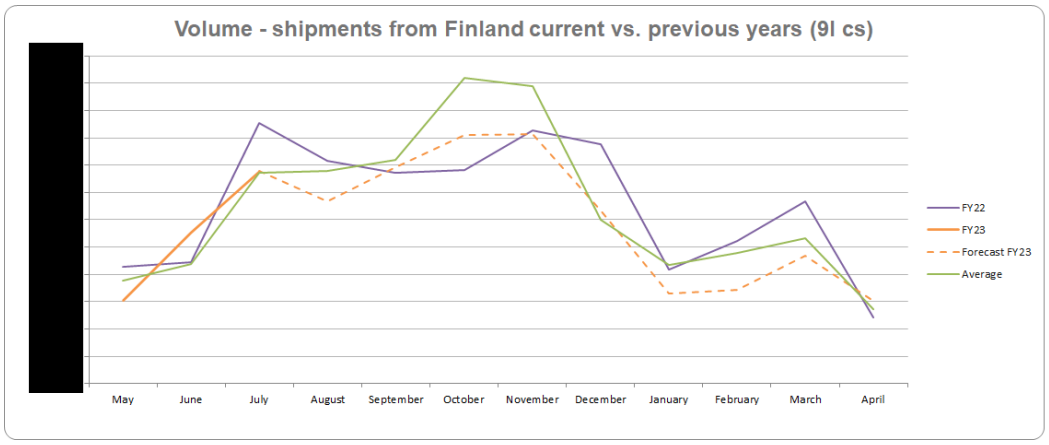


Figure 20. Volume - shipments from Finland current vs. previous years. Line chart 2nd version. (author's work based on BFF 2022)

Figure 21 illustrates the same data as in Figure 13 (in 4.3.4 Data visualisation). Yet, it uses a line chart that most users may find easier to see the evolution and comparison of the movements and depletions of the company. It also has a higher starting point for the values in the y-axis instead of 0, so users focus their attention to just the data on top of the bars in Figure 13.

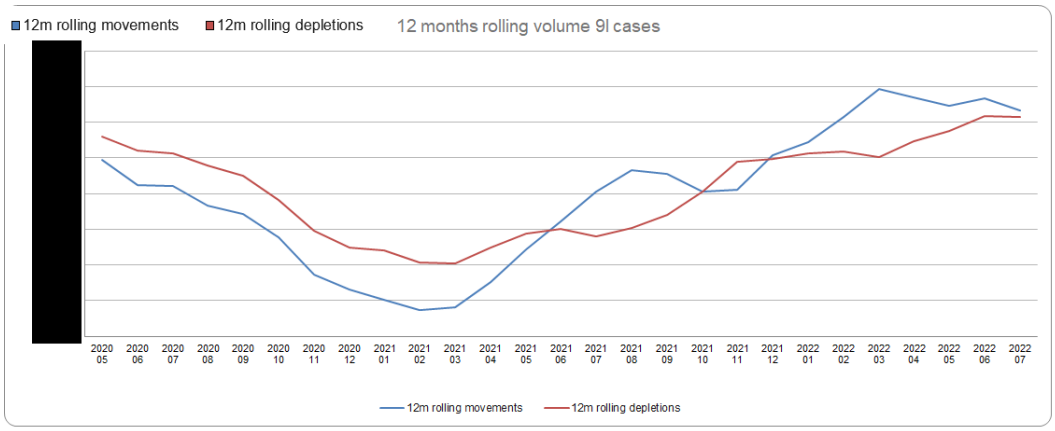


Figure 21. 12 months rolling volume 9l cases. Line chart version. (author's work based on BFF 2022)

Alternately, Figure 22 and Figure 23 illustrate the same information as Figures 17 and 18, but they use linear charts instead. In both cases, the values in their y-axis starts at a higher level than 0 and the target level is portrayed in the form of a unique red line. Also, a trend line has been added to easily show whether the evolution of results is increasing or decreasing. Just with these little changes, it is easier to observe the performance and evolution of the results and how they are related to its corresponding target.

