Measuring Service Level Across Multi-Unit Retailers

Interrelated performance measures to balance profitability and customer service

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SUMMARY

This thesis gives an overview of performance measurements and performance measurement systems within retailing, and how to combine measurements to balance customer service and profitability. The thesis has its main focus on a case company that has chosen to be anonymous and is called The Retailer in this thesis. The Retailer is one of the larger retailers acting on the Swedish market with the purpose to extend their measurements for service level to reflect the customers' perceived service level i.e., customer service. The method applied to do this involves inductive qualitative research with semi-structured interviews from the case company as the major data collection. A performance measurement system is presented as a solution for The Retailer to balance customer service and profitability as well as common measurements used within retailing companies to measure Supply Chain performance. Additionally, common barriers for measuring service level within retailing are researched and presented as well as how to adapt the performance measurement system to fit a broader audience of organizations within retailing. Several important aspects were pointed out from the literature to consider when integrating performance measurements such as, cross-functionality, communication and how to evaluate the measurements. These were confirmed to be barriers from the empirical findings and therefore these are presented and important factors to consider for increasing communication, cross-functionality work as well as how to increase the overall understanding of the organization's measurements are concluded.

Keywords: Performance measurements in retailing, KPIs retailing, Performance measurements supply chain, KPIs supply chain management, Performance measurement systems

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List of abbreviations

BSC – Balanced Score Card

CSF – Critical Success Factors

RQ – Research Question

SC – Supply Chain

SCM – Supply Chain Management

KPI – Key Performance Indicator

KRI – Key Result Indicator

1. INTRODUCTION

The aim of a supply chain (SC) should be to maximize the value generated by the actors involved. This means maximizing the difference in what the product is worth for the customer and the cost of the product for the SC (Syntetos, Babai, Boylan, & Kolassa 2016). It is the final customer who sets the demand for the entire SC, as the customer buys from the retailer, which needs to have the products available to respond to the demand. This generates demand upstream in the SC, to wholesalers or distributors, which in turn will create demands at the manufacturer. As actors higher upstream in the SC need to serve a greater number of customers, quantities increase in each of the hierarchical steps. The general retail SC is currently facing increasing uncertainty and complicity of their business environment (Andand & Grover, 2015). Due to these challenges, it is important for the retail SC to be adaptive and responsive to ensure growth in such a highly competitive market with changing customer demands (Andand & Grover, 2015). Hence, a flexible SC is required in order to have the right products at the right place, and at the right time and therefore performance measurements, SC performance and supply chain management (SCM) becomes key words for an organization within retiling. Focusing on the key word will help improving important areas such as supplier relationships, multi-dimensional performance measures (i.e., financial and non-financial performance measures), and improve the collaboration and visibility between actors within the SC (Zentes, Morschett & Schramm-Klein, 2012; Andand & Grover, 2015).

1.1 The Bullwhip Effect and Measuring Performance in Retail Chains

The demand variance between actors results in an increased number of products, which leads to a phenomenon called the "Bullwhip Effect", meaning that the number of stocks increases upstream in the SC as the orders are bigger than the sales (Syntetos, Babai, Boylan, & Kolassa 2016). Lee and Whang (2004) describe four reasons for how the bullwhip effect emerges: demand signal processing, rationing and shortage gaming, batch order, and price fluctuations. This can be concluded to be common situations in several typical SCs, including the retail industry. Inbound orders from downstream actors in the chain bring precious input to upstream actors, which affects decisions regarding production and inventory. This information can misguide upstream actors in their process as the information can be distorted and tend to increase further up in the SC, resulting in the above-mentioned "Bullwhip Effect" (Lee & Whang 2004).

As the retail industry is very demand-driven the *"Bullwhip Effect"* emerges regularly, due to their size and number of products. To attenuate the effect of the "Bullwhip Effect", efficient information flow between actors in the SC is required, where sales, inventories, forecast, etc. can help the collaboration between suppliers and retailers (Zentes et al. 2012). As the actors within the retail industry have increased in size during the last decades, going from local stores to regional, and even across borders, the amount of data that can be collected and used has increased. Resulting in enhanced possibilities to predict demand inventories as well as measuring performance using key performance indicators (KPIs) related to this (Zentes et al. 2012).

When the right KPIs are used it will provide helpful information about product flows, tied up capital in warehouses as well as in stores, and increase customer service, leading to fewer stockouts or too much tied up capital, which can increase the sales and decrease the waste leading to a win-win situation in an economical and environmental perspective for the company. Furthermore, the use of a sufficient mix of KPIs can prevent the “Bullwhip effect” as the company has more accurate data of the product flow both inbound and outbound. More accurate data will help to make more accurate forecasting and react to fluctuations in demand quicker (Andand & Grover, 2015).

1.2 Key Performance Indicators and Measuring Performance in Retail Chains

For retailing companies, a competitive advantage can be achieved by offering superior customer service since authors in the field argue that this creates an opportunity to achieve a competitive advantage for any organization. In SCs, different kinds of Key performance indicators (KPIs) are used, some more accurate than others (Parmenter, 2015). One common KPI to use is to measure *service level*, which explains the ability to deliver customer orders from the total amount of orders, in the context of the right amount and on time (Tseng & Wu, 2014). However, many companies fail to use the right measurements, where they use the wrong definition of performance measure (Parmenter, 2015). With the increased competition and the global market, SCM has become a key focus for management teams within organizations to gain a competitive advantage over competitors (Andand & Grover, 2015).

In addition, for the achievement of competitive advantage organizations need to strive for superior performance. Performance measurements are a big part of achieving superior performance and according to Gunasekaran, Patel and Tirtiroglu, (2001) performance measurements are required to “streamline the flow of material, information, cash, simplify decision-making processes, and eliminate non-value activities”.

A superior SC performance requires both a system for analytical performance measurements and a process to initiate the process of realizing KPI goals (Cai, Liu, Xiao & Liu, 2009). However, even with the criticality of performance measurements, many organizations struggle to identify critical or additional KPIs and further improve these to increase both the effectiveness and the efficiency within the organization and its SC (Cai, Liu, Xiao, Liu, 2009). As companies often fail to connect KPIs to strategies (Paramenter, 2015) and due to the changing business climate and varying goals and strategies throughout supply chains, each SC requires suitable KPIs (Chan & Qi, 2003). Furthermore, it is important that strategic objectives and performance goals are communicated throughout the organization this includes lower levels in order to create specific performance criteria at each level within the organization to connect to the overall organizational strategy (Neely, Gregory & Ken Platts, 1995). The definition of SCM is easier to define than performance measures since these fail to assist in supporting the SCM development. This is due to the fact that performance measures can increase understanding among SC members and identify potential opportunities and effectiveness of strategies, as well as re-designing goals and strategies (Chan & Qi, 2003).

To address the issues of identifying additional performance measurements for a company in the retail industry, this thesis will address such issues on how the organization's strategy and its context play a role in which KPIs that will be beneficial to increase the accuracy of the service level. To be useful throughout the whole organization and thereby balance high customer service with profitability.

1.3 Case Company's Description and Background

This thesis will be based on insights from a company within the retail industry. The company, which now will be called *"The Retailer",* is a big player in the retail industry in Sweden but is also active within other industries. The Retailer has about 1 300 stores with a market share of about 36 percent, which makes them the leading actor in Sweden. During 2020 the revenue was over 91 billion SEK and had around 8 400 employees. This report will mainly focus on a department (SC unit) within their organization that is only attached to the retailing part of the organization (close to 5,5 billion SEK in revenue), as the company has identified potential for improvements connected to how they use performance measures.

Today The Retailer uses different KPIs such as service level to measure their performance out to the stores. The KPI has limited ability to consider other aspects such as the real amount of the actual order from stores since the system will deliver the amount the warehouse has in stock if the order exceeds the stock available, therefore the service level will be 100 percent, which is not the actual case. This is a limitation within their way of measuring today and something they are struggling with since they want to have more accurate data and their actual service level in order to manage their stock levels in a better way as well as KPIs that several actors in the supply chain can agree on (such as retailers, supply planners, managers, etc.).

By using a different set of KPIs, The Retailer aims to better reflect the situation at the stores as the current setup mainly reflects the situation at the warehouse (Supply Chain Manager 1). The new perspective will result in a better view of the main situation for the organization and will improve the customer experience as the KPIs will take their perspective into better consideration. As mentioned before, the service level is measured wrong with the current system. This leads to issues connected to knowing the optimal stock levels since the system will calculate the service level by how much they have in stock and can deliver even though the order is of larger amount than available. By measuring in this way, The Retailer will show inaccurate numbers of their performance, as these are higher than they should be (Supply Chain Manager).

The Retailer's SC is described in figure 1. The SC consists of suppliers, a central warehouse, units within the organization, and 88 stores located throughout Sweden. The Retailer sources suppliers throughout the world and has lead times that vary from just a few days to months (Supply Chain Manager 2). Most of the products are located in a central warehouse, and just a few products are located in another warehouse shared with The Retailers non-retail products. The stores are located in Sweden, in strategic places linked to the organization's goals and strategy, and deliveries of products are done two to four times a week (Store Strategy & Innovation Manager). The organization is divided into three units, a SC Unit, a Sales Unit, Stores Unit. They collaborate daily in order to solve issues that emerge. Further description of their individual tasks will be explained in the empirical findings (chapter 4).

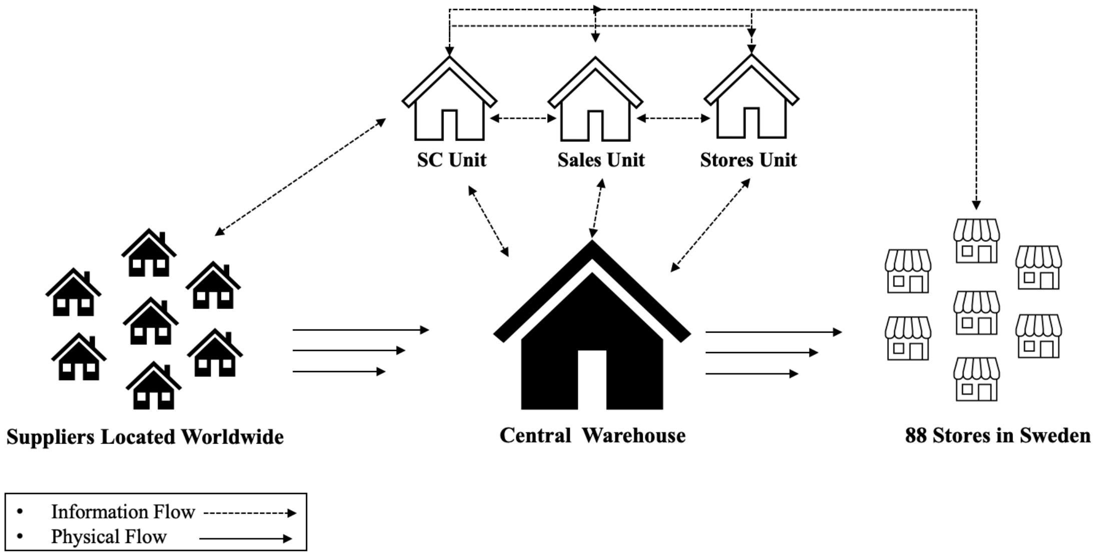

Figure 1. The Retailers Supply Chain and Business Units.

1.4 Purpose

The Retailer struggles with the current KPIs, they want to investigate how the use of different performance measures would help the organization to measure their SC performance better. This thesis will investigate the measures used within the industry, and common barriers regarding measuring in multi-unit retailing organizations. By doing this, we will address the purpose of the thesis being:

how a multi-unit retail chain can balance profit and service level through measuring SC performance.

The Retailer desires performance measures that are simple, user-friendly, and useful throughout all units within the organization, as this would increase understanding and usability of the measures, and in addition probably usage. The aim of The Retailer is to use and follow up on suggested performance measures on a daily, weekly, monthly, and yearly basis. Important for The Retailer is that the suggested performance measures must be able to be integrated into the current system and compatible with other measures used by the organization. Thus, the study will use the following research questions (RQ) to fulfill the purpose.

RQ. 1 What are common barriers in measuring service level in multi-unit retailers?

RQ 2. What Performance measurements can be used within a multi-unit retail company to measure service level to balance customer service and profitability?

RQ 3. How should the service level be designed/organized to reflect a retail company's strategy, goals, and visions?

1.5 Delimitations

Delimitations of the study are set to several parameters. First, the study is limited to the "special" product segment of The Retailer. This is due to a different approach in handling and distributing products within the organization, rather than their other business. Hence, the retail department, i.e., special segment, is managed and operates in their own way. This segment includes electronics, candles, gardening tools, household products, etc. Furthermore, the study only includes information and interviews with certain capabilities within the organization, industry, and academics. This is done to collect relevant data and information to answer the research questions of the study. The study will also only look at the flow of products between stores and warehouses, and how the delivery is being measured.

1.6 Thesis Structure

The structure of this research will be as followed. In chapter 2, the theoretical frame of reference is presented, where theory regarding retail SCs, strategies, performance measures, design of performance measures, and communication within organizations is presented. In chapter 3, the methodology of this thesis is described, explaining the research strategy and method, as well as ethical considerations. Empirical findings from the case study are presented in chapter 4, structured in a similar way as the theoretical frame of reference. In chapter 5, the empirical findings are compared with the theory, to find suggestions of handling the barriers and problems at The Retailer. Chapter 6 consists of a suggested performance measurement system for The Retailer but is flexible enough to be used by other organizations within the retailing industry. Chapter 7 is the conclusion, where the RQs are answered by using the empirical findings and theoretical frame of reference.

2. THEORETICAL FRAME OF REFERENCE

Ireland and Crum (2005) state that activities and operational decisions made by top management should be cross-functional and involve different departments to encourage collaboration at functional, operational, and strategic levels. Furthermore, the performance of this type is measured by operational efficiency since the collaborating approach will relate performance measurements from different departments toward organizational performance measurements. As the collaboration gives insight between different units within the organization, the performance measurements can be used to improve current operations and comparison both within and between organizations. The performance metrics provide an essential platform that can help the organization to find improvements of individual indicators (Ho, Chan, Wong & Chan 2000). Henceforth, this chapter will explain characteristics of the retailing industry, strategy for positioning on the market, performance measurements, design and usage of performance measurements, and the essence of communication within organizations.

2.1 Supply Chain Within the Retail Industry

Retailing is one of the largest industries and is in constant change, which has been accelerating in pace during the past decade. Retailing is the last step in the distribution of commodities and involves organizations that first and foremost focus on purchasing products from other organizations with the intent to resell these to private households, usually without transformations (Zentes et al. 2012).

As mentioned earlier, retailing companies that formerly acted on local or regional markets, tend to increase in size and begin to internationalize. Hence a leadership role within distribution channels is assumed based on branding and expansion strategies as well as innovative SCM solutions and so forth (Zentes et al. 2012). As a result of the increased size of retailing companies, their power has grown, and they are now a dominant actor in the distribution channel; and often coordinate or even own value chains from production to customer. Retailing has become a more complex business, "with a highly sophisticated form of management and marketing" (Zentes et al. 2012). As retailers connect the manufacturers with the consumers, focus on product assortment, engaging with customers, as well as a holistic view of management and marketing is done to seize opportunities of the market (Zentes et al. 2012). Additionally, SCM has become an important factor for retailing companies to stay competitive, by reacting better to the increasing complexity and uncertainty of the retailing industry. To measure the performance of their SC, retailing companies should use both financial and non-financial performance measures (Andand & Grover, 2015).

A competitive advantage for retailers often arises through distribution and warehousing, meaning a management control of the SC, a logistic leadership. The opportunities in investing in this are realized by retailers and view them as a trade-off between optimal customer service and costs for the company. Logistics is important for organizations acting within the retail industry, as it constitutes a large portion of the total cost as well as contributes to the commercial value of the product (Zentes et al. 2012). Andand and Grover (2015) describe that competition in the retail industry has changed from products to SCM, meaning that retail SCs need to be adaptive and responsive to meet the demand of the changing customer markets. This requires greater collaboration and visibility between the actors in the SC, where retailers' relationship to other SC partners as well as performance measures are a vital part in succeeding (Andand & Grover, 2015).

When managing logistics, retailers often focus on four components (also called "logistics mix"), which is *storage facilities* (buildings for stock and/or distribution), *inventory* (question of the number of products to store of each product), *transportation* (products need to be transported from manufacturers to warehouses, and from warehouses to stores), and *recycling/reuse* (returning packaging materials for recycling and/or reuse) (Zentes et al. 2012). An additional component is information exchange. In order to have products when retailers need them, it is necessary to have information about demand, supply, volumes, inventories as well as prices and movements. Figure 2 describes the trade-off between costs and service level as well as the relation between the four components and the importance of communication (Zentes et al. 2012).