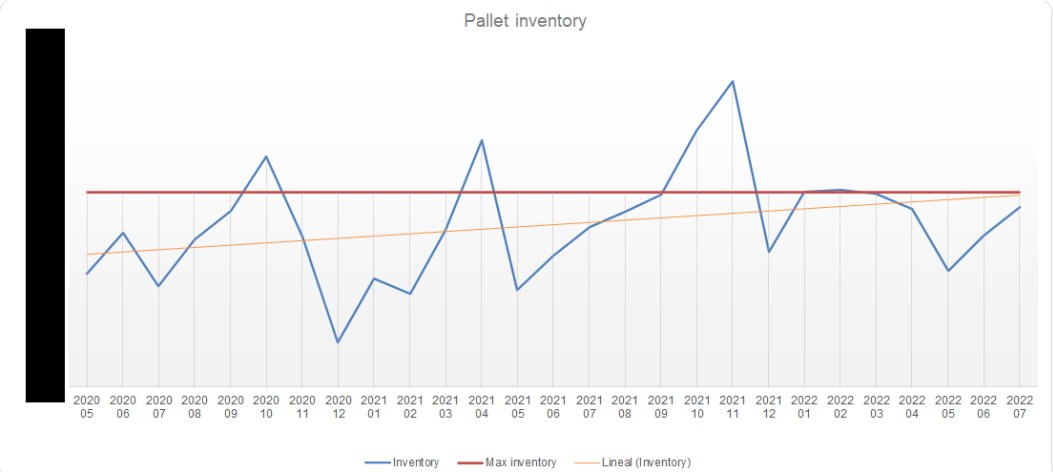


Figure 22. Pallet inventory. Line chart. (author's work based on BFF 2022)

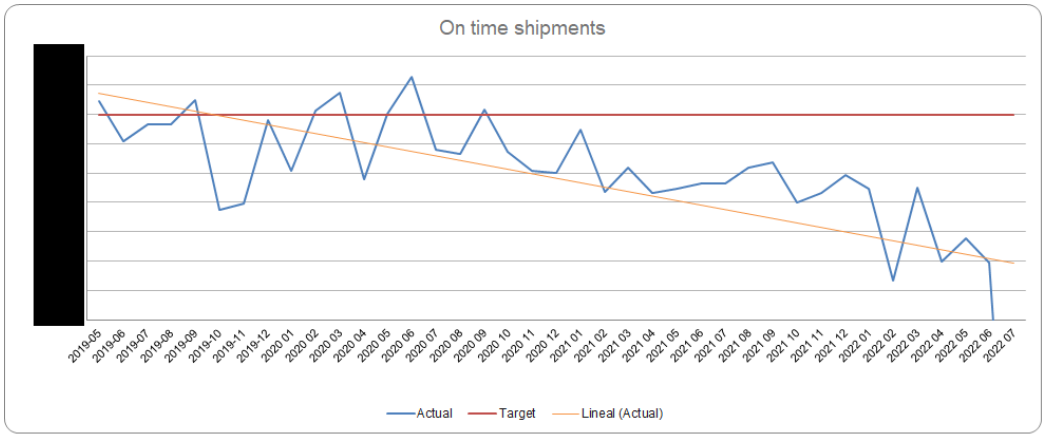


Figure 23. On time shipments. Line chart. (author's work based on BFF 2022)

Lastly, in regard to the criteria behind the charts, Figure 24 shows the relationship between the number of monthly shipments and the monthly projections of 9-liter cases. It is a line chart created by the author based on the data found in the FY23 Supply Chain – Finlandia Metrics file, since this data was solely shown in the file as raw data and, thus, would probably go unnoticed by many users of the file. One of the aspects discussed during the meetings with the company was the forecast accuracy. Hence, this figure could potentially provide more **meaningful information** than other graphs in the file, such as the Order information graphs, which did not provide reliable nor accurate data nor visuals.