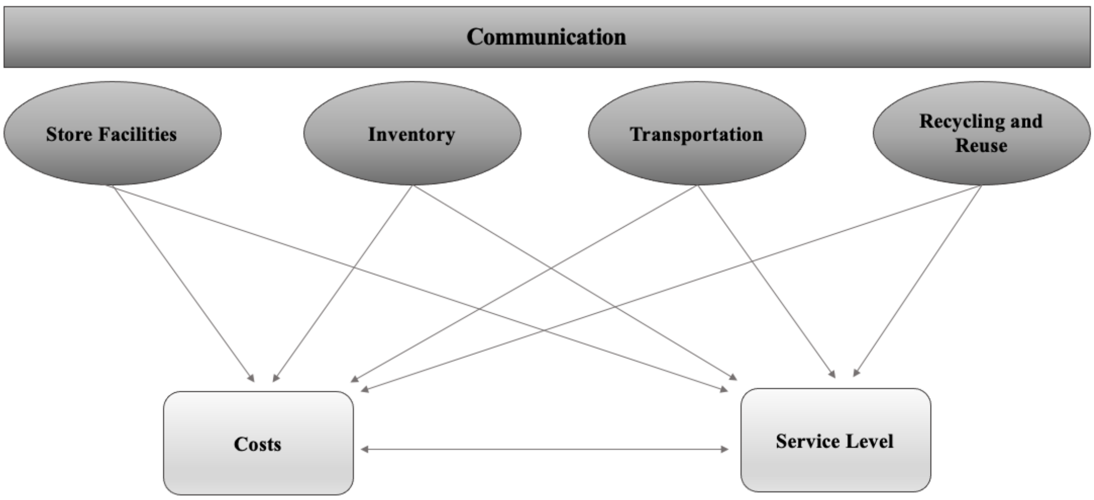

Figure 2. The relation between the logistics mix and the tradeoff between costs and service level (modified from Zentes et al. 2012).

2.2 Strategy to Achieve a Strategic Positioning

Strategy can be described for an organization as setting broad objectives that direct the organization towards its overall goals and include planning the path in how these goals will be achieved (Porter, 1996). Furthermore, it will in general focus on long-term objectives and dealing with the overall broad picture, and not stressing individual processes or activities. According to Porter (1996) strategy is described as "performing different activities from rivals or performing similar activities in different ways". But how to choose and create the strategy for organizations depends on the market it operates in, types of products, resources, etc. Strategy is closely related to operational effectiveness and is often confused with strategy, but operational effectiveness is not strategy (Porter, 1996). Furthermore, companies tend to fail to distinguish between operational effectiveness and strategy, leading to improvements that are important for their business but are not sustainable long-term. Operational effectiveness refers to performing activities within the organization better than competitors. Performing activities better is a diffused term but it can be performing activities faster, with better quality, fewer defects per product produced, cheaper, etc. To find or choose a strategy, a company needs to consider "Strategic Positioning" which refers to an attempt to achieve sustainable competitive advantage by distinguishing itself from other actors within the industry.

2.3 Performance measurements

Choosing appropriate performance measurements in a Supply chain is difficult due to the complexity of these systems. A performance measurement system should reflect the environment whereas several individual measures should be used to reflect the performance of the system (Fig. 3) (Neely et.al., 1995). Hence, performance measurements are vital to accurately measuring performance. In general, performance measurements are inadequate due to the low degree of interaction between important parts of the organization and its SC (Beamon, 1999). Three important characteristics of performance measurements are mentioned by Beamon (1999) as these play an important role for the organization to both stay and to be competitive. *Resource* measurements, *output* measurements, and *flexibility* measurements are argued to be these important types of measurements. These measurements have a specific goal and purpose to fulfill.

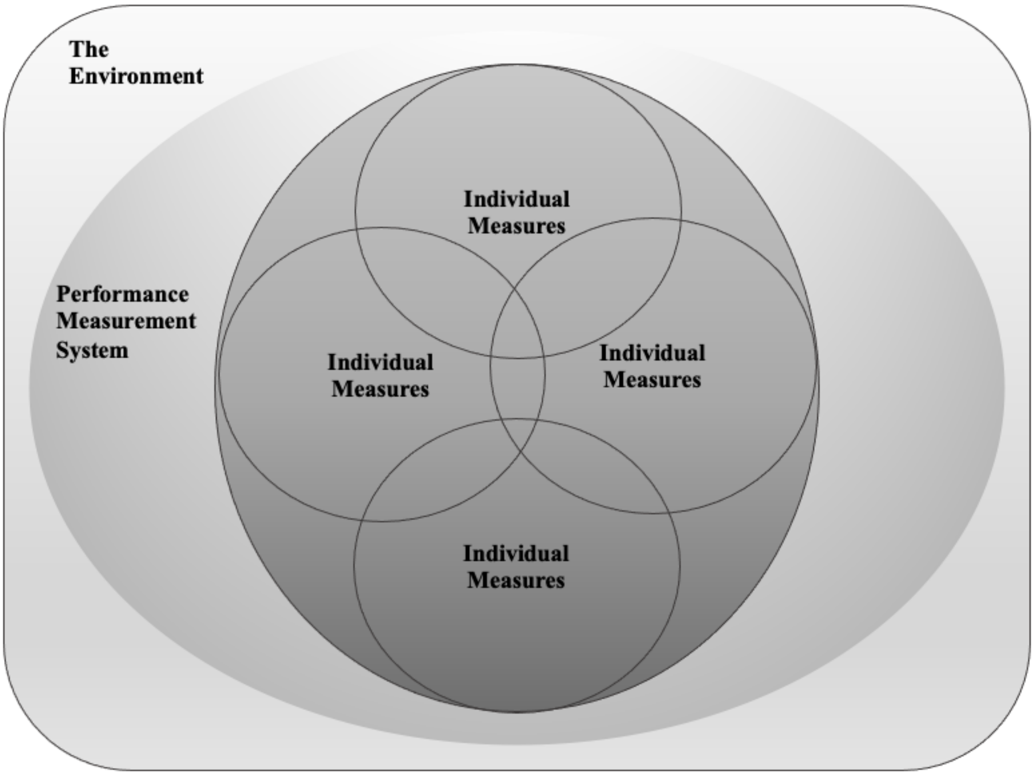

Figure 3. Individual measures related to the performance measurement system in relation to the environment (modified from Neely et al. 1995).

The goal of the *resource* measurements is to create a high level of efficiency and the purpose of this is that efficient resource management is critical for profitability. Defining resource measurements includes inventory levels, personnel requirements, equipment utilization, energy usage, and cost. Common measurements within these areas are, the total cost of resources used, distribution costs, manufacturing cost, inventory cost, return on investment (ROI), etc. A general rule of an SC organization, the goal is to use the resources most efficiently (e.g., resource minimization) (Beamon, 1999).

Output measurements have the goal of delivering a high level of customer service and the purpose for this is obviously that without a high customer service the customers will tend to choose another organization. Output measurements include customer responsiveness, quality, and quantity. Most of the output measurements can easily be represented numerically such as the number of on-time deliveries. Hence, some are more difficult to express numerically such as customer satisfaction, quality, etc. Furthermore, the output measurements must correspond to both the organization's strategic goals and the customers' goals and values to meet the customer requirements (Beamon, 1999).

Flexibility measurements are at least as important as the two others, the goal of flexibility measurements is to create the ability to respond quickly to unforeseen changes in the environment the organization operates in, and the purpose is that a lot of markets and businesses has rapid changes and an uncertain environment and therefore and organization and its SC need to be able to respond quickly to change (Beamon, 1999). Since these measurements are related and benefit from each other an organization must have at least one individual measurement from the different categories. By this, the organization can study interactions between measurements from the different categories. Flexibility measurements are something that Beamon (1999) explains is seldom used in an organization analysis but is beneficial since they can measure a system's ability to react and respond to fluctuations in demand or change in the market. Advantages of flexible systems within an organization and SC are increased customer satisfaction, reduction in the number of late orders, reduction in the number of lost sales, etc. (Beamon, 1999).

Chan and Qi (2003) on the other hand, have decided to divide performance measures into three categories, *inputs*, *outputs*, and *composite*. *Input* measures relate to time and costs. Where time is a strategic dimension in the evaluation of management performance in the pursuit of high service level connected to fast responsiveness and low inventory levels, and the cost is related to consumption of resources e.g., labor, knowledge, capital, etc. *Output* can be measured by comparing functional performance and mission, in the form of value-added to products or processes, but also flexibility in production or responsiveness to demand. *Composite* measures typically involve both inputs and outputs and make more sense, as outputs are compared to inputs. To have a mutual understanding, these measures should be well-defined and normalized (Chan and Qi 2003).

Parmenter (2015) also indicates that there are different categories of performance. Additionally, he also suggests that there are four different types of measurements, divided into two groups: *result indicators* and *performance indicators*. *Result indicators* reflect the sum of several teams' inputs, which can be useful when looking at a result from an organization but not beneficial when looking at which teams are performing or not. *Performance indicators* can be used to measure a team or a cluster working closely together, hence the performance can be connected to a team when evaluating good and bad performance. The following section will define these.

2.3.1 Result Indicators

A summary of activities done by more than one team is called a result indicator, these give a good overview of how teams work together. The result indicators give a good perspective of what has been done (Badawy, El-Aziz, Idress, Hefny, Hossam 2016). The distinction to a key result indicator (KRI) is that the KRI is a more overall and important overview of the activities that have been performed. Result indicators are often financial performance measures and can hide real drivers of performance. Therefore, to understand what to increase or decrease, the focus needs to be on the activities that generated the financial indicator. Result indicators can be used in wide time horizons, where they can be used monthly or quarterly, but also weekly, daily, and for future events such as planned initiatives. Some result indicators that the KRIs can be built on are *Sales made yesterday, Number of initiatives implemented from the latest customer satisfaction survey,* and *number of staff trained to use a specified system* (Parmenter, 2015).

2.3.2 Key Result Indicators

KRIs are often mistaken for key performance indicators (KPIs) and are characterized by being a result of several actions performed by many teams. These measurements are good summaries and describe if the organization is on the right track and gives a good picture of how well the organization performs regarding the organization's strategy or a company's critical success factors (CSF) (Paramenter 2015; Badawy et al. 2016). KRIs are typically reviewed monthly or quarterly, however, this will only show if the organization has performed accordingly. KRIs can be reported to the board or management, however, the problem is that senior management has a hard time understanding why results land out of control, with performance on highs and lows. Hence KRIs are of little use for management as they cannot change the direction of the organization, additionally, they will not tell you what you should do to improve the results. Typically, the CEO is responsible for the measurements, and separation between those affecting governance and those impacting management is commonly done when reporting. A report with governmental KRIs should be available for management and management reports released with intervals depending on the importance of the measure. For companies in the private sector, KRIs could be *Net profit on key product lines, Customer satisfaction, or Return on capital employed,* etc. (Parmenter, 2015).

2.3.3 Performance Indicators

Non-financial indicators are called performance indicators, which can be connected to a certain team. The performance indicators explain to the users what they must do (Badawy et al. 2016). Performance indicators are important but not vital for the business, these can help teams align to the organization's strategy and complement the KPI's of the organization. Performance indicators can be used as a past, current, or future measure, and can be used on several levels in the organization, such as per division, department, teams, or the entire organization. Some examples of performance indicators are *late deliveries to customers, the number of innovations implemented by a team/division or canceled processes or reports that are not functioning* (Parmenter, 2015).

2.3.4 Key Performance Indicators

The difference between performance indicators and KPIs is that KPIs focus on aspects that are related to the organizational performance that is critical for the success of the organization, both current and future success (Parmenter, 2015). If the organization is not active in several sectors, Parmenter (2015) suggests using less than 10 KPIs, to avoid suboptimization within the organization. The KPI can measure current activities

(24/7 or daily), looking at past activities that took place last week, month, quarter, etc., or by looking at future commitments when actions will take place in the future.

By basing the KPIs on CSFs, competitiveness will be reached by focusing on the organization's core capabilities. To set the right target of the KPI, the organization needs to look at competitors and benchmark themselves. Furthermore, the organization should form challenging targets to outperform competitors' performance (Chen, Huang, Yu, & Hung, 2017). KPIs are seldom new to the organization, either they are unrecognized by the management team, or they have not been acknowledged (Parmenter, 2015). By implementing a KPI management system, preferably with the PDCA- (Plan-Do-Check-Act) cycle and by implementing a strategy management system, targets can be achieved (Chen, et al. 2017). Examples of KPIs are *Late deliveries to key customers, a list of late projects,* or *the number of innovations planned for implementation* (Parmenter, 2015). Parmenter (2015) also describes seven typical characteristics of KPIs, shown in table 1.

Table 1. Seven common characteristics of KPIs

Characteristic	Description
Non-financial	By having a monetary measurement, you convert it into a result indicator automatically. As KPIs should measure deeper down in the organization, it would be better to measure a pattern that would generate monetary flows
Timely	Some KPIs can be monitored weekly, however, it is more advantageous to monitor them 24/7 or daily as the organization can react directly to highs and lows in the measurement
CEO – focus	The CEO always has the attention to the KPIs, as all KPIs make a difference for the organization and the CEO will act if these don't perform according to plan
Simple	The KPI should be easy to understand for everyone in the organization, and what actions are needed to perform accordingly
Team-based	The deepness of a KPI enables the KPI to be connected to a team. Hence the CEOs can hold managers accountable for not performing as expected
Significant impact	One or more critical success factors will be affected by a KPI, hence by measuring KPIs, the organization will score critical success factors in several dimensions/directions
Limited dark side	A KPI needs to create the desired behavior, hence create behaviors that are in favor for the development of the organization

Note: modified from Parameter, 2015

2.4 Design & Usage of Performance Measurements

The usage of measurements is used to quantify efficiency and/or effectiveness, where managers use the KPIs to track the performance of their system. The staff that carries out activities within the system needs performance measurements to see how well they perform. Hence, performance measurements are important for everyone within the organization to explain what should be measured and how it should perform to meet the expectations (Neely, Richards, Mills, Platts & Bourne 1997).

2.4.1 Design of the Performance Measures - What Should They Reflect?

Traditionally, performance measurement systems are focused and adopted narrowly, with just one or a few dimensions, this results in a common problem as companies use a common set of measurements (Neely et al., 1997). To handle this, companies can use a balanced set of measures with different perspectives, Neely et al. (1997) mentions in their article that companies should use KPIs with a financial, internal business, customer, and innovation & learning perspective to solve this problem. Mentzer and Konrad (1991) also suggest carefully considering what information to include in the performance measure, to not include irrelevant information, and to avoid overcomplicating the collection of data. Even if the gathering of all relevant data is feasible, cost related to management and usage of the information may exceed the marginal benefit of using it. Additionally, the "comparability" of measures should be considered, as some measures may not be useful across all situations and need some modification to function in some situations (Mentzer & Konrad 1991). Chan and Qi (2003) also indicate that the KPI should be usable and reported under equal situations, meaning transferring a complex reality to a limited number of symbols. Problems connected to measurement errors are an additional problem, where Mentzer and Konrad (1991) explain that problems related to the collection of data and assigning contributions are common.

Improving SC performance is a continuous process that requires a logical performance measurement system, meaning that KPIs need to be understandable and implemented into the daily routine work. To represent this, the performance measures need to be interrelated and include both financial and non-financial measures (Andand & Grover, 2015). Anand and Grover (2015) also describe that KPIs can be categorized into primary and secondary ones. Where primary KPIs reflect the overall SC performance, and secondary measures give indications of reasons for the outcome, resulting in a detailed view of the SC.

Performance measures can have a behavioral impact on the users, as people modify behaviors in attempts to guarantee positive results even if they would have to take inappropriate actions (Mentzer & Konrad 1991). By designing KPIs in a faulty way, users can behave in a dysfunctional way. As individuals are encouraged to take inappropriate actions, due to the method of calculating performance, or the formula of the KPI. Therefore, designing a KPI not only involves creating a formula but questions such as the purpose and frequency of the measurement, and the source of data should be considered (Neely et al., 1997). Mentzer and Konrad (1991) suggest that the problem emerges from the use of an evaluation and reward system based on poor reward measures. A common situation is to use fixed measures in a task that needs flexibility and innovativeness, which results in rewarding inflexible behavior. Hence, it is important to not only think about what should be measured but also consider behaviors that these measures could urge to the users (Neely et al., 1997).

Beyond the behavioral effect, the design of performance measures also needs to solve issues such as the link between performance measure and strategy, conflicting performance measures, and an adequate balance of internal and external measures (Neely, Mills, Platts, Gregory & Richards 1996). To reduce the complexity of performance measures, the authors have concluded that a process-based approach for performance measurements will help to do this. Having a process-based approach will facilitate organizations to decide what should be measured, how to measure it, collect suitable data, and eliminate conflict within their measurement system (Neely et al. 1996; Han & Kang 2007). Han and Kang (2007) propose a framework on how to handle this which will be further explained in chapter 2.4.3.

Mentzer and Konrad (1991) suggest that measurements should include all the aspects in the process being measured, suitable for each situation (usable in comparable situations), minimize errors in measuring, and reflect the management reward system. Neely et al. (1997) has gathered information from over 20 articles and their recommendations are described in table 2.

Table 2. Recommendations for management when designing performance measures

	RECOMMENDATION:
1	Performance measures should be derived from strategy
2	Performance measures should be simple to understand
3	Performance measures should provide timely and accurate feedback
4	Performance measures should be based on quantities that can be influenced, or controlled, by the user alone or the user in cooperation with others
5	Performance measures should reflect the "business process"- i.e., both the supplier and customer should be involved in the definition of the measure
6	Performance measures should relate to specific goals (targets)
7	Performance measures should be relevant
8	Performance measures should be part of a closed management loop
9	Performance measures should be clearly defined
10	Performance measures should have a visual impact
11	Performance measures should focus on improvement
12	Performance measures should be consistent (in that maintain their significance as times goes by)
13	Performance measures should provide fast feedback
14	Performance measures should have an explicit purpose
15	Performance measures should be based on an explicit defined formula and source of data
16	Performance measures should employ ratios rather than absolute numbers
17	Performance measures should use data which are automatically collected as part of processes whenever possible
18	Performance measures should be reported in a simple consistent format
19	Performance measures should be based on trends rather than snapshots
20	Performance measures should provide information
21	Performance measures should be precise – be exact about what us being measured
22	Performance measures should be objective – not based on opinion

Note: modified from Neely et al. 2017.

To summarize the recommendations from Neely et al. (1997), performance measures should be transparent, linked to actions, measures, and strategies, as well as calculated properly. Chan and Qi (2003) support this where they describe typical flaws with KPIs as that they have a short-term and profit focus, promote local optimization, not supporting continuous improvement, and being uni-dimensional. Additional problems with KPIs in an SC context according to Chan and Qi (2003) are described in table 3.

Table 3. Problems with performance measures in a SC context.

Problems with KPIs in an SC context
• Being no connected with the strategy
• Lack of balanced approach to integrating financial and non-financial measures
• Lack of system thinking, in which a Supply Chain must be viewed as on whole entity, and measured widely across the whole
• Loss of Supply Chain context, and thus encouraging local optimization

Neely et al. (1997) have created a framework that can be useful when designing and auditing performance measures. By considering inputs, outputs the framework specifies what good measurement is in a given context, as well as considering behavioral impacts. The framework can be seen in table 4. Furthermore, the authors add that the frequency of measurement and reviewing needs to be defined, as well as who acts on the performance measure.

Table 4. Framework for designing and auditing performance measures, with the example of customer service.

Title	**Customer service – adherence to customer service**
Purpose	To enable us to monitor factor completion performance
Relates to	Business objectives – "meet quality standards", "delivery on time", "no customer complaints"
Target	100 percent schedule completion on time at least by end of the year
Formula	Percentage of pieces arrive at the customer´s location when agreed
Frequency	Weekly
Who measures?	Despatch manager
Source of data	Delivery receipts
Who acts on the data?	Production Manager
What do they do?	Investigate reasons for late deliver, set up problem-solving teams to eliminate root causes
Notes and comments	Early deliveries are not on time

Note: modified from Neely et al. 1997

Cai, Liu, Xiao, and Liu (2009) states that measurements often are static and lag behind the SC since KPIs are established and being unchanged in changing environments. Few organizations have a systematic method for prioritizing the measurements, leading to organizational problems in adapting to changing strategic objectives and meeting requirements in dynamic decision-making environments (Cai et al., 2009).

2.4.2 Performance Measures Relation to Organizational Goals & Strategy

Supply Chain Management (SCM) has become more and more important for organizations to stay competitive and follow the development of technology and the increased customer requirements (Gunasekaran et al. 2001). Good management of the supply chain results in both increased competitive performance and improved organizational performance. Hence, it is important in the development process of KPIs that these are based on the organization's CSFs and the core capabilities of the organization (Chen Et al., 2017).

To develop and determine KPIs, the identification of CSFs is an important task for the organization meaning the organizations need to analyze their core competencies and core capabilities that are related to the CSFs. The determination process of KPIs and their goals should therefore, as mentioned before, be based to achieve the organization's core capabilities and competence (Chen Et al., 2017). The easiest way to distinguish between KPIs and CSFs can be explained with two terms, cause, and effect. CSFs are the cause of the organization's success and the KPIs are the effects of a firms' actions (Anand et al., 2015). To develop sufficient types of KPIs to supply retailers and customers, it is important to consider the warehouse operations. Chen et al. (2017) provides a list of KPIs that must be met to acquire a high service level, described in table 5.

Table 5. Important KPIs that must be met to acquire a high service level.

	Important KPIs to acquire a high service level
•	Good quality
•	Deliver accuracy
•	On-time delivery
•	Short time for delivery
•	Security of delivered goods
•	Top-quality service
•	Acceptable price
•	Latent needs satisfied

Note: modified from Chen et al. 2017.

As the warehouse management systems vary from organization to organization the most important part is that the organization understands how they should develop the performance indicators and how to KPIs in an accurate way (Chen et al., 2017). Organizations are aware of the potential of SCM, but they have insufficient knowledge of the potential of effective performance measures and metrics that are required in an integrated supply chain (Anand & Grover, 2015). Hence the development of performance measurement toolsets (KPIs) is challenging since it requires incentives from top management and an organizational culture that allows the implementation of performance measurement systems. On the other hand, David and Albright (2004) point out that performance measurements and the establishment of KPIs will help the top management team to make strategic decisions. Kincaid (1994) also mentions that performance measurements are a requirement to be competitive but also for the development of strategies for future improvements. Performance measurement will expect to support the top management team in strategic decisions to provide feedback in one's supply chain which increases the visibility of the supply chain and thereby help to assess the accuracy of demand and supply planning (Anand & Grover, 2015; Chae, 2009). Neely et al. (1997) also explain that performance measures are an essential part of the planning and control cycle, which creates incentives to capture performance data to make informed decisions.

As performance measures are used to increase a company's competitiveness, managers put a lot of effort into developing measures that will reflect the performance of the company (Cai et al., 2009). The managers need to identify critical KPIs and the relationship between KPIs, however, this is a hard task. Additionally, KPIs must be prioritized within an area of KPIs, something that companies struggle with. After this is done, improvements within KPIs need to be done, which is accomplished by continuous planning, monitoring, and execution (Cai et al. 2009). Typical challenges in this work are complicated performance measures, evaluation of the importance of performance measures, and how KPIs relate and conflict with each other. The importance of the connection between KPIs and organizational strategy has been validated by several authors. To preserve this, and to solve previously mentioned challenges from Cai et al. (2009), the framework in figure 4 is suggested by Cai et al. (2009). By using the framework, relationships between a set of KPIs can be discovered and performance improvement strategies can be identified. The difference to traditional top-down management processes is to analyze the KPI in the third step in the new cycle, to find connections between KPIs and adjust weights to better respond to real situations. But first of all, to shorten the lead time of the cycle, as organizations have to respond faster to opportunities and threats (with the old design of the management cycle, managers have a hard time changing or regulating KPIs before the six steps are completed) (Cai et al. 2009).

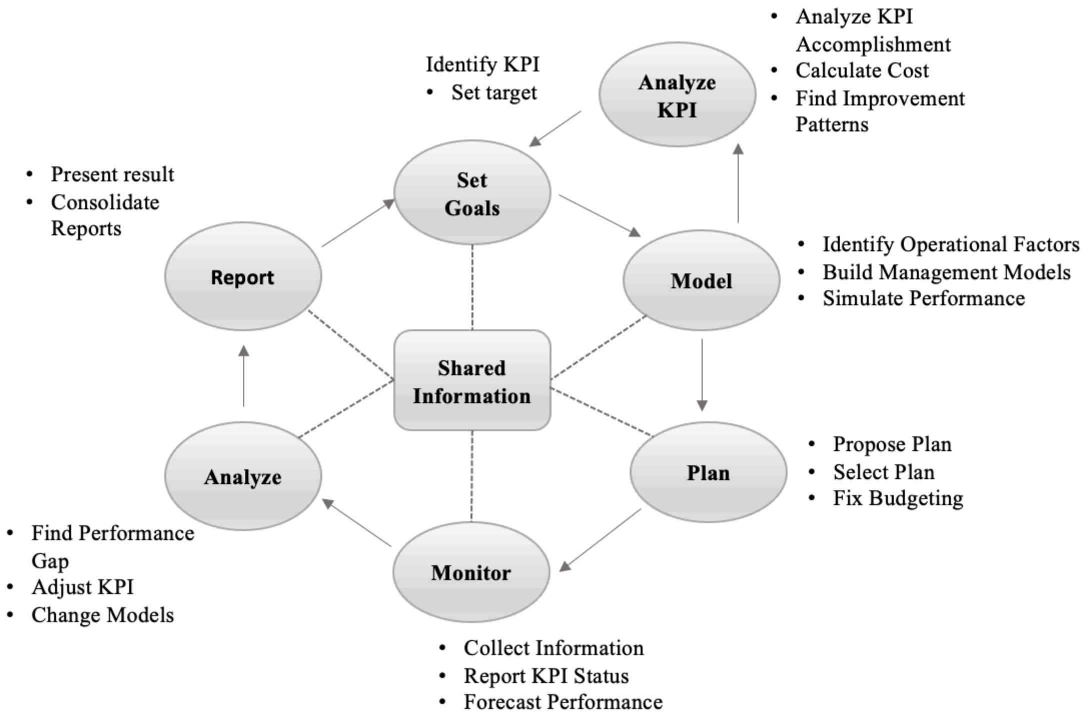

Figure 4. Business Performance Management Cycle (Modified from Cai et al. 2009)

Ireland and Crum (2005) state that activities and operational decisions made by top management should be cross-functional and involve different departments to encourage collaboration at functional, operational, and strategic levels. Furthermore, the performance of this type is measured by operational efficiency since the collaborating approach will relate performance measurements from different departments toward organizational performance measurements. As the collaboration gives insight between different units within the organization the performance measurements can be used to improve current operations and comparison both within and between organizations. The performance metrics provide an essential platform that can help the organization to find improvements of individual indicators (Ho, Chan, Wong & Chan 2000).

As KPIs can be divided into several groups the organizations carefully need to consider what their KPIs should reflect and be used for. As mentioned earlier a common problem is that performance measurement systems are too focused and narrowed into a few dimensions of a company. As Neely et al. (1997) mention in their article, KPIs should provide measurements of financial, internal business, customer, and innovation and learning perspectives. Therefore cross-functionality as Ireland and Crum (2005) mentions is important for organizations. Cross-functionality brings different dimensions of the organization together which helps the organization to provide a clearer picture of the overall organizational performance. Therefore, the categorization of the KPIs is an essential task for organizations, hence it is a complicated task since the "core capabilities" must be considered once again and be a foundation in which KPIs are used and how they are categorized (Anand & Grover, 2015).

To develop vision, implement a strategy for performance measurement, and design measurements that are suitable for the organization's "core business" a tool called Balanced scorecard (BSC) can be used (Sofiyabadi, Kolahi & Valmohammadi, 2016). The development of BSC was made by Kaplan and Norton (1992) to provide a link between financial and non-financial performance measurements. In short, the BSC is designed to help the top management's decision-making process and as a guideline to get a broader vision of the organization's operations (Asosheh, Nalchigar, & Jamporazmey, 2010). Hence, the BSC is not a static list of measures, it is a framework for implementing and aligning change and for managing strategy-focused organizations. The BSC measures organizational performance from four different perspectives (Wu et al., 2009):

- Financial
- Customer
- Internal business process
- Learning and growth

When using the BSC the design and implementation process is divided into four main stages (Kunz & Schaaf, 2011):

- Translating the vision and gaining consensus
- Communicating the objectives, setting the goals, and linking strategies
- Setting targets, allocating resources, and establishing milestones
- Feedback and learning

To gain further knowledge and to translate the strategy into more operational terms "strategy map" is a useful tool (Kaplan & Norton, 2004). The operational terms are beneficial to communicate to employees how their work task relates to the organization's overall objectives (Buytendijk, Hatch, & Micheli, 2010). Furthermore, it helps to link processes together with the desired outcomes and to evaluate measures, target investments in humans, and informational and organizational capital (Huang, 2009). In the article by Saunders, Mann, and Smith (2009), a framework describing the interrelationships between six "categories" influencing the business result is presented (fig. 5). When using this framework, descriptions of how each "category" influences each other and show their strengths. This will not help the organization defining a strategy or action plan, and not how these should be implemented. Instead, this gives information of straightness in the organization and can help organizations forming their strategy process (Saunders et al. 2009).

Figure 5. Performance Excellence Criteria's (modified from Saunders et al. (2009).

Hence, these tools are just a guideline to gain understanding and provide an overall vision of the organization to acquire and what kind of measurements will be important for the organization's business and strategy. Since these tools are just guidelines there are limitations. One major limitation is that there are a high number of individual measurements in an SC context, e.g., measurements related to cost could be between 30-40 different indicators. This causes problems to managers since all these different measurements often provide valuable information in the decision-making process (Cai et al., 2009). KPIs can provide feedback and information regarding performance, display progress, and potential problems, and enhance motivation as well as communication (Chan and Qi 2003). Selecting and making trade-offs between measures is crucial to obtain and establish effective improvement strategies, it is a difficult task for SC participants, and for managers who try to allocate resources and achieve SC performance goals, this becomes a bottleneck (Cai et al., 2009). As mentioned before CSF and KPIs provide a cause-and-effect relationship, on the other hand, BSC generally assumes that these KPIs are uncoupled. Cai et al. (2009) explain that the latest BSC models do illustrate a cause-and-effect between goal-related KPIs, but they are inadequate for quantitative analysis of the complex intertwined relationships. Meaning BSC is a good tool to describe business operations and as a good communication tool but not a very effective tool to improve the overall performance by accomplishing the critical KPIs (Cai et al., 2009).

Organizations struggling with the issues of performance measurements even though they have well-educated managers within SCM. The issue has its foundation as mentioned before in the detection of CSFs and to find sufficient performance measurements to implement in their organization. Since the tools has their drawbacks and not that effective to find the best-interrelated performance measurements with the cause-and-effect relationship a big part of the challenges for managers is to work in an iterative way to find additionally performance metrics to the already existing key SC processes and interactions (Brewer and Speh, 2000).

Mentzer and Konrad (1991) explain that measuring effectiveness and efficiency might not reflect the goals of a business unit, therefore companies need to consider how goals are attained and can be accurately documented. Hence managers should carefully consider using standard performance and productivity measures without determining if these are appropriate for their goals. However, Mentzer and Konrad (1991) state that companies seldom compare their performances against their goals.

2.4.3 What is a Good Value of a Performance Measure

It is important to evaluate if the performance measure is at a satisfactory level. A company's goals and situation should be reflected in the performance measurement, by benchmarking a competitor or the industry these might not be attained (Mentzer & Konrad 1991). For example, when assessing customer service, high levels are assumed to be a good level. However, some customers might prefer lower service levels to buy at lower prices, hence it is dangerous for companies to benchmark competitors or industry without establishing the underlying assumptions. Instead, companies should define their own benchmark by goals that are based on actual demands and compatible with the organization's goals (Mentzer & Konrad 1991).

Cai et al. (2009) also state that the relationship between KPIs can be divided into three different relationships, *parallel*, *sequential*, and *coupled*. In the *parallel* relationship, KPIs are independent of each other, meaning fulfilling A will not affect B. The *sequential* relationship is a *cause-effec*t relationship, meaning that fulfilling A results in a cost for B (the reverse way may not always be the case). In *coupled* relationships the KPIs are dependent on each other, meaning fulfilling A will affect B, the same goes for the other way (Cai et al. 2009). Cai et al. (2009) suggest analyzing and evaluating KPIs from five categories; *resource, output, flexibility, innovativeness,* and *information,* to find correlations and cause-effect interplays. This means that this is an iterative process, and correlations between performance measures need to be identified. By establishing relationships between the measures, a matrix can be generated and measures that are crucial for the overall performance can be identified, and improvements can be made (example in table 6). Management can then select patterns of KPIs that match their organizational goals and new performance goals can be adjusted, hence the matrix can be used to make actionable suggestions of improvements. In their study, Cai et al. (2009) use five questions to create a matrix at a case company called SCC, which are summarized in table 7.

Table 6. The relation between KPIs.

M=		A	B	C	D
	A	0	0	0.25	0.1
	B	0.1	0	0.1	0.05
	C	0.05	0.05	0	0.25
	D	0.1	0	0.1	0

M=the relation, A=inventory cost, B=total turnover costs, C=procurement flexibility, D=logistics flexibility
Note: modified from Cai et al. 2009

Table 7. SCC, questions for the creation of the matrix.

	Question
•	Which KPIs are usen in the Supply Chain performance measurement system of SCC?
•	What and how strong are the interdependent relationship between these identified KPIs accomplishment costs, when they are simultaneously?
•	How to optimize the total identified KPIs accomplishment costs, based on their formulated costs relation matrix?
•	What is the order of priority of the selected critical KPIs and which improvements pattern is considered?
•	How to adjust and implement the critical KPI accomplishment strategies?

Chan and Qi (2003) suggest a method to enhance the development of SCM, I.e., maintain competitiveness, by having a holistic system perspective. In this way, performance is measured outside the company's boundaries instead of focused locally. This is done by dividing key processes into smaller sub-processes or/and activities, to measure their performance in sub-KPIs. The measures should cover all aspects that are important to actors in the SC. With more complex situations or reality, the more varied and extensive the KPIs need to be to describe reality in the best way. By focusing on measures related to input, output, and composite (described in chapter 2.3) rather than on financials, results in a deeper insight into processes. As the sub-KPIs are aggregated to a higher level, priorities to the sub-KPIs can be done according to the changing SC objectives. Consequently, weighting the measures according to importance, will result in a holistic KPI that will reflect processes that are important for the SC's value-adding processes (Chan & Qi 2003).

For an individual to assess the performance of a whole or a part of an SC can be a hard task. To face this challenge, Chan and Qi (2003) recommend collaboration between actors throughout the SC, with representatives from various management areas assembled into a team. By having this team with a wide background and experience, a lot of different opinions and suggestions will arise regarding the KPIs and their performance.