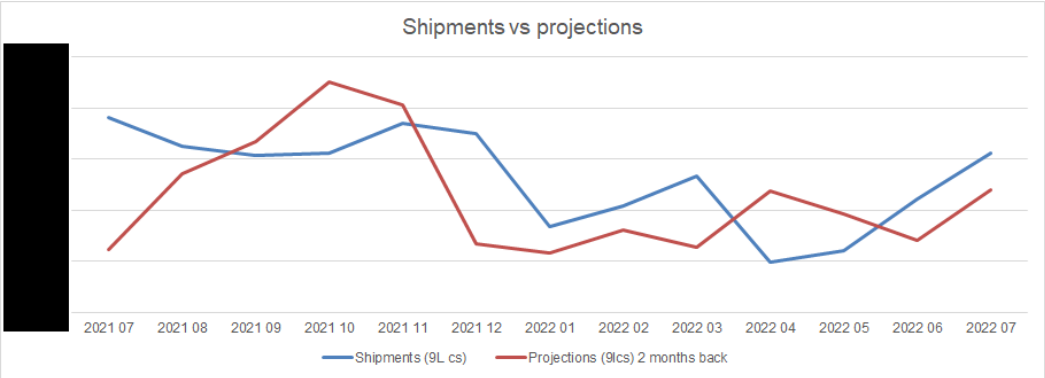


Figure 24. Shipments vs projections. (author's work based on BFF 2022)

### 5.6 Modernised digital data strategy: summary

The current Brown-Forman data strategy has un unclear purpose that negatively affects the way Brown-Forman Finland measures the performance of its outbound logistics process and, consequently, the company's forecast accuracy. Thus, the proposed recommendations to create a modern data strategy answer the following questions:

1. **Why?** Brown-Forman's new data strategy needs to have a clear purposed, aligned to the company's goals and digital transformation.
2. **What?** Sets the data to focus on. That is the most useful data to achieve the company's goals, such as which key metrics to gather to perform the selected SCOR best practices.
3. **Who?** Establishes who the end data users are, and which stakeholders are directly and indirectly involved in the data lifecycle. That translates in a better understanding of their needs.
4. **Where?** The most reliable and efficient IT tools where data is store and manipulated, that is easily accessible for all stakeholders at any moment. While Brown-Forman's Excel and SAP are in the cloud, the digital transformation in the company needs to guarantee that just reliable tools are used at its highest level of performance.
5. **How?** Establishes the principles and practices (such as how data is manipulated) to guarantee data quality, reliability, consistency and transparency.
6. **When?** Real time data should replace the dependency on manual, old performance data analysis that can help fixing the gap created by deficient forecast accuracy.

On the last instance, the new data strategy should be implemented in phases and scale it progressively. Hence, this implies a process of planning the new modern Brown-Forman data strategy, applying it in certain processes among the company's supply chain, constantly evaluating it and adapting it if needed and, finally, scaling it to the whole process.

# 6 Conclusions

This final chapter summarises the main aspects presented in the report, highlights the proposals to the company and discusses the relevance and limitations of the research. The conclusions conclude with the author reflecting on her own learnings.

## 6.1 Key findings

This thesis aimed to investigate the current state of the outbound delivery process of Finlandia Vodka at Brown-Forman Finland and its margin of improvement based on its operational performance measurements. Through literature review, the study explored the main aspects related to supply chain management and logistics. Within these topics, the author focused the theory review specifically to the outbound logistics process to explore some of its main elements. There are many key activities that were highlighted such as customer service, forecast accuracy and order management. All of these activities are strongly related to the outbound delivery process of the case company. Furthermore, metrics were also an important part of the theory since operational and financial performance are measured by using key metrics. The SCOR model was introduced, which sets a base of reference to determine the performance of supply chain, while some general financial performance indicators were linked to supply chain.