As mentioned in chapter 2.4.1., Han and Kang (2007) suggest a framework to use in order to design and evaluate KPIs for them to be relevant for the organization's processes, strategies, and business processes. Measurement systems are currently not clearly defined and poorly connected to companies' processes; hence it is difficult to decide which processes should be improved to achieve specific goals and what measurements are influenced by a business process. By looking at sub-processes, measurements connected to these can be traced (sub-KPIs), which results in KPIs that contribute to operational, tactical, and strategic positions in the organization. The framework (shown in fig. 6) consists of a KPI model (where KPIs are classified into the strategic, tactical, and operational level), a process model (where processes are divided into the size of the process span), and a KPI-process model which represents the relation between KPI and business processes (Han & Kang 2007). The framework supports managers responsible for designing and redesigning processes, deciding a prioritization of processes for improvements, and performing what-if analysis of process execution. Monitoring performance would also be possible by implementing the framework within business process management (Han & Kang 2007).

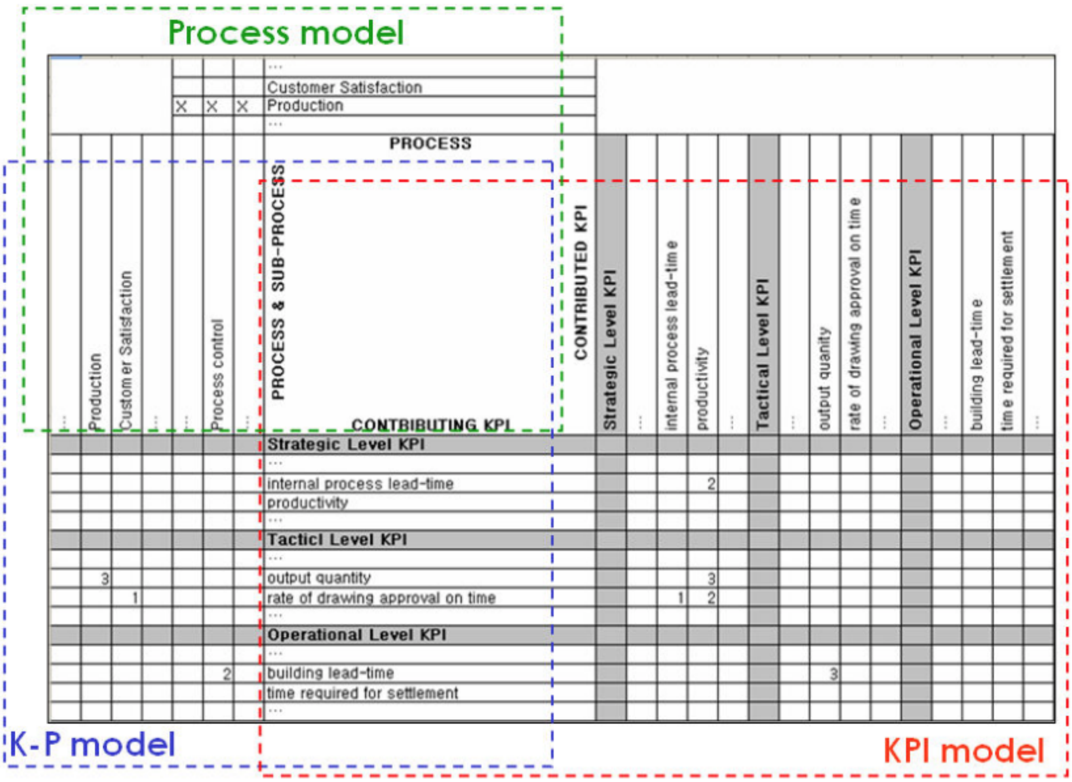

Figure 6. The framework created by Han and Kang P.226 (2007).

2.5 Communications within Organizations

Communication is an important aspect for all organizations to consider since it is the process of transmitting information and common understanding between one person to another (Keyton, 2011). Communication and cross-cultural interactions within an organization seem important to choose the right performance measurements since more aspects of different units are taken into consideration (Ho et al., 2000). On the other hand, when communication is managed carefully, internal communication also can lead to higher awareness of threats and opportunities. In addition, communication can help to increase the organization's productivity, performance and help with the external customer orientation (Downs & Adrian, 2004). But, to achieve the benefits of communication, the organization must create clearer relationships, promote business objectives, and put a strong focus on the strategy (Tkalac Verˇciˇc, 2021).

2.5.1 Challenges & Barriers with Internal Communication

Since the retail industry is an industry of constant change and a fast-moving business leading to complexity, uncertainties, and increased globalization, communication has become more important and challenging for organizations (Zentes et al. 2012; Brun, 2010). The definition of communication, the process of transmitting information and common knowledge between individuals requires an understanding of the information and knowledge as a result since otherwise there is no communication. As this can be challenging the person with the messenger must encode the messenger so it can be understood as it intended (Keyton, 2011). As performance measurements can use different units depending on where in the organization, they are used the internal communication plays a major role in translating the different units to create an understanding throughout the organization. Common communication barriers are related to a lack of data on how well the current communication within the organization works and how much information people need to perform their work tasks (Robson & Tourish, 2005). In addition, the managers play a crucial role since they must evaluate their roles as communicators and to spread the information throughout the organization (Robson & Tourish, 2005). The low level of awareness of the organization's communication climate and their hesitation to investigate the communication are common obstacles to improve the communication effectiveness. Robson and Tourish (2005) mentioned that there is overall a need for more communication within organizations. Furthermore, they present several issues for managers to consider when improving the communication climate and increase communication within an organization, these are summarized in table 8.

Table 8. Issues for managers to consider for increasing internal communication.

	Issues to consider
•	The need for progress on communication important issues
•	The need for more information on crucial change issues from managers
•	Need for more -face-to-face interaction between managers and other staff
•	The need for more upward communication
•	A lack of face-to-face rather than technologically based communication
•	Problems at the induction stage for new staff

Note: modified from Robson and Tourish (2005)

These are the key issues raised by Robson and Tourish (2005) related to how to increase internal communication to achieve the benefits it can provide such as improved productivity, increased level of innovation, higher quality of services and products, and a reduction in costs.

3. METHODOLOGY

This chapter explains the methodology of the thesis and how the research is performed. It is divided into different sections to explain all steps in the thesis in order to answer the research questions and cover essential parts of the research theory. It will further explain research strategy, research method, research design, data collection, analysis of the data, and aspects regarding validity and reliability.

3.1 Research Strategy

The thesis investigates the theme of performance measurements within retailing and the main focus is to provide the case company, The Retailer, with suggestions and knowledge regarding performance measurement, performance measurement systems, and identified issues. Since the thesis will generate more theory to the investigated field of performance measurements within retailing it is considered to be of an inductive nature (Bryman & Bell, 2011).

The inductive nature of the thesis has its foundation in that the research will provide the field of retailing with new knowledge and insights (Bryman & Bell, 2011). The aim is to provide companies, and especially The Retailer, within retailing with new knowledge, learnings, and applications of the already existing literature within the field of retailing. The retailing business is widely investigated and there exists a lot of research but as our case is quite unique the literature needs to be combined and adapted to this study. Since the thesis will provide new insights and learnings it is considered to be written in an inductive fashion (Bryman & Bell, 2011).

For this Thesis, a qualitative research method was decided to be the best suitable based on the investigated topic and its nature. The main aspect of qualitative research is concerned with words rather than numbers (Bryman & Bell, 2011). Furthermore, the inductive nature is closely linked to qualitative research. Research strategy builds upon two philosophical terms, epistemological and ontological orientations. The qualitative research takes a philosophical perspective as an epistemological position and this thesis will therefore be of an interpretive and constructivism perspective (Bryman & Bell, 2011). These perspectives will influence how the research is performed and carried out. The interpretative nature means that it takes interpretations of reality and an understanding of the social world. On the other hand, constructivism means that social outcomes are based on an interaction between individuals (Bryman & Bell, 2011). For this thesis, this is advantageous since the focus of the research lies within internal issues and strategies regarding performance measurements.

The thesis follows a research structure modified from Sreejesh, Mohapatra, and Anusree (2013) research process described in figure 7. The main steps of the modified research process consist of Project start-up, project definition & RQ, literature review, defining research design, data collection, analysis of the data, and concluding the research. Furthermore, the thesis will consider the main aspect of qualitative research mentioned by Bryman and Bell (2011). The research process is an iterative process with interactions between the different sections which is illustrated by the dashed arrows in figure 7. The solid arrows illustrate the time frame of when each step is initiated in chronological order starting from the top.

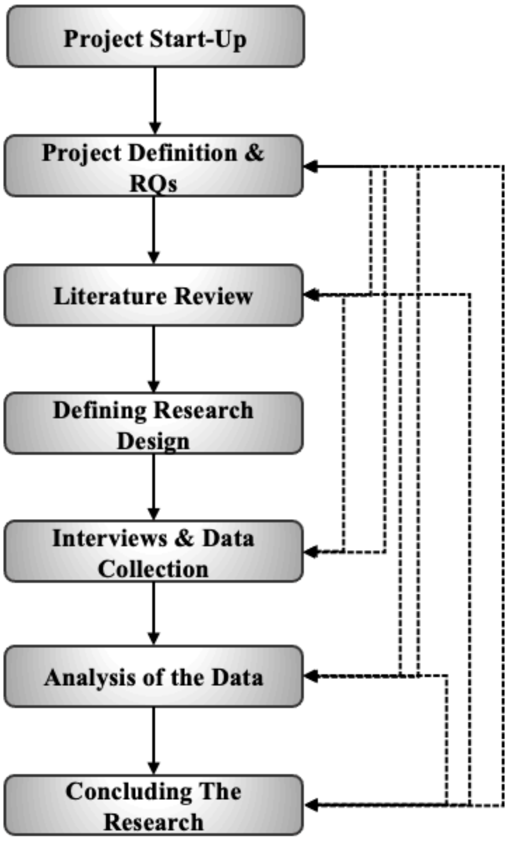

Figure 7. The structure of the research of this Thesis.

3.2 Research Method

The research method describes how the data was collected (Bryman & Bell, 2011). This chapter will explain the methods used for the data collection, analysis of the data, and securing the quality of this thesis.

3.2.1 Case Study

The case study design was chosen to construct an intensive and detailed analysis of The Retailer and its activities and processes regarding performance measurements. The major aspect that distinguishes a case study design from other research designs is the focus on a bounded system or organization (Bryman & Bell, 2011). This thesis has its major focus on The Retailer and their systems therefore the case study was determined to be the best-suited design. Furthermore, as the thesis will be of a qualitative nature, a case study is suitable since according to Bryman and Bell (2011) the case study design is favorable to use in combination with qualitative research.

The case study was structured in four majors steps described in figure 8. The different steps aimed to provide deep knowledge about the organization, theory, and in the end provide suggestions for improvement regarding performance measurements and performance measurement systems and related issues. The Organizational background aimed to grasp The Retailer's perspective and goals of the research. It consisted of meetings with the supervisor at the company to get a broad view of their expectations and an introduction to the current issues regarding performance measurements. The later steps will be further explained below.

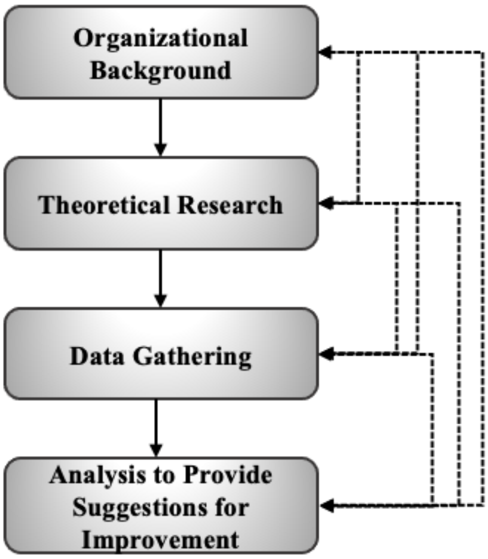

Figure 8. Case Study Design.

3.2.2 Literature Study

One of the steps of the research was to perform a literature study that relates to how The Retailer can use new KPIs, (e.g., complementary KPIs for current KPIs and performance measurement systems) to measure their service level from more perspectives to improve the measurements of the flow of products. To find relevant literature to the study-specific keywords were used: *Performance measurements retailing, KPIs retailing, Performance measurements supply chain, KPIs supply chain management,* and *Performance measurement systems*. To dig deeper into the field of KPIs and performance measurements snowballing was performed in the reference list of the first selection of literature. The decision process of which literature to use was done by decisions taken from the sections Company Description & Background and Purpose where literature was chosen that were limited to performance measurements and KPIs within retailing and the flow of goods between warehouse and stores. Databases used during the literature searches were Google Scholar, Science Direct, Taylor & Francis Online, and Chalmers library database.

The literature review aimed to grasp the general KPIs and the critical characteristics of KPIs within retailing to decide the most beneficial measurements for The Retailer with the organizational background in consideration. Furthermore, the literature aimed to find an appropriate course of action to use the measurements. According to Bryman and Bell (2011), one of the main steps in qualitative research is to perform a literature study. As the characteristics of KPIs and their processes were studied we found that there are a lot of processes behind how to find and implement the right measurements. Therefore, we decided to divide the literature study into three parts to be able to dig deep into all areas to provide a study that covers all the dimensions of performance measurements. The dimensions we studied were how to design the KPIs and what they should reflect, how organizational strategy relates to the choice of performance measurements, and what they are saying to the organization in terms of value. During the literature study, KPI characteristics for retailing have been shown to improve service level. Furthermore, the literature study gave insight into several frameworks which can be adapted and combined in order to consider the stores to be integrated with The Retailer's current KPIs. In addition, important characteristics of the organization and its impact on which KPIs to use were highlighted from the literature to find the best suitable mix for The Retailer to grasp the customer's perspective.

3.2.3 Data Collection

This section of the report was to collect information and data about The Retailer's organization, routines, issues, and today's performance measurements within different units of the company to answer the research questions. This was done to analyze their current performance measurements, how the different units are interrelated, and potential issues regarding performance measurements within the organization. Furthermore, the data collection gave insight into common barriers and issues regarding performance measurement within the retailing industry.

The Empirical data gathered in this thesis was mainly collected through qualitative interviews. All interviews were held in a semi-structured way to allow follow-up questions and open for a discussion regarding the questions in the interviews (Bryman & Bell, 2011). The interviews were held with expert personnel such as Head of Sales, Head of Business Management, Supply Chain Manager, Head of Supply Chain, and managers responsible for systems where KPIs are conducted. In table 8 is a short description of the interviewed personnel.

The interviews were designed from important factors when designing and improving organizational performance and chose performance measurement systems mentioned by authors in the theoretical frame of reference. The same interview template was used for all interviews. The structure was as follows: environmental factors, information related to the current KPI, The process behind the KPIs. The chosen structure made it possible to grasp all necessary data and information about the organizational work, issues, and usage regarding performance measurements.

Table 9. Description of the interviewed personnel at The Retailer

#	Unit and position within the organization	Data collection, duration, and date	language, and way it was conducted	Responsibility	Background
1	Analytics Analytics Manager	Recordings & notes 70 min 2021-03-31	Swedish Video chat	Creating statistical reports for usage in the organization.	The Analytics Manager has been working at the position since 2008 and collects and assembles data to create reports and KPIs to support personnel throughout the organization. Additionally, the interviewee is participating in developing alternative KPIs.
2	Stores & Sales Unit Stores & Sales Manager 1	Recordings & notes 55 min 2021-03-31	Swedish Video chat	A bridge between stores and management regarding the administration of stores.	Store & Sales Manager 1 has been in the position for three years but has been working in the organization since 2002 with different tasks throughout the organization. Has the responsibility of five specialists supporting the stores with decisions regarding such as sales, budgeting, personnel, planning, statistics, and policies.
3	Stores & Sales Unit Stores & Sales Manager 2	Recordings & notes 71 min 2021-04-06	Swedish Video chat	Supporting stores regarding sales and communication to the end customer.	Store & Sales Manager 2 has been in the position since the autumn of 2020 and works with strategic questions regarding sales and communication to the end customer, to achieve the store's targets in sales and profits. It involves managing five team members and handling communication from management to the stores.
4	SC Unit Supply Chain Manager 2	Recordings & notes 61 min 2021-04-15	Swedish Video chat	Support the team with tasks related to purchasing and distributing products.	Supply Chain Manager 2 has been in the position for close to one year and has previous experience in similar tasks. The interviewee works with supporting its team of six with decisions about when products should be available, bought, who should buy it, and from who, and handles the cross-functional work with the Stores Unit and with the warehouse.

Table 9. Cont.

#	Unit and position within the organization	Data collection, duration, and date	language, and way it was conducted	Responsibility	Background
5	SC Unit Supply Chain Manager 3	Recordings & notes 80 min 2021-04-15	Swedish Video chat	Support the team with tasks related to purchasing and distributing products.	Supply Chain Manager 3 has been in the position for one year and has been a part of the Analytics Unit during the time as well. The interviewee has previously worked with distributing products out to stores and been an SC Analyst. At the current position, the interviewee is responsible for a team of seven supply planners in supporting their daily work.
6	SC Unit Supply Chain Manager 1	Recordings & notes 59 min 2021-04-19	Swedish Video chat	Support the team with tasks related to purchasing and distributing products.	Supply Chain Manager 1 has been in the position for close to two years but has been working in the organization for almost 20 years. At the current position, the interviewee has the responsibility of supporting a team of seven to solve issues related to purchasing and distribution, such as product availability, transportation, and manufacturers.
7	SC Unit Head of Supply Chain	Recordings & notes 68 min 2021-04-19	Swedish Video chat	Supporting the managers for each unit	Head of Supply Chain is the manager of the supply chain, which includes an SC Unit, Sales Unit, Store Unit, and an SC Analytics Unit. The interviewee is a part of the development of the entire retail segment at the company as well as the development of the flow of goods.
8	SC Unit Supply Chain Analyst 2	Recordings & notes 59 min 2021-04-19	Swedish Video chat	Analysis for process improvements and system development	Supply Chain Analyst 2 has been in the position for a year and works with analyzing the SC Unit with process improvements and system developments. The interviewee has previously worked as a supply planner for three years and different positions at the warehouse between 2005 and 2017.

Table 9. Cont.

#	Unit and position within the organization	Data collection, duration, and date	language, and way it was conducted	Responsibility	Background
9	Stores & Sales Unit Store Strategy & Innovation Manager	Recordings & notes 57 min 2021-04-21	Swedish Video chat	Works with strategy and innovations in stores	The Store Strategy & Innovation Manager has been in this position for seven months and previously, worked within the same organization as Head of Sales. Works with layouts and concepts in the store and with streamlining of the space in stores to maximize the value of each square meter.
10	SC Unit Supply Chain Analyst 1	Recordings & notes 68 min 2021-04-22	Swedish Video chat	Analyzing, educates, and developing the organization	Supply Chain Analyst 1 works with analyzing the flow of goods, which includes analysis for decision support, education for how to use the systems, and development of the systems. The interviewee has been in the position for about a year but has been working at The Retailer for four years, previously with distributing products from the warehouse to stores.

The purpose of the semi-structured interviews was to gain knowledge from The Retailer regarding the different sections from the literature study, to find out how they work with KPIs today and highlight problems and differences between the organization and the literature. The idea was to get a broad picture of the organization within the areas of culture, units, communication, goals, vision, and what the current measurements are used for and by whom. The information from the interviews gave insight into the organization to gain valuable knowledge about the organizational structure, cross-functionality, processes, and problems with current measurements. Furthermore, from the collection of information, we were able to compare the literature and the organization to highlight and find reasons for current problems and why the service level does perform in a sufficient way. When the interviews and literature were compared, highlighted problems could be addressed in order to find a solution to address the research questions.

3.2.4 Analysis of Data

Qualitative research often generates large amounts of data, as the data consists of many sources such as interviews, documents, or field notes (Bryman & Bell 2011). This might result in the hard task of finding “analytical paths” through the data. Typical approaches to analyzing qualitative data are *analytic induction* and *grounded theory*, where the grounded theory probably is the most prominent. These are often an iterative process, with recurring interplays between the collection and analysis of data. Meaning that the analysis starts after some data has been collected, which influences the next steps of data collection. Hence grounded theory and analytic induction can be described as strategies of analysis as well as a collection of data (Bryman & Bell 2011).

Analytic induction is defined by (Bryman & Bell 2001) as *"...an approach to the analysis of data in which the researcher seeks universal explanations of phenomena by pursuing the collection of data until no cases that are inconsistent with a hypothetical explanation (deviant or negative cases) of a phenomenon are found."* The approach starts with a rough definition of research question/questions with a hypothetical explanation and continues to the collection of data (examination of cases). In case of an inconsistency between a case and the hypothesis, the analyst needs to either define the hypothesis to exclude the deviant or negative case or modify the hypothesis to continue collecting data. This leads to a quite extensive method for analysis, as single cases can require additional data collection and reformulations of the hypothesis.

Grounded theory has become the most commonly used approach for analyzing qualitative data, and as mentioned earlier, is an iterative process. Where theory derived from data is systematically gathered and analyzed throughout the research process, hence data collection, analysis, and theory are closely related at the end (Bryman & Bell 2001). Four tools are commonly used within the grounded theory, *theoretical sampling*, *coding*, *theoretical saturation,* and *constant comparison*. Theoretical sampling means that the analyst collects, codes, and analyses data simultaneously and decides what data to collect next, developing the theory as it arises. Coding is the key process of grounded theory, where the data is broken down into named component parts after starting to collect data. Theoretical saturation relates to the coding (reaching a point where reviewing how the data fit with concepts or categories no longer is needed) and collection of data (when a concept or category has been formed, more data is collected until new data no longer gives new insights to the concept). Constant comparison implies maintaining a connection between data and conceptualization, to avoid losing correspondence between concepts and categories with their indicators (Bryman & Bell 2001).

The data in this thesis has been analyzed by using the grounded theory. As no hypothesis was created before gathering of data, which is done when using the analytic induction. The analysis has been done by using several of the tools suggested by Bryman and Bell (2011). Coding was done from day one of collecting data for this thesis, where sources stating similar facts were categorized and explained under headlines used in the theoretical frame of reference. Theoretical sampling emerged when facts and issues were brought up during the interviews conducted at The Retailer, which resulted in adding further theory to the theoretical frame of reference and analysis. Consequently, this also resulted in additional coding of data as the research proceeded. Furthermore, throughout the data collection, constant comparison and theoretical saturation were used naturally as theory was excluded as these no longer gave further deepness or fit the headlines and content.

3.2.5 Research Quality

This section explains how the thesis is written to maintain the highest possible trustworthiness and authenticity, which are the two best-suited criteria when evaluating qualitative research (Bryman & Bell, 2011).

Trustworthiness is suggested when evaluating qualitative research and it includes four different criteria namely: *credibility*, *transferability*, *dependability*, and *confirmability* (Bryman and Bell 2011). Credibility ensures that the authors have acted according to good practice, and hand over findings to members of the studied field to confirm that the authors have understood the field correctly. As qualitative studies often study smaller groups or individuals with certain characteristics, transferability deals with the fact that if the result of the study can be generalized beyond the specific context of the study. The dependability concerns the repeatability of the study, hence how repeatable the study is for other researchers. Confirmability of the study encompasses if the researchers have been objective during the study and acted in good faith without personal values intruding during the process.

In addition to the trustworthiness, the criterion of *authenticity* is suggested to secure the quality of qualitative research (Bryman & Bell, 2011). The main concern for authenticity is to raise a broader set of issues regarding the political impact of the research, i.e., if the research is useful for, and can be valuable for a wider context than the researched field (Bryman & Bell, 2011).

To secure the quality in means of authenticity and transferability, this thesis has used both empirical findings from interviews as well as using literature based on the retail industry overall to answer the research questions. In addition, the supervisor at the company has provided its knowledge to the thesis regarding the retail industry and typical characteristics. To address the research questions in a correct manner and to be valuable for the retail industry in general characteristics mentioned by several authors has been used. Credibility has been ensured by having supervisors both from The Retailer as well from Chalmers University of Technology, resulting in expertise both from the retail industry as well as within the SC field. The dependability has been considered in the thesis by being transparent with the chosen research strategy and method, and descriptive text showing all steps in the research and what has been conducted from each step in the process. Furthermore, interview templates used during all interviews are shown in Appendix I, where the same structure was used during all interviews. In order to assure the confirmability of this thesis, the authors have communicated frequently with supervisors to stay objective.

3.3 Ethics

Ethical issues can arise within business and management research (Bryman & Bell, 2011), this chapter will explain how ethical aspects have been concerned to secure the integrity of this thesis.

Bryman and Bell (2011) provide a list of four main areas to consider the ethical aspects of business research, *harm to participants, lack of informed consent, invasion of privacy,* and *deception.* Harm to participants means that the respondents in the research are not harmed or adversely affected due to their participation (Bryman & Bell, 2011). In this thesis, no situations entailed any harm to participants. The persons who were interviewed were asked beforehand, and their contributions were voluntary. Furthermore, no personal or confidential information was distributed regarding both interviewed persons and the organization, which these were informed by beforehand. Whether there is a lack of informed consent, is considered since the interviewed persons were voluntary and informed about the interviewed topic. In addition, the interview template was sent out a day prior to the interviews to guarantee that no questions should include confidential information about the organization as well as confidential or personal information about the interviewed person, which also secured that there was no invasion of privacy. No deception was involved in the thesis during the data collection as resonances were told about the research before the interviews as well as at the beginning of the interviews. Furthermore, the structure of the interview was told, such as recording and notes, and the participants had the choice to decline participation.

4. EMPIRICAL FINDINGS

This chapter will explain the findings from interviews conducted with several employees throughout The Retailer's organization. The findings are summarized and analyzed into different sections to address findings that correspond to the RQs field of research.

4.1 Case description

The first thing that was brought up during all interviews is that The Retailer currently is in a reorganization of their internal processes. This work has prolonged for over a year, and they are currently in the middle of getting all implemented systems to work and find out how they can use them to develop their business further. During the reorganizations, issues among performance measurements have been recognized and some work on new KPIs has already been on the agenda.

4.1.1 The Retailers Strategy

The Retailer focuses on increasing customer value by offering a broad range of products to simplify the customers' everyday lives. This is done by offering the needed products when it is needed, i.e., common as well as seasonal products, high-quality products to the right price (Stores & Sales Manager 2). The consumer has expectations when they are at the stores, and if one aisle is poorly filled this will affect the perception of the customer even if the rest is well filled (SC Analyst 1). On the other hand, as the line of products has been increasing during the last years the Store Strategy & Innovation Manager mentions that there are products that might not be profitable enough, which is the drawback of the broad assortment.

The products relate to the food segment and create a "one-stop shopping experience", instead of customers going to several stores to purchase their products. This also increases sales as customers buy products they did not intend to buy from the beginning (Stores & Sales Manager 1). *"Of course, in the end, we want to make money, but it should not limit the product quality"* (Supply Chain Manager 1). Since profitability is important for The Retailer. This is generated by decreasing the value of stock and the Store Strategy & Innovation Manager discusses the importance of offering a mix of products that the customer wants to buy but at the same time offer products that the company can make money on.

The Retailer puts a lot of effort to get the customers' point of view and the sales personnel tries to work closely with stores and customers, organizational improvements are also done by working cross-functionally with a focus on learning and development. The customer's service includes making it easy for the customer with aspects such as the return of products, availability of shopping carts, and products within different price segments (Stores & Sales Manager 2). To create further customer value The Retailer follows up on customers by surveys, moreover, they look at numbers such as sales as these reveals what customers seek (Supply Chain Manager 1). The surveys can be used to create "nöjd kund index" (NKI) and are used with sales figures to measure if the customer needs are fulfilled, which can be compared to competitors' figures to measure competitiveness (Supply Chain Manager 2).

The majority of the stores' products are located facing the customers in shelves but to maintain high customer value, each store has a capacity of 100-400 pallets extra in the store's warehouse, to secure the capacity of seasonal products, campaign products, and products with the high turnover rate (Stores & Sales Manager 1). SC Analyst 1 explains that depending on where stores are located, the stores have different prerequisites to sell products. As some are located closer to holiday locations than others, and due to the geographical location stores will start their season differently. The possibility of storing products in their warehouse also differs, as some stores are located in older buildings (SC Analyst 1).

To stay competitive and profitable, the Store & Sales Unit works continuously to develop the customer experience. As a lot is changing both within the industry and in society overall, The Retailer needs to follow new trends and continue to offer the right services and products (Store Strategy & Innovation Manager). Additionally, The Retailer can notice a change in customer behavior, where customers are more open to buy a broader range of products than before, partly due to the pandemic. Internally, *"the stores' needs come first, as this, in the end, will benefit the customers and the organizational goals"* (Stores & Sales Manager 1).

4.1.2 The Retailers Organizational Structure

This thesis has its foundation within the SC unit at The Retailer, hence other units and especially the Sales and Stores Units are taken into consideration since they also play a significant role in how the organization will perform, and how they achieve their goals of having high customer service and high profitability. The three main units operate on their own and have their specific responsibilities within the organization. They have different performance measurements, which they are responsible to measure, monitor, develop, and address potential issues within.

The SC Unit's main task is to balance demand and supply to provide the right number of products to the store at the right time. They hold the responsibility for the suppliers and that they perform according to agreements regarding time, number of products, and quality. Furthermore, they hold the responsibility to achieve the goals of their KPIs of days of stock and service level from warehouse to store. To conclude, they hold the overall responsibility for the physical flow of products from suppliers to the stores. To know what and amount they should order, the Sales unit makes the sales plan and what they expect to sell over the year and communicate this to the SC unit. The sales Unit's main responsibilities are to make plans for how much to sell, plan campaigns, and help the stores make plans for how they can sell according to the plans. The Store unit works to support the stores in their processes and decisions regarding how to operate the stores, personnel questions, and policies the stores must follow. In addition, they also work with strategies and innovation to increase the customer experience in stores by optimizing space and how the shelves are placed.

The relation between the units is just information flow otherwise they operate mostly by themselves. The SC unit has contact with the suppliers and no "physical" contact with the stores. On the other hand, the Sales and Store Units have more direct contact with the stores and how they operate since all stores have more or less the same products and very similar layouts. The analytics managers and persons work mostly in a SC context to measure how well the flow of products from suppliers to the stores performs. The measurements are conducted and then communicated through weekly reports out to the whole organization. Furthermore, the analytics work with the development of new performance measurements and new ways of measuring the organization's performance to develop the organization further. In figure 9, the flow of information is mapped.

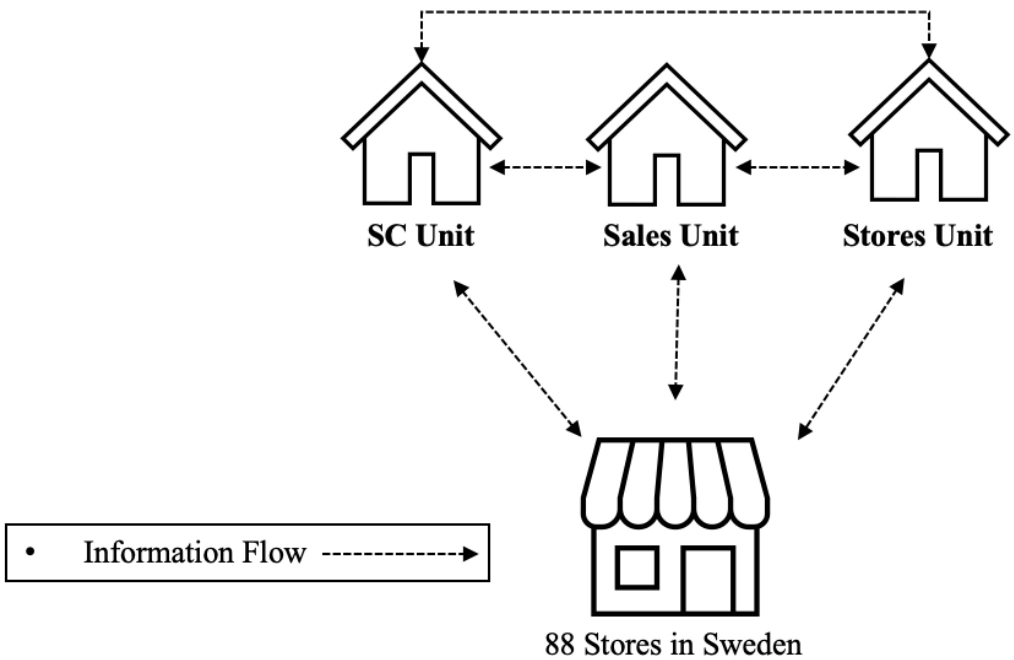

Figure 9. The information flow between the different Units and Stores

4.1.3 The Retailer's Products

As mentioned earlier, The Retailer offers a very broad range of products and product types for their customers. They have products that always must be in the stores such as table linen and batteries in numerous different models. These are important even though the margins might not be high since the customers expect to be able to always buy these in all stores. In addition to this, "high" volume and relatively cheap products as well as more expensive products such as TVs and grills. This mix of expensive and low and high-volume products makes planning a complex task for the SC unit. Furthermore, they have a lot of campaigns and seasonal products, during a campaign or the products season also need to be in the stores and have a very high service level. Some products from Sweden or Europe can have a lead time of one to two days and some products from Asia up to four months. It is therefore hard to control the number of stocks and the planning for the futures and how long the stock will last is very important (Supply Chain Manager 3).

4.1.4 The Retailers Performance measurements

KPIs used by the SC Unit at The Retailer is service level from warehouse to stores, days of stock at the warehouse (i.e., how many days on average the products are in stock) as well as two types of waste: replenishment waste and operational waste. Replenishment waste is related to products being sold at a lower price or products being discarded, operational waste is related to broken products at the warehouse or changing quantities up or down due to stock checking (Analyst Manager). Days of stock is used throughout the SC and show how fast/slow-moving the product is. The service level is mostly used by the SC Unit and shows how well the demand is satisfied (Supply Chain Manager 2). Additionally, they use the value of stock, both on the current stock as well as incoming products to the warehouse. This is compared with estimated sales to see if there are available products to the estimated sales, furthermore, the value of a stock is compared with the service level and days of stock (Supply Chain Manager 1). Furthermore, the Stores are measuring “hål i hyllan”, which explains the number of empty shelves. In addition, The Stores Unit measures improvements, they use measurements related to measuring the rate and amount of improvement proposals. These proposals are often connected to new ways of working or tools to help the stores to work more efficiently. The Stores also use “Nöjd Kund Index” which is a survey sent out to the customers where they answer questions regarding products, service, quality, etc. The Sales Unit uses a measurement called sales frequency which refers to how many of the customers who enter the stores buy something. Furthermore, they use Average Sales per Receipt, and margins, Average Sales per Receipt refers to how much value the sold products have compared to the total value of the receipt and margins, i.e., how much they earn per product.