Based on the literature review, the author gathered data from the case company to analyse its current state. This could be performed by combining the author's knowledge from directly working in the outbound delivery process of Finlandia Vodka, the multiple discussion with the company, and the metrics from the company. There were two main conclusions from the analysis of the case company. On one hand, the main issue affection the operational performance of the company's outbound delivery process is forecast accuracy. Low levels of forecast accuracy translate into multiple consequences for the company affecting its supply chain, but also its financial performance. On the other hand, an obsolete and inefficient data strategy was stated to be one of the main reasons why the company's forecast accuracy is deficient.

## 6.2 Recommendations

As a result of the analysis, a set of recommendations were given to the case company in order to improve its current business process. The research has confirmed that Brown-Forman Finland currently uses a traditional data strategy that is inefficient to fulfil the current company's goals and needs, and can potentially affect its financial performance. Thus, it was recommended to switch from a traditional data strategy to a modern data strategy that is aligned with Brown-Forman Corporation's goals and its digital strategy.

The main idea behind this new modernised data strategy is to set a clear purpose behind it, that translates into a significant improvement in the way the company measures the performance of its outbound delivery process of Finlandia Vodka. The main expected outcome from having a clear data strategy objectives and methodologies is to improve the forecast accuracy, which would benefit the company's financial performance. By having clear data goals, the company would just collect, analyse and communicate the most relevant and reliable data in a more efficient way. Thus, decision making from the company's managers would be faster, more accurate and ahead of time.

In addition, from stablishing a clear data goal, the data strategy would be based on real-time data and would determine which data is collected and for which purpose, such as which best SCOR practices is connected to. It would also state the data end users and its stakeholders along the whole data lifecycle, while considering their needs. In regard to technology, the ICT team should provide with the best, most reliable and efficient IT tools to achieve the data strategy goals. This implies that implementing a new data strategy would require multidisciplinary teams to work together. Thus, it is essential that data governance guarantees the quality and reliability of data throughout its whole lifecycles and set common principles and practices in the whole Brown-Forman Corporation.

### 6.3 Limitations and suggestions for further research

Data-related topics, such as the one investigated in this report, cover a broad number of elements. Hence, the research tried to focus its study on the data areas that are most directly related to the author's current job as a Logistics Specialist and the outbound delivery activities she performs. Since the company has many business processes, the ones described in this report show their basic idea and do not enter in smaller details. Similarly, the amount of data created along all these processes is too wide to analyse in the current report, which is why the research focused on just one set of performance data.

These limitations imply that there is a margin of improvement in terms of analysing the current state of the company's business processes and its current data strategy. That means that the scope of the study can be broadened to more detailed business processes and business areas withing Brown-Forman Finland and Brown-Forman Corporation. However, the research can be used as a base for further analysis of the current outbound delivery process of Finlandia Vodka and its performance measurement, so improvements can be applied.

### 6.4 Reflection on learning

The preparation of this research report has provided the author with new knowledge for future development. She could achieve a deeper and detailed understanding about the field of expertise in which she currently works, and learn about the different business implications it has. The author believes that this learning would have a positive impact for its future career. A valuable lesson was also to learn to decompose business processes for further analysis, such as the various process flow charts created by the author for this research. Lastly, the main problems were to set a scope for the project due to the broadness of business processes and data, and the ability to attain time management skills to finish the thesis in the planned time schedule.

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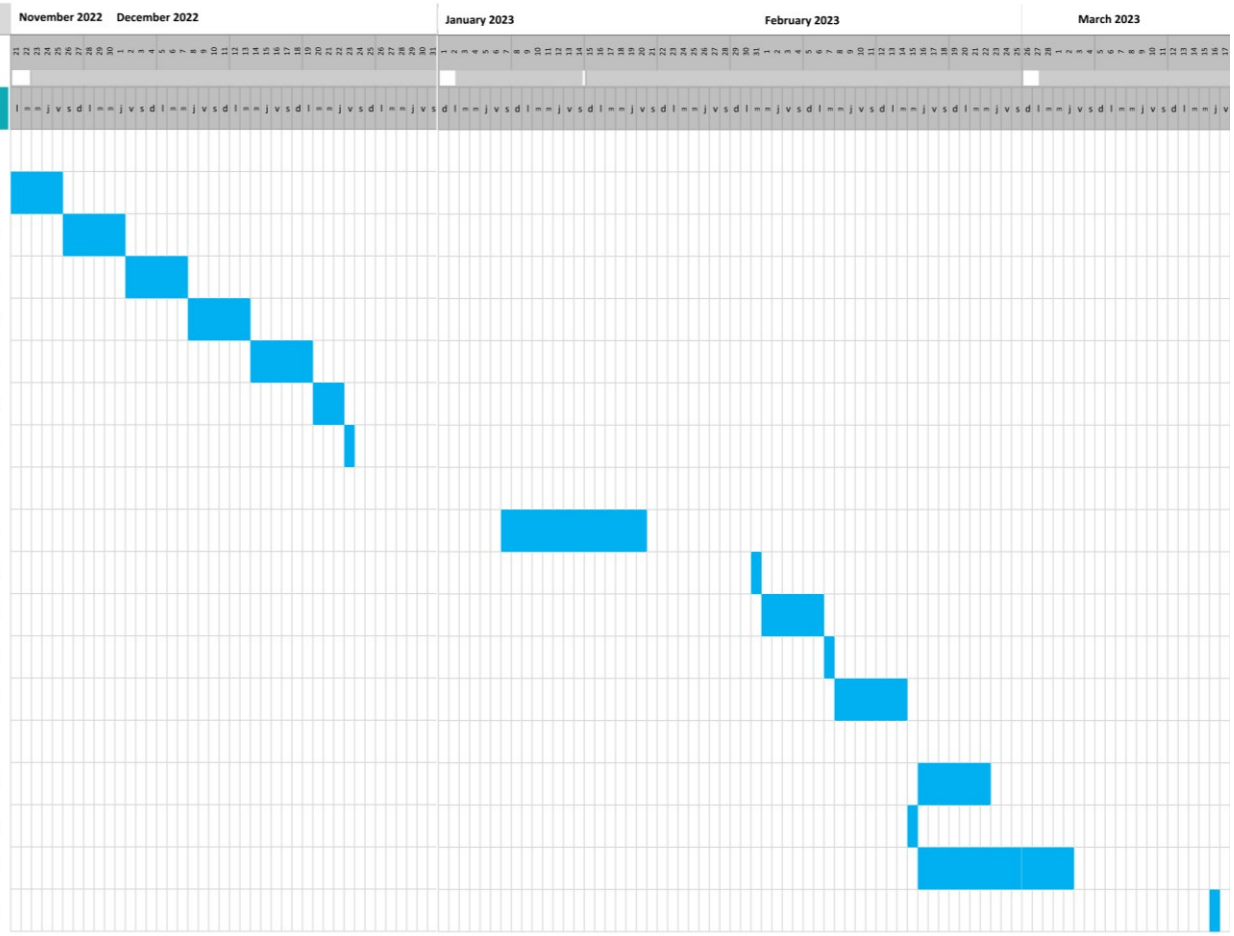