One KPI that has been brought up and has been under development which also is related to service level is Min.Fill. The idea behind Min.Fill is to reflect the customer’s point of view regarding the service level in the stores and more specifically in the shelves. Min.Fill is a measurement of how many products it should be on the shelves to provide an attractive store for the customers, the value of Min.Fill is the lowest accepted number of products on each shelf. If the number becomes lower than the predetermined value, the “service level” towards the customers becomes lower. In this way, The Retailer can compare the service level towards the stores with the service level towards the customer, to find relations or issues between these. If the service level to the stores is high, and several indications that products are under Min.Fill (meaning there is frequently a too low number of products on the shelves), it will indicate that something in the stores is wrong. A summary of the used measurements are summarized in table 10.

Table 10. Major performance measures used by The Retailer

Unit:	Supply Chain	Sales	Store
Performance Measure:			
Service Level	X		
Days of Stock	X	X	X
Waste	X		
Value of Stock	X		
Estimated Sales	X	X	
Min.Fill	X		X
Average Sales per Receipt		X	
Sales Frequency		X	
Margins		X	
"NKI"			X
"Number of Empty Shelves"			X
"Improvements"			X

4.2 The Design & Usage of the Measurement

The Analytics Manager pinpoints that the measures are designed to create value and should be used throughout the organization. Several performance measures are used but service level is the most usable to reflect the logistics performance. This can be used daily where suppliers can be contacted whereas days of stock can be used during longer time horizons (Supply Chain Manager 1). However, the interviewee notes that the KPIs need to be relevant and be usable throughout the organization, and where more specified ones might increase usability. The KPIs are used to measure past and current performance, but Supply Chain Manager 1 explains that by working with future performance better transparency against stores and the work with store management as well as the Sales Unit would be increased. The current KPIs are commonly used within logistics and are comparable with the ones competitors use, *"it can be concluded that we use standard measurements"* (Supply Chain Manager 2). Furthermore, The KPIs show if the unit does a good job or not, and display where improvements are necessary to increase performance (Supply Chain Manager 2). There is overall no differentiation of products such as ABC classification, the only aspect that differs between products is the forecasting that is based on an earlier demand for specific stores (Stores & Sales Manager 2).

The current KPIs are used to compare time periods on days, weeks, and months, where the numbers can be adjusted depending on events that occur at different time periods (such as holidays or paydays) (Analytics Manager). All the current measurements reflect the past performance and are comparable with the current performance of the SC. Days of stock is measured on a quarterly and yearly (rolling year) basis to react if products are moving faster than planned but can also be used on future measures to look for the ability to meet demand. The measures reflect the future if it is possible, but a lot is compared with historical data (Supply Chain Manager 2). The SC Analytics Unit states that the KPIs have different characteristics and usability depending on the unit of the organization.

The used KPIs match competitors and industry measures, however, the usage and what data they are based on may differ (Analytics Manager). Theoretically, forecasts on sales and incoming products can result in a future service level, but delays can decrease the reliability of this measure (Supply Chain Manager 2). By measuring Min.Fill, measuring will be easier as estimations are not required. Instead, the measure will only show if the products are under, over, or at the specified level (SC Analyst 1). The new measurements are developed by the SC Unit from the beginning to show how they perform to the rest of the organization. But it has its foundation from stockouts in stores. If the service level is measured in a "correct" way it will reflect the whole business, in that way the whole organization can be able to take actions in the right way with the right data as a ground for their decisions (SC Analyst 1).

The Analytics Manager also states that there is always a balance in what value the measurements should have to avoid the measurements to conflict with each other. Furthermore, this balance of the measurements is the hardest part to find since there are a lot of aspects behind all the measures. The current performance measures have a conflicting design, Supply Chain Manager 1 states that there needs to be a conflict to perform in the best possible way. However, there needs to be a balance between the measures, and suggest that the KPIs can be aggregated to a higher level and then broken down to product level. SC Analyst 2 explains that there is a conflict between days of stock and sales, as stocks at the warehouse can be higher or lower than forecasted sales due to other disturbances in the SC, such as suppliers changing their available demand, late information from the Sales Unit, or other aspects out of their control.

Supply Chain Manager 2 states that the internal measurements reflect the situation within the SC Unit but are not used widely throughout the organization, measurements are used to compare the stock towards what the Sales Unit has forecasted to sell. The KPIs are good and usable if they are defined and explained throughout the organization because it creates clarity and incentives for improvements to increase internal motivation and as a result create a higher customer value (Stores & Sales Manager 2).

The Sales Unit compares sales between weeks and plans sales three months ahead, which is a normal time span to compare. The current KPIs match the culture of the organization and the industry they work in. However, alternative performance measures are required since this would increase competitiveness and the development of the industry. Current KPIs help with continuous improvements connected to the effectiveness of processes and improved organizational performance to save costs and increased sales (Stores & Sales Manager 1). Stores & Sales Manager 1 plan twelve months ahead of the current year, which in return is broken down into months and weeks based on historical data and assumptions. As they plan on a long horizon, they are slow-moving to changes in market demands (Supply Chain Manager 3).

4.2.1 Issues Related to the Design & Usage of the Measurements

Supply Chain Manager 1 explains an issue related to the structure of the measurements, as they are not described well enough, and it is up to the user how they interpret what is described by the KPI. Additionally, some KPIs reflect time periods that are not useful for the purpose they are supposed to. Stores & Sales Manager 1 discusses that since the retail industry is a fast-moving business, they must be quicker in decisions and more resilient in order to take actions to fluctuations in demand quicker. Furthermore, a lot of the forecasting or actions in unforeseen situations are done by assumptions and historical data which might not be accurate for the future (Stores & Sales Manager 1).

When The Retailer looks at the incoming value of goods, the value can be misleading as the period of the total amount of incoming goods often is on a yearly basis. However, as the period that is examined has a shorter timeframe, the incoming goods seem to cover more demand than it will do (Supply Chain Manager 1). Connected to this issue, The Analytics Manager points out that the data needs to be detailed and measurable. Supply Chain Manager 3 explains that to streamline the processes and provide the customer with products at the right time at the right place, new measurements have been developed but not yet implemented. These are a theoretical service level, and Min.Fill. Theoretical service level measures if there was an order they could not deliver and compare to the estimated sales. The difference between the estimated sales and the "not delivered orders" is calculated as "Estimated loss of sales". The SC Unit thinks this works well but it is not integrated and established with sales and stores. The idea with Min.Fill is to get a measurement of how many products should be on the shelves and still look good from a customer's point of view. There are some issues here to find the right parameters of the lowest value since the stores and SC Unit have different views here (Supply Chain Manager 3).

High days of stock decreases margins as these ties up capital and take a lot of space at the warehouse, leading to longer distance to pack products in the warehouse and increased handling times (Analytics Manager). *"Before the implementation of the new ordering and distribution IT system the focus was to buy products at the best price possible and not the right number of products which resulted in very high tied-up capital and high days of stock"* (Supply Chain Manager 3). Nowadays the "Days of stock" has become more important since products in the warehouse cost money as well. This transition has become an issue since stores nowadays think they have a low flow of products to the stores and not enough in stock (Supply Chain Manager 3). *"A low service level shows that there is a demand we cannot supply for and a possibility of losing sales, however, this does not reflect the view for the customer"* (Supply Chain Manager 1). Supply Chain Manager 1 also states that this is important for the SC Unit, but emphasizes the importance for the entire organization.

Locally, campaigns are followed up and compared with the estimated sales. However, these are followed up on but nothing they measure, and this is not discussed with the Stores Unit and Sales Unit. Supply Chain Manager 2's opinion is that this would help the organization to improve. According to Supply Chain Manager 3, shortage orders have become an issue today since the system, in that case, makes the value zero, as this leads to a better service level from the date but does not mirror the reality. These shortages are accumulated in the system which means they need to have tools to make it up "solidarisk bisthantering" which means that the stores cannot order these products, instead, the SC Unit will deliver a smaller number of products to all stores to have some products on the shelves (Supply Chain Manager 3).

Regarding the elements of the KPIs (external, internal, financial, and non-financial) there are a lot of different views. According to Supply Chain Manager 3, the current KPIs cover the elements of internal, external, financial, and non-financial. However, the current KPIs do not cover the availability of products at the stores, i.e., the customers' perspective at the stores (Supply Chain Manager 3). SC Analyst 2 also thinks all the elements are covered but points out that from the beginning the KPI can have a view but at the end will have a financial perspective. SC Analyst 1's view of the current performance measures is that they do not reflect the appropriate elements. A lot of attention is put on internal processes and ways of working, externally, on the other hand, is measured if The Retailer increases their market share or grows with the market. The external element is more discussed with top management rather than further down in the organization, though some information can be distributed down the organization. Financial and non-financial elements are better covered according to SC Analyst 1, however the KPIs mirror the financial elements better. According to Supply Chain Manager 1, the SC Unit's current KPIs have a limited view of financials and non-financial elements but relate to the internal and external elements of the organization. Supply Chain Manager 2 also thinks that not all aspects of financial, non-financial, external, and internal elements of measurements are taken into consideration, they do not talk about "loss of sales" in money, which are the "real" service level since they products in stores are the once that are generating money and sell not the products "delivered" to the stores (Supply Chain Manager 2).

When designing the new system, the Store Strategy & Innovation Manager's opinion is that there was a lack of involvement of persons with knowledge from the stores' perspective. Instead, there was a high degree of "technical persons" which has resulted in the system being less anchored to reality. An outcome of this was that during the implementation there were a lot of conflicts between units, where a common perception of what should be delivered was missing. For example, during the development of Min.Fill the involvement from the different units was low, it comes from a directive from managers that we have a problem with the service level, and the interviewee was the one that came up with potential solutions (SC Analyst 1). There was very little communication between units on what should be measured and how to measure it. To further improve the measurements, the frequency of how often it is measured can be considered, *"should it be measured once an hour, week, or day?"* to mirror reality as much as possible (SC Analyst 1).

The Store Strategy & Innovation Manager thinks that more anchoring to reality is needed, where too much focus is put on theory instead of what is important, increased customer value and profitability. The interviewee explains that the SC Unit requires high profitability and reduced stock. Where the question is what is profitable, as well filled shelves will increase sales (Store Strategy & Innovation Manager). SC Analyst 1 explains that the customers have their expectations of the stores, and it is important for the organization to consider this in the design of the measurements since one segment of products that are lagging and causing stockouts can affect the customer experience negatively. Stores are measuring "hål i hyllan" (number of empty shelves) but the SC Unit does not consider for example how many shelves there is of a product, just the value of stock and the stores have a hard time showing that more product together with organized and well-prepared shelves will sell more, leading to stores thinking the flow of products is too low (Stores & Sales Manager 1). After the implementation of the new software, The Store Strategy & Innovation Manager thinks that the perspective of the stores is missing. As the current way does not reflect how a good store should look for the customer to feel attracted to buy products. Additionally, The Retailer does not measure perfect order, i.e., what the stores orders/needs. Which can be misleading for the result of the performance measures (Analytics Manager).

SC Analyst 1 suggests that "Conflicts" between KPIs are necessary to find a balance between for example "days of stock" and "service level". The issue is to find this balance which is hard if the units are too focused on their "own" KPIs and they only measure for each other. It is important to implement more cross-functionality to see the "bigger picture" and the aggregated result of the organization's measurements. By a broader picture and understanding of the different units and what they are measuring the organization can stop working in silos and understand how to work to benefit all units, *"therefore a measurement system that shows the "bigger picture" should be of a high value to the organization"* (SC Analyst 1).

The current way of measuring service level does not reflect how the organization performs, as products at the warehouse can be out of stock but the stores are filled with the same product. Additionally, products with seasonality and with long-term shortages are not measured, resulting in the measurement not reflecting reality. Furthermore, "*the* *people measured have the possibility to set the reason why the product is out of stock, meaning that the user can influence the measure to their advantage"* (SC Analyst 1). Measuring the service level from the warehouse does not reflect what should be done at the organization (SC Analyst 1), measuring closer to the consumer would give indications of what should be done and enhanced. Measuring holistically, would increase the possibilities for the organization to easier reach the targets of what should be done (SC Analyst 1). The KPIs need to be usable and addressed in different ways depending on what products are looked at, where margins differ as well as the turnover rate. The targeted values are distributed from top management with a holistic view, which is negatively according to SC Analyst 1. The interviewee suggests that the targets should be based on a lower level on products or product segments due to the earlier mentioned aspect that product characteristics differ a lot.

To achieve a good service level both to the stores but also to the customers, "days of stock" needs to be broken down into "days of stock" for each store since this will be more accurate since the demand varies much from store to store (Supply Chain Manager 2). The reduction in "days of stock" has led to stores think they have a too low number of products in stores, this creates incentives for manual orders (the stores' order product to the stores from the warehouse, instead of the SC Unit distributing from the warehouse to the store) which creates a sub-optimization of the flow of products since the manual orders disrupt the planned flow of products from the SC Unit this will affect the measurements negatively and will make them more inaccurate. As an example, *"if stores recognize that a shortage might occur, they create a manual order to provide themselves with products, which creates an uneven distribution of products between stores and causes problems for other stores"* (Supply Chain Manager 2).

If the service level is measured more accurately and trust throughout the organizations is achieved, it is easier to mirror the sales from stores to the service level and compare these and how they are linked (Stores & Sales Manager 2). Stores & Sales Manager 2 also argue that service level, if measured accurately, can help in their work since they know if they can have campaigns or have the products exposed on several locations in the store.

4.3 The Measurement's Relation to Goals and Strategy

The Analytics Manager states that the measurements create incentives to work towards goals, and the KPI can be used as a guide to proceed forward in the right direction. In addition, the KPIs are a helpful tool to find obstacles and reasons behind goals that are not fulfilled. To create goals to achieve for specific performance measures, the data must be detailed and measurable. Otherwise, the value of the data has no meaning to The Retailer since it can mislead the user and be used in the wrong environment showing inaccurate results (Analytics Manager). Furthermore, a good value of the KPIs creates time for more value-adding activities to develop their business for the future to be even more competitive.

The service level used today has its foundations within the SC Unit and The Retailer's current goal is 90 percent, based on a historically lower level of service level (Analytics Manager). The current KPIs have been used by The Retailer since *"the beginning of time",* and match the organizational goals and strategy, and Supply Chain Manager 1 declares that the discussed topics at the organization are measured. Additionally, the interviewee explains the goals must be realistic and then be iteratively increased over time to improve the operations and processes.

Used KPIs are service level, days of stock but also looking at lost sales, and Min.Fill. These support personnel in decisions and show how to act to succeed with the organization's goals. These are based on the values of The Retailer and can be compared to general KPIs within the industry. The Stores Unit also states that they do not consider competitors. Instead, they work towards their own goals and strategy to develop their company to serve all customers under one roof. Such as discussing how to solve issues related to product availability both from stock as well as from suppliers. If the value of a KPI is not at a satisfactory level and not aligned with the strategy, indications of where in the SC the problem is located, and this is communicated to other units of the organization (Stores & Sales Manager 1).

The Analytics Manager states that the current KPIs relate to both the organization's goals and strategy in terms of both financial and non-financial performance. Where service level relates to having goods in stock to satisfy the customer, even though this does not mean increased sales. And where waste and days of stock relates to the profitability of The Retailer. The measures are distributed to the organization depending on the goal and who is measured, service level however is distributed throughout the organization where the Sales Unit and SC Unit use it the most (Analytics Manager). Vertically and higher up in the organization, discussions about monetary values are common (Supply Chain Manager 3). Supply Chain Manager 1 explains that by having the right KPIs the organization can work in the right way if processes are aligned with them, as they will show what is good and bad. Pointed out during the interview was also the fact that a balanced combination of performance measures would result in more perspectives and increased usability. The importance of communication is described by SC Analyst 2 as the SC Unit is the link between the Purchasing department and Sales Unit. *"By using different KPIs the communication would be improved, and the overall performance of the SC would improve"* (SC Analyst 2).

Current KPIs are connected to maintain and grow sales (Supply Chain Manager 3). The service level is used to provide a good service level in stores which in return creates a good service level (customer service) to the customers and to follow up on the customer service and service level in stores, *"they have to be measured"* (Stores & Sales Manager 1).

4.3.1 Issues Related to The Measurement´s Relation to Goals and Strategy

The Analytics Manager states that there need to be goals to the KPI to know what to strive for and has a suspicion of basing these on historical levels. According to Supply Chain Manager 2, there is too much focus to decrease the "days of stock" today, which creates a negative spiral that can lead to a decrease in service level since unforeseen events always will occur. By working towards forecasts, the focus on reducing "days of stock" would instead be compared to "loss of sales" if there is a stock out. Meaning sometimes it is better to have higher "days of stock" to always have products in the stores to sell (Supply Chain Manager 2). In addition, Supply Chain Manager 1 describes that the current measures do not match the organizational culture, as there is a gap between the units in the perception of what is seen from the Sales Unit and the Logistic Units. Supply Chain Manager 1 states that no measurement represents both perspectives.

Supply Chain Manager 2 states that the SC Unit cannot present numbers and results as the Sales Unit can, they can present sales numbers and other measurements for all units in the organization to show how they perform. This is something the SC Unit strives to achieve; they point out that a collaboration between both the Purchasing department and the Sales Units is necessary. According to SC Analyst 1, the integration of the measurements throughout the organization is an issue today since not everyone understands the measurements which creates silos between units. This also has its origins in that the different units are measured separately, and they have their "own" measurements. *"Each unit has relatively clear goals, but the numbers do not connect between units, they are just transferred vertically within that unit. Therefore, cross-functional cooperation has to be considered more and implemented in the organization"* (SC Analyst 1).

The Retailer only uses differentiation of products when they measure days of stock, where they use lead time from the manufacturer. However, when measuring service level, no differentiation is done (Supply Chain Manager 1), which Supply Chain Manager 1 thinks would be beneficial to increase the service level. Suggested from Supply Chain Manager 1 is to look at product categories or segments to catch seasonality, and if possible, at the product level as some products impact sales more than others (where the interviewee explains the difference between uncommon sizes of sock vs. the common size).

The understanding between stores and SC Unit is an issue since the SC Unit thinks that it is possible to sell with a lower stock value, on the other hand, the stores put a lot of effort into the visible picture in the stores which requires higher stock levels as they argue this will sell more (Stores & Sales Manager 1; Store Strategy & Innovation Manager; Stores & Sales Manager 2). Due to the lower stock levels, store personnel have to change a lot of their work in order to make the shelves look good all the time, and a lot of time is spent on non-value-added activities since the measurements are inaccurate and manual orders have to be done (Stores & Sales Manager 1). According to The Stores & Sales Manager 1, the trust from the store's perspective for the service level is low and the store managers think that the numbers are adjusted to look better than the reality. The goal is to always have products in the store since the goal always is to sell.

With better trust and understanding of the measurements, the number of manual orders will decrease and the link between stores and warehouses becomes better. Since the service level helps to increase the customer experience since the service level to store actually will mirror what the customers see, and a high service level, in that case, will make the experience better since the shelves have a sufficient number of products to look good which increase the possibility to sell more (Head of SC; Supply Chain Manager 2; Supply Chain Manager 3). The issue today is that personnel within the stores think 100 percent service level is good which is not reasonable but must be communicated from the SC Unit to create an understanding. Otherwise, the organization has a clear message for what a good value is and there is an acceptable level for deviations. During a campaign, the service level must be 100 percent but on for example a dish-brush, the service level is accepted to be lower (Stores & Sales Manager 1).

4.4 Evaluation of the Measurements

The evaluation of measurements is an ongoing process, especially for service-level where the data is analyzed over a period of time to detect issues connected to the measurements. Furthermore, the data and possible issues are in return used to improve the operations by redefining processes or reevaluate the measurements (Analytics Manager). The evaluation process is also used to take action to improve the current business and operations. Overall, the value and what defines a good value varies depending on as mentioned earlier the range of different products since the differences between lead times between products are long.

Within the Sales Unit, the evaluation process is built on that one specific store is only compared to itself since all stores have different prerequisites, to find out their performance to develop specific stores further. The evaluation is not done on a store level to compare different stores. In addition, understanding of different demands in different regions is taken into consideration, but this is already done in an early stage when the forecasting is done. The Sales Unit only evaluates its measures and KPIs such as sales and comparison from earlier years or periods to improve and attract more customers. Generally, information about what a good value is well distributed throughout the organization, but individuals might have different views of what is a good value. On some occasions, there are different acceptance of values as seasonal products and campaigns are of high importance for The Retailer to serve high customer value (Stores & Sales Manager 1).

Current measurements are used to evaluate the level of stock and to create a “healthy level” for the organization. In addition, it is used to evaluate if a campaign is possible to fulfill to provide all stores with products. “*Is the flow of products sufficient?”* and *“can we provide stores with all they need?”* are questions The Retailers ask during this evaluation. According to SC Analyst 2, KPIs also have a key role because the analysis could revise information regarding peaks or decrease in demand to take actions from, maybe correct orders from suppliers to match the current situation better. To have the right products at the right location at the right time. This will also be an incentive for actions in the form of layout of the stores, to adjust the layout after the products that are selling in high volumes in specific stores will help supply planners to delegate the stock more accurately (SC Analyst 2). SC Analyst 1 also states that overall, *“the KPIs are a tool to improve the organization and measure these improvements over time. The KPIs should be connected to the issues to be able to pinpoint the issue and take action to improve the business and solve the issues”.*

SC Analyst 1 explains that an important part of daily work is to look at the measures in the right way to take appropriate actions. Measuring KPIs is a continuous work, and the organization should not be satisfied by reaching a goal, instead, the organization should raise their ambitions to continue improving according to the interviewee. SC Analyst 1 also points out that to evaluate improvements of the organization the KPIs should be designed to answer this as well if, for example, the service level has increased for a specific product segment, which will mean that this part of the business has been improved from the last period. Additionally, SC Analyst 1 explains that it is extremely hard to put a number and a goal of KPIs, since it might reduce the motivation for improvement if the goal is achieved, the goal should instead be updated to improve the processes and organization incrementally. The target number should also be realistic since it creates motivation and engagement of employees (SC Analyst 1).

The evaluation is done in several time horizons according to Supply Chain Manager 1. The Store Strategy & Innovation Manager explains that measures are compared against previous years, and daily. The last year is compared with the current year’s performance. The organizational targets (OT) reflect a time perspective of future performance three years ahead, which is broken down into months and weeks. The OT is for instance measured in sales, the number of sales, sales in specific locations at the stores (Store Strategy & Innovation Manager). Days of stock is broken down on product segment and on product group, where the SC Unit distributes reports to the organization. Where daily reports are sent out describing days of stock, service level, safety stock as well as the incoming value of the stock. Weekly reports are sent out describing how well the organization performs according to service level and where shortages have and will emerge. Every month, the SC Unit, sales, stores as well as the Procurement department discusses the performance of the past month and what the focus should be in the coming month (Supply Chain Manager 2).

4.4.1 Issues Regarding Evaluation of the Measurement

Settings in the article register offer stores to order products that are not available due to stockouts or that the product is terminated, which affects the service level negatively (Supply Chain Manager 2). Since they do not have any current measurements for the stores it is hard to evaluate if the organization perform better and to take actions to improve their current processes, today a lot of decisions are taken from gut feeling and experience which is not sustainable over a long period (Supply Chain Manager 2). In addition, Supply Chain Manager 3 mentions that overall, it is hard to evaluate the performance today since they do not have any good measurements, but the days of stock have a decided upper limit that is rolling over one year. The Analytics Manager points out that calculating shortages can be questionable as these emerge regularly depending on how often the stores get their deliveries.

Stores & Sales Manager 2 states that since the service level is not measured it is hard to know what a good result is. On the other hand, good measurements, and communications of days of stock and service level can help with the sales management, since they can make sure to have products in stock and products for safety stocks in case of an increase in demand during shorter periods (Stores & sales manager 2). Stores & sales manager 1 also explains the hard task of deciding what to measure. It is a conclusion of the issue today for the stores and connects the measurements to what unit within the company should perform, due to the different measures. If numbers are adjusted to look better than they are, it creates trust issues and conflicts between units, instead, it is important to create a broader understanding of the measurements to create better links between the units (Stores & Sales Manager 1). Furthermore, Supply Chain Manager 2 mentions issues regarding relationships to supplies and what actions to take if they do not deliver according to the agreement, it must be a clear direction from the organization on what to do. Furthermore, some relationships with suppliers need to be stronger and more managed to secure demand more accurately.

Current measurements are not presented daily, but they are designed to benefit their current processes and vice versa, the processes are designed to fulfill the goals of the KPIs (SC Analyst 1). This means that the KPIs do not reflect the current problems, and it is, therefore, hard to know where to take action to solve issues. Overall, The Retailer does not work in the future of their current measurements; they are compared from past periods but in the Software system. The Retailer is trying to investigate the future to see coming deficits (Supply Chain Manager 2). By working more with the future, they can work towards the forecasted sales and by that increase the transparency between warehouse and stores, work together with sales and stores managers, and work proactively if some products will be out of stock and create actions to solve it.

According to Supply Chain Manager 2, there is an issue in the process of sorting and choosing data since the amount of data is very large and The Retailer has not found a solution for “what we want to measure”. This becomes an issue since they are not able to create the right measurements or present the data in a way to be understandable to act from. SC Analyst 2 explains that by having all the historical data, forecasts on future demand and available stock can be done and compared to other time periods. However, SC Analyst 2 points out the importance of keeping in mind why the results between periods are different, as holidays might differ or that available stock during that time was different. Something that The Retailer currently does not have a solution for. Looking at historical data can also be wrong according to SC Analyst 2, as there are a lot of external circumstances that will affect the outcome. Instead, the cause of why the outcome is different should be considered according to the interviewee.

It can be concluded that the interviewed personnel at The Retailer have different views regarding what is a good value or not. What is good or bad regarding performance is something that employees of The Retailer do not know according to SC Analyst 2; this is more up to personal perceptions. The perception depends on which unit the employee works within (SC Analyst 2; Supply Chain Manager 2; Stores & Sales Manager 1). The Store Strategy & Innovation Manager also agrees that the interpretation of what is a good value or not differs between units and a lack of common understanding occurs regularly. The targeted values of the service level can seem to be old and not changed in a long time (Supply Chain Manager 1). One interviewee also explains that one value for the entire product line can be wrong as some products are more important than others. Though, new goals for days of stock are evaluated each year, where the SC Unit looks at sales, service levels, and which products are bought often to find an appropriate value (Supply Chain Manager 1). As mentioned earlier The Retailer needs to offer the customer a store filled with products, to offer a high customer value. The Store Strategy & Innovation Manager explains that there is a challenge to measure an overall service level, as products have unequal importance for the company. Where some products should always be in stock, and some are less important but can have higher importance during a campaign.

Measuring service level in ordinary shelves works well for The Retailer, the Store Strategy & Innovation Manager points out that the temporary shelf and displays lack a good measure to see service level. Sometimes these can look empty and give the customer a poor impression. This is due to the fact that these displays have a larger capacity than the estimated sales. Therefore, there needs to be a balance between service level and profitability, where the Store Strategy & Innovation Manager suggests finding an appropriate level in the stores to keep being profitable. With the current software system, there is a conflict between what the system thinks is a good amount of stock and what is an appropriate amount for the stores. Therefore, the interviewee points out that there is a need for a measurement that reflects both perspectives.

According to Supply Chain Manager 3, Min.Fill shows how many products that should be on the shelves to sell from a customer point of view. If the value falls short of the predetermined number the value of Min.Fill becomes zero, this means that they can follow the value over time to see how many times they do not provide the stores with the right number of products or how many times they have late deliveries meaning they can see the overall performance towards the customers (Supply Chain Manager 3). Supply Chain Manager 3 also explains that the new measurements and the service level, in general, the "good" values are not decided since they have technical issues and not implemented the measurements yet and if they should separate the measurements into "to the stores" and "to the customers" and if there are a different between these. Furthermore, Supply Chain Manager 3 states that even though the service level is high the stores can have complaints, and therefore the Min.Fill becomes important to see how well-filled the shelves are. The target values of this measurement must be decided cross-functional throughout the organization to find the best possible value and to give understanding to all involved parts.

4.5 Communication & Issues Regarding Communication within the Organization

From the interviews, it can be concluded that The Retailer has problems with communication regarding measurements between units. Where the units use different measures, and the common measures are poorly defined, and a lack of understanding is common. Sometimes, according to SC Analyst 2, too much focus is put on specific measures, which the interviewee thinks is negative. *"As the measures have unequal importance between the units, a better understanding of how the measures are interrelated is required"* (SC Analyst 2). According to Supply Chain Manager 3, there are also issues regarding understanding between units for campaigns, they are planned from the Sales Unit but not communicated to the SC Unit early enough to cover for the lead time to buy in the right number of products, meaning they do not have products to cover the whole campaign period. If it is a campaign for a new product the sourcing of suppliers takes time as well, which does not need to be considered by the Sales Unit (Supply Chain Manager 3).

"*The measures are not well communicated horizontally or vertically, and a lot more can be done to increase this"* (Store Strategy & Innovation Manager). Where the interviewee points out that more cross-functional work needs to be done. Depending on what forum discussions occur, comprehension differs but can be better as units use different measures and the units do not understand how they are affected. The Store Strategy & Innovation Manager also explains that managers can have a better understanding but at the operational level, there is a lack of understanding. The Store Strategy & Innovation Manager points out the importance of an understanding across units at The Retailer, something that is missing today. A better understanding of how the system is connected and how decisions at one unit affect others (Store Strategy & Innovation Manager). *"Stores experience that the measurements are not integrated horizontally throughout the organization which creates misunderstandings between SC and stores"* (Stores & Sales Manager 1).

Currently, orders from stores accumulate if products are not available in the warehouse, as mentioned above. As a consequence, the need for the product looks larger than the actual need. This, according to Supply Chain Manager 1 results in a miscommunication issue as the availability of the product can sustain for longer periods. *"By having this problem, the reality is not presented properly, and a lot of time is put into solving operational tasks that should not be a problem"* (Supply Chain Manager 1). Another common problem according to SC Analyst 2 is manual orders from stores and that orders from suppliers are changed. Where The Retailer does not have information of why orders from suppliers are changed as this information is not available in the system, instead, this information originated from the user (SC Analyst 2).

Stores & Sales Manager 2 tells that the KPIs communicated from the SC Unit are not always clear what they should reflect and what the use of them could be, it must be more specific about what the value reflects, and the measurements must be more defined what they measure and why. The Sales Unit uses a range of KPIs related to sales out of the stores, where the Stores & Sales Manager 2 mentions sales frequency, average sales per receipt, and margins. By simplicity and better descriptions of KPIs, improvements throughout the organization are possible and a better understanding of how KPIs are related. As of now, there is some suspiciousness of what is mirrored in the stores and if this is a true value, where Stores & Sales Manager 2 thinks that clarification can increase trustworthiness.

Stores & Sales Manager 1 also states that there is a trust issue related to the service level and the performance of this as well as an understanding of what the KPIs mean. This would help to engage the SC Unit and Business Management Unit. With an understanding of service level and days of stock, problems related to products would be understood and effectivization's can be made in the stores and a different way of working being applied (Stores & Sales Manager 1).

According to the Stores & Sales Manager 2, a problem is that the value and goals of the measurements, especially service level and days of stock are not communicated out throughout the organization if the service level is measured more accurate it is possible to use it to create higher customer value since it is easier to plan campaigns and layouts in the store to sell more and have shelves with sufficient amount of products

4.6 Summary of Issues Within the different Organizational Units

Generally, at The Retailer, too much focus is put on specific measures, both within the organization overall as well as within the different units. This affects the organization negatively as this leads to isolated islands and sub optimizations. In addition to this, a common understanding of what the measures reflect and are interrelated to each other is missing, which adds complexity to the above-mentioned problem. As an understanding of the interrelations is missing, integration both horizontally and vertically is lacking. By having more cross-functional work, planning campaigns, stock, sales, and stores would be enhanced. Related to this is the concern that measures have unequal importance between the units, increasing the sub optimizations. Where an understanding of the interrelations would help the communication between the units and in the end, help the organization succeed. By understanding how, why, and what the measurements do for the organization. The value of the measures is also poorly communicated, both within units and between the units. Hence, the target values of measurements must be decided cross-functional throughout the organization to find the best possible value and to give understanding to all involved parts.

When designing the new system, the SC Analytics Unit more or less designed it by themselves, with a lack of involvement from persons with experience and knowledge from the store perspective. Which can be related to isolated islands, bad communication, and a lack of cross-functional work throughout the organization. The current measures don't reflect future performance. However, by working more proactively, The Retailer can work towards the forecasted sales and by that increase the transparency between warehouse and stores, work together with sales and stores managers, and work proactively if some products will be out of stock and create a plan to solve it. A list of the essential issues is summarized in table 11.

4.6.1 Essential Issues Regarding Measurement's Relation to Design & Usage, Goals & Strategy, and Evaluation within the SC Unit

Since the service level has its foundation and is measured by the SC unit, it has also become their biggest concern to find a solution. Today the biggest issue is how to reflect the customers' point of view (i.e., Theoretical service level) and how they experience the service level in stores and not only measuring the service level to the stores. The main issue regarding the theoretical service level is to find how they can measure this, what types of measures to use, and parameters winning the measures to reflect the reality in the stores. Today's measures do not cover the availability in stores, i.e., the customers' perspective at the stores, the number of products on the shelves to look attractive for the customers is related to sell more and therefore has become an important aspect to consider when designing measures. The availability of stock in stores is another issue that is not taken into consideration, when the products have been delivered the SC unit more or less leaves the responsibility to the stores. This becomes an issue since they do not know whether the products are on the shelves or in the warehouse in stores. By capturing the customers' point of view and measuring the service level on the shelves they can pinpoint where the issue has their foundation if they have delivered a sufficient number of products to the stores, but the shelves are empty, something in the store's processes are wrong and vice versa.

What is a good value? This is something that is a big issue throughout the whole organization, the values and what they strive for are not communicated in a language for all units to understand, units do not know how they can use each other's measurements or what they mean. The value needs to be explained throughout the organization to explain why it is measured, how it is measured, potential benefits for the organization, and how it affects other units.

Shortage orders is also a big issue today, mainly because of the IT system that handles the orders from the stores. If a product is out of stock in the warehouse, the system will change the order of the product to zero, which is not mirroring the reality since it will make the service level higher. This problem becomes a bigger issue since the orders of products that are not available accumulate, resulting in the shortages looking larger than the actual need.