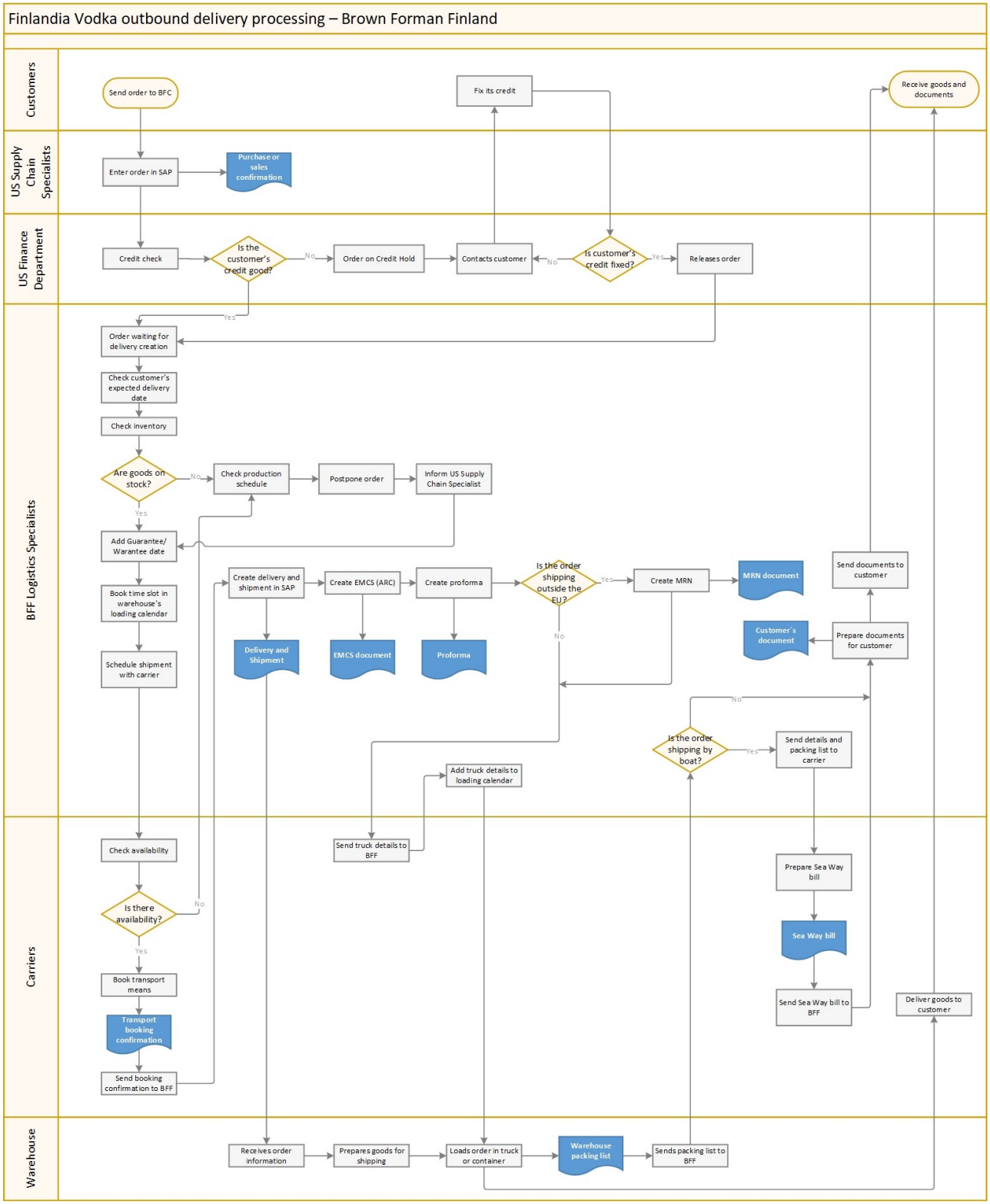
# Appendices

## Appendix 1. Research schedule

| Phases & Tasks | Task description | Comments | Start | Days | Finish by |
|---|---|---|---|---|---|
| **Phase 1** | **Theoretical framework** | | | | |
| Task 1 | Finding literature sources | Outbound Logistics, SCM metrics, Financial metrics | 21/11/2022 | 5 | 25/11/2022 |
| Task 2 | Reading literature and seleting relevant content | | 26/11/2022 | 6 | 01/12/2022 |
| Task 3 | Writing SCM theorical framework | | 02/12/2022 | 6 | 07/12/2022 |
| Task 4 | Writing Finance theorical framework | | 08/12/2022 | 6 | 13/12/2022 |
| Task 5 | Writing operational performance theorical framework | SCOR model and Relationship between SCM & Finance | 14/12/2022 | 6 | 19/12/2022 |
| Task 6 | Finishing theorical framework | | 20/12/2022 | 3 | 22/12/2022 |
| Task 7 | Submiting draft for review | | 23/12/2022 | 1 | 23/12/2022 |
| **Phase 2** | **Data collection & Analysis** | | | | |
| Task 1 | Analysing Brown-Forman Finland's current outbound logisics | Graphically mapping the various processes | 07/01/2023 | 14 | 20/01/2023 |
| Task 2 | Meeting with Managing Director | Presenting the mapping of the outbound logistics process | 31/01/2023 | 1 | 31/01/2023 |
| Task 3 | Writing conclusions from the meeting & Preparing peformance analysis results for next meeting | | 01/02/2023 | 6 | 06/02/2023 |
| Task 4 | Meeting with Managing Director | Performance analysis presentation | 07/02/2023 | 1 | 07/02/2023 |
| Task 5 | Writing conclusions from the meeting & writing summary for the analysis chapter | | 08/02/2023 | 7 | 14/02/2023 |
| **Phase 3** | **Results** | | | | |
| Task 1 | Preparing improvement proposals | | 16/02/2023 | 7 | 22/02/2023 |
| Task 2 | Meeting with Managing Director | Proposals presentation | 15/02/2023 | 1 | 15/02/2023 |
| Task 3 | Writing conclusions from the meeting & Finalising Thesis | | 16/02/2023 | 15 | 02/03/2023 |
| Task 4 | Meeting with Managing Director | Pesenting Final Thesis | 16/03/2023 | 1 | 16/03/2023 |



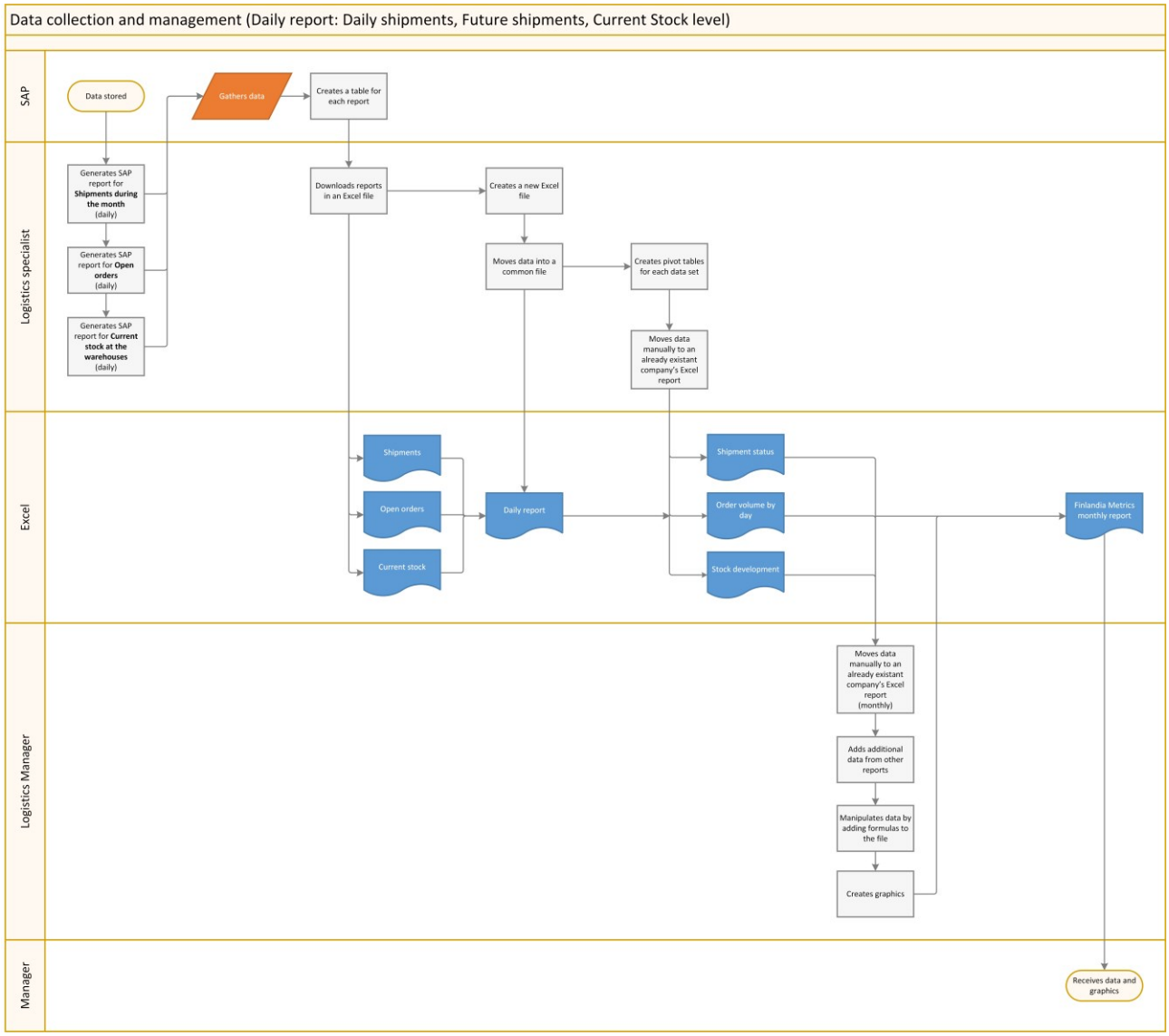
## Appendix 2. Finlandia Vodka outbound delivery processing – Brown-Forman Finland