Differentiation is also mentioned a lot since today when measuring service level, no differentiation between products or product segments are used, this becomes an issue since it is hard to control and know which products or product segments perform badly in terms of service level, which makes it hard to find a solution to this issue. Furthermore, supplier relationships seem to be an issue as well, there are no clear protocols to follow if the suppliers do not follow their terms or do not deliver on time. In addition, the overall supplier relationship management seems to get too little attention within the organization.

4.6.2 Essential Issues Regarding Measurement's Relation to Design & Usage, Goals & Strategy, and Evaluation within the Sales Unit

Just as explained at the beginning of this chapter, the Sales Unit's measures don't reflect the future. Forecasting, actions, and decisions are based on previous periods and assumptions instead. The Sales Unit plans campaigns, sales, and other events without involvement from the SC Unit. The understanding and cooperation between the units are discussed during several interviews and an understanding of how the SC Unit work is missing. The SC Unit explains that a better understanding from the Sales Unit of how they work and contextual factors with products such as lead time, product and supplier sourcing, product availability, etc. would facilitate both unit's everyday work.

4.6.3 Essential Issues Regarding Measurement's Relation to Design & Usage, Goals & Strategy, and Evaluation within the Stores Unit

Manual orders affect the whole organization, the issue originates from the stores as they order products to secure the availability of products. The problem emerges regularly as the stores feel that there are too few products on the shelves, as well as during campaigns and when stock in the warehouse is at lower levels. Several of the interviewees think that the number of manual orders has increased since the implementation of the new systems. This might be due to the decreased amount of products per delivery, where the SC Unit tries to lower the level of products in the stores, to reduce days of stock and stock when the product is terminated, to reduce the cost of handling and storing products. From a store perspective, an understanding is necessary to trust the new process, which would decrease the manual orders and stop sub-optimizing between stores. With a common understanding with the Sales Unit, the process of finding replacement products and reorganization of the stores can be improved, which also would help the SC Unit if issues regarding the original product arise.

Table 11. Summary of essential issues at The Retailer.

Unit:	Supply Chain	Sales	Stores
Issue:			
Communication	X	X	X
Cross-Functionality	X	X	X
Categorization of Measurements	X	X	X
Proactiveness	X	X	X
“Customer Perspective”	X		
Stock in Store	X		
What is a Good Value?	X	X	X
Manual Orders	X		X
Planning	X	X	
Days of Stock	X		X

5. DISCUSSION

This chapter will discuss the major barriers and important factors highlighted from the case study and the literature. The discussed aspects are the major factors when determining performance measurements and designing a performance measurements system. to achieve a retail company’s goal, strategy, and visions.

5.1 Organizational Goals, Strategy, and Visions Relation to Performance Measurements

As The Retailer wants to be competitive and a leader of the retailing market, they need to be more adaptive and agile in their work, where they need to be better at finding new trends and put more effort into their proactive work. As Andand and Grover (2015) describe the competition within retailing has changed focus from a product view towards an SCM perspective, which means that organizations must be adaptive and responsive to quickly react to changes in demand of the quickly changing consumer market.

From the Empirical finding, it can be concluded that The Retailer has a Need-based strategic positioning since they want to serve several customer segments with their broad range of product offerings which differ from the closest competitors. This is beneficial since they increase the opportunity to attract several customer segments, but on the other hand, it can be costly since Porter, (1996) describes that this is most economically beneficial if the organization can produce its product with the use of a distinctive set of activities. To achieve a strategic positioning, it is required to do trade-offs (Porter, 1996). Since The Retailer offers products from several segments but also several types of the same products within the segment, by focusing more on this trade-off, they might achieve better strategic positioning and achieve a sustainable advantage over its competitors. As the essence of strategy is concluded by Porter (1996) as “what not to do” and purposefully limit the offerings The Retailer must carefully consider if it’s necessary to offer the same product in several models. From the empirical data, an issue regarding this was pointed out since their SKUs have increased rapidly over the years. In addition, they do not know exactly how many SKUs they have at the moment, and no data if they must keep all or phase out some non-valuable items, which they do not have a clear plan for.

As The Retailer today struggles to measure the service level accurately, both the general defined and the theoretical service level (i.e., customers perspective), they might not have adapted the SC view completely. From the empirical findings, it can be concluded that there is a lack of supplier management and clear plans for actions to manage relationships and issues with its suppliers. As Zentes et al., (2012) mention, it is important to manage relationships and have greater collaboration and visibility between all actors in the organization’s SC. This includes relationships with partners as well as performance measures to succeed with the SCM and be more responsive and adaptive.

To succeed with the SCM and to manage the relationships with actors in the SC as well as internal relationships, communication- and/or information exchange are very important aspects (Zentes et al., 2012; Ho et al., 2000; Downs & Adrian, 2004).

To adapt to quick changes in demand and to provide the stores with a high service level, information about supply, demand, inventories, and the price is important. From the empirical findings, it is concluded that The Retailer has little cross-functionality regarding supplier and supply issues which decreases the overall understanding from the rest of the organization if the service level decreases or there is a stock out. Cross-functional and cross-cultural communication will help manage supplier relationships but also create an understanding between units. As Downs & Adrian (2004) mention, carefully managed communication can lead to higher awareness of threats, opportunities, and increase productivity. All these aspects are very relevant for The Retailer to stay competitive, responsive, and adapt to the complex retailing market with the quickly changing consumer market.

As mentioned by Zentes et al., (2012) a holistic view of management and marketing must be done in order to seize opportunities within the market. This requires a very sophisticated form of management and marketing and a clear strategy for how it should be done to achieve the goals and visions of the organization. As The Retailer today has recognized the opportunity for improvements to stay as one of the biggest within their field, they also need a plan for how it should be done. They want to increase customer service and at the same time be profitable, which does not always correspond to each other. With higher customer service, the cost will increase since it often requires a higher stock in stores as well as in the warehouse. The Retailer might therefore consider the trade-off between customer service and cost, either increasing customer service and costs, or reducing customer service and costs. Furthermore, from the empirical data, it will also become a trade-off between sold products and a high service level. In some cases, it is "worth" to lose in sales since the warehouse costs for a product are high. On the other hand, with the right management of the SC and optimization of the flow of products, these goals are achievable since costs in the warehouse will decrease with optimized processes and operations. This requires a clear strategy and measurements to pinpoint issues and potential areas of improvement. As logistics play an important role to achieve high customer service, it also contributes to high costs and the commercial value of the products, the distribution and warehouse operations are key processes to consider. According to Zentes et al., (2012) logistics will help to gain a competitive advantage. On the other hand, this once again requires the management control of the SC (i.e., SCM and logistic leadership).

5.2 Performance Measurement Systems

As performance measurements are vital to measuring performance in an accurate way (Neely et al., 1995), organizations need to put a lot of effort into establishing performance measurement systems that reflect the environment that they act in. The importance of proper measurements cannot be stressed enough, as these are important for everybody in the organization to explain what should be measured and performed to meet expectations (Neely et al., 1997). This is something that The Retailer currently struggles with, at least on an aggregated level. Instead, each unit measures what is important for them and tries to optimize this in their favor, resulting in isolated islands and sub-optimizations. Even an understanding of what some of the performance measures mean and should be used for is missing at The Retailer, which can be related to both issues regarding communication and designing of the measurement.

From the empirical findings, it can be concluded that The Retailer uses a variety of performance measures. However, these are uni-dimensional and promote local optimizations, lack system thinking as well as a balance of financial and non-financial measures, which is common according to Chan and Qi (2003). Neely et al., (1997) also confirm this in their article, as companies commonly use performance measurement systems that are adopted narrowly with one or few dimensions. As these systems generally are arranged with a common set of measures, which is the case at The Retailer, companies should use measures that reflect financially, internal business, customer, and learning perspectives to solve this problem.

In the theoretical frame of reference, several categories and types of performance measures are mentioned. Categories that have been described in the theoretical frame of reference are *result indicators, performance indicators, KRIs* and *KPIs* (Parmenter, 2015), *resource measurement, output measurements*, and *flexibility measurements* (Beamon, 1999), as well as *input measures, output measures,* and *composite measures* (Chan & Qi 2003). From The Retailer's point of view, they use performance measures and do not distinguish between different categories or types of measurements. This can be regarded as a mistake as the characteristics between categories affect the outcome and usage of the measurements. This can also be related to the above-mentioned aspect of having uni-dimensional measures, as organizations need a performance measurement system that covers all aspects that are important for reaching organizational goals and visions. As units at The Retailer measure by themselves, a holistic perspective from a performance measurement system with measures from the different categories might increase cross-functionality for The Retailer. However, each unit should have its measures to secure performance, to show that the performance is at satisfactory levels, but should not result in sub-optimizations. Important to have in mind the "comparability" mentioned by Mentzer and Konrad (1991), where measures might not be usable in all situations or across all units. In order to function properly, modifications might be needed to function well in different situations or units for The Retailer.

Sub-optimizations can also be related to the fact that performance measures can have a behavioral impact on the persons that are being measured, as inappropriate actions can be taken to guarantee positive results on their measures (Mentzer & Konrad 1991). The design of the measurements plays a big role in this, as purpose and frequency need to be carefully considered to avoid dysfunctional behaviors (Neely et al., 1997). This can to some extent be connected to the above-mentioned isolated islands at The Retailer, where personnel execute actions to benefit their unit. It is also brought up during interviews that the measured user can set the reasons for an outcome. Which actually can have a behavioral impact on the user, resulting in an inaccurate performance for the user, unit, and even for The Retailer. The sub-optimization can also be related to a lack of prioritizing measurements, as The Retailer does not prioritize the measurement at the moment. By not having a systematic method for prioritizing measurements, organizational problems emerge in adapting to changing strategic objectives and meeting requirements in dynamic decision-making environments (Cai et al., 2009). By implementing this, The Retailer can reduce sub-optimizations and isolated islands as a common understanding of what the organization wants to achieve and what actions are needed to do so. This will also enhance flexibility and increase the possibilities to act on the changing retail market.

5.2.1 Fixed Measurements and its Implications

Another usual problem is that measures are fixed in situations where flexibility is required, resulting in rewarding inflexible behaviors (Neely et al., 1997). This is currently happening at The Retailer, where the Store Strategy & Innovation Manager describes that the company continues to offer products that are not profitable enough and should be replaced by other products. Additionally, some products and product segments need higher or lower values when measured, such as seasonal products, high turnover rate, or products for campaigns, where more flexible measures might be needed. Having established and unchanged measurements is a common phenomenon even though companies act in changing environments (Cai et al., 2009), which also seems to be the case to The Retailer.

According to Neely et al., (1997), performance measures should be transparent, linked to actions, measures, strategies, as well as calculated properly. From empirical findings, it can be concluded that The Retailer struggles with this to some extent. Where the organization has problems finding the right measures and the fact that personnel within several units do not think measures are connected to strategies. A lack of understanding of what the measures reflect and how to act on the information is also mentioned during interviews.

5.2.2 Defining Performance Measurements Systems and Performance Measurements

The lack of understanding of how to act and what processes to improve can be derived from a poorly defined measurement system that lacks connection to The Retailer's processes (Han & Kang 2007). Difficultness in understanding which business processes influence specific goals and measures is missing at The Retailer. By dividing processes into sub-processes, measurements connected to these can be found (sub-KPIs), resulting in having measurements that can be used at operational, tactical, and strategic positions throughout the organization (Han & Kang 2007). Furthermore, when the sub-KPIs are aggregated to a higher level, prioritization to the measurements can be done to reflect the objectives of the measurement. Hence, weighting the measures of importance will result in a holistic KPI that reflects important processes for the organization (suggestions in section seven). If The Retailer decides to do something similar, understanding of the measurements would be enhanced. Additionally, this would help the organization to improve performance concerning their goals, due to increased understanding and usability as well as holistic measures that reflect important processes at the organization.

The Retailer could also benefit from mapping how the measurements are interrelated, to find correlation and cause-effects. This is an iterative process of high importance for organizations as correlations between measures need to be identified. When this is done, management can design measures that match the organizational goals (Cai et al. 2009). Working with the measurements would be enhanced if The Retailer finds the relationships of the measurements (*parallel, sequential,* or *coupled*) as well as evaluates the measurements by the categories mentioned by Cai et al. (2009) (*resource, output, flexibility, innovativeness,* and *information*). In the end, this would benefit the organization on a holistic level as well as for the employees across the organization. By knowing this, management of the organization can increase the efficiency of measuring and designing processes of daily operations, as knowledge of how actions affect the outcome is brought to light. This will also help employees further down in the organization as an understanding of the relationships between measures and processes could decrease sub-optimizations and isolated islands at The Retailer.

5.2.3 The Evaluation of Performance Measurements to Align with Organizational Strategy

The evaluation of the performance measurements is important, in order to assess if the organization performs at a satisfactory level. Additionally, the performance measures need to reflect the organizational goals and situations, hence benchmarking the industry or competitors might not help to achieve organizational goals and situations. Instead, these should mirror actual demand, CSFs, and be compatible with organizational goals (Mentzer & Konrad 1991). The Retailer is currently improving this connection, where new measurements are designed and implemented. However, the targeted numbers that the measures (old and new ones) are evaluated against lack foundation, where managers from The Retailer have no idea why the targeted numbers are set to the specific level. There are even managers that state that "the targeted numbers seem to be old and should be updated".

Since strategy is an overall focus of an entire organization to set objectives on how to achieve the organizations' goal, in general, it will focus on long-term objectives and not stressing individual processes and activities (Porter, 1996). Since The Retailer is very clearly divided into units, with low involvement between them, it might not be relevant for the SC unit to consider this in their daily work. The empirical data states that the problems lay with the internal activities and processes since they do not know how to measure for example service level and the perceived service by the customers and might not be related to the overall strategy. Since service level is a basic measurement used by most companies within the retail industry, on the other hand, The Retailer is unique due to their broad range of different product segments but also products within specific segments. Hence, their organizational strategy might be relevant, but their internal processes and activities seem to be poorly adapted to their product range.

Performance measurements and their goals are vital to companies within the retailing industry to provide feedback, pinpoint issues, and help the management teams to make strategic decisions (David and Albright, 2004). Hence the determination process of specific measures should be based to achieve the organization's core capabilities and competencies (Chen Et al., 2017). It is therefore crucial for The Retailer to consider their core competencies and capabilities in the development of new performance measurements. As Anand et al. (2015) describe, the core competencies and capabilities are related to a firm's CSF, meaning the cause of a firm's success and the measurements are related to the effects of a firm's actions. For The Retailer, this means that they must consider their cause to their success and what effects their actions will provide to measure their operations sufficiently.

5.3 Cross-Functionality and its Effect on Performance Measurements

From the empirical findings, the development of new performance measurements has been brought up to try to reflect the customer's point of view in stores called theoretical service level in chapter 4. During this process, SC Analyst 1 was in charge of how this could be measured and developed a measurement called Min.Fill, described in chapter 4. As the involvement of the different units was low, the risk is that the measurements are focused in a too narrow way and does not reflect what the overall organization wants to see from the measurements, which Chan and Qi (2003) argue is a common issue when companies determine their performance measurements. Ireland and Crum (2005) argue that cross-functionality is an important aspect for the development and determination process of performance measurements. Since it provides insights from the different units and the organizational understanding of the measurements, and in the end a clearer picture of the overall organizational performance. In addition, decisions made regarding the performance measurements will benefit from cross-functional involvement since it encourages collaboration at functional, operational, and strategic levels and relates the different units and their measurements toward organizational performance measurements. Furthermore, the cross-functional involvement provides to a higher degree a common platform of measurements that can help the organization to find improvement of individual indicators as well as increase the understanding and what the performance of the measurement means for an organization in this case The Retailer (Ireland & Crum, 2005).

From the empirical chapter, it can be concluded that the low integration between the units and its measurements are low which SC manager 1 also thinks is an issue. The organization does not have a common understanding and the units measure separately. As each unit has clear goals and measurements but is not communicated horizontally throughout the organization it is hard to work as one towards organizational goals, and it is especially hard to pinpoint areas of improvement. As the integration of measurements is an issue for the retailer, Cai et al. (2009) suggest a method mentioned in chapter 2 to overcome this. The framework's main aspect is shared information throughout the whole organization to discover relationships between KPIs and to identify improvement strategies.

5.4 Communication and its Relation to Performance Measurements and Organizational Performance

As mentioned earlier the cross-functional integration between units and their activities is an issue at The Retailer. To improve the integration, the above-mentioned framework could be useful but mostly for the integrations of the measurements. A vital part of the framework is understanding and information exchange between the units and therefore communication becomes a keyword for The Retailer. Cross-functional work and integration will only work if the units can understand each other, which the empirical findings conclude that this is not the case. Keyton (2011) defines communication as *"the process of transmitting information and common knowledge between individuals requires an understanding of the information and knowledge as a result otherwise there is no communication"*, it is possible to argue that issues regarding performance measurements lack communication since there is no understanding of the measurements and their implications for the organization between units.

Since The Retailer has clear units with clear responsibilities the communication plays a major role in the achievement of goals, strategies, and visions for the organization. Besides, simplifying the choice of measurements can also lead to higher awareness of threats and opportunities. On the other hand, to benefit from the increased communication, The Retailer needs to create strong relationships between the units, promote strong business objectives, and put a strong focus on the organizational strategy (Tkalac Verˇciˇc, 2021). To overcome the communication barriers Robson and Tourish (2005) argue that managers play a crucial