**Appendix 3. Finlandia Metrics Summary**

| **Service/Quality** | **Trends** |
|---|---|
| CS/Complaint - Service YTD | 12m shipment trend |
| CS/Complaint - Product YTD | 12m Depletion Trend |
| OOS (Out of Stock) Line-item YTD | 12m Production Trend |
| OTIF Request Date YTD | |
| BFF On-Time shipments | |
| | **Orders** |
| | Number of orders |
| **Volume** | 9l cs / order (avg) |
| Shipments (9L cs) | Number of SKUs shipped |
| Projections (9lcs) 2 months back | Loadings - daily in cases (avg) |
| Difference shipped - forecasted | Loadings - daily in cases (min) |
| Rolling 3m difference shipped - forecasted AVG | Loadings - daily in cases (max) |
| Difference in % | Difference Max -Min |
| FY year-to-date difference | Difference Max -Min without Poland |
| FV classic | |
| FV Classic Rolling 12months | **Production** |
| FV Classic % change | Production 12 months rolling (9L cs) |
| FV Flavors | Change vs. Prev month |
| FV Flavors Rolling 12months | Production (9L cs) |
| FV Flavors % change | Number of Active SKUs |
| Flavor % of total | Number of SKUs produced |
| FVW Inventory (9L cs). End of month | Finlandia OEE |
| Inventory in Pallets (calculated, 44 NP 9lcs/pallet) | Finlandia OEE - Classic |
| BFF Inventory Turnover | Finlandia Flavor impact |
| BFF 12 months rolling volume (9L cs) | Average line speed (excl. 50 ml) b/h |
| Change vs. Prev month | AVG Bottles / hour 12month |
| Finlandia 12 months rolling Depletions (9L cs) | AVG Bottles / hour % change |
| Change vs. Prev month | # of Batches produced (excl. 50 ml) |
| | Average batch size (excl. 50 ml) bottles |
| **Quality** | Average 9L cs / batch |
| Customer complaints | Average 9l cs per shift |
| Service Complaints | Number of Batches below 6000 bottles |
| Complaints to Vendors | Small batches vrs total % |
| Complaints to Warehouse | |

## Appendix 4. Daily report data collection process



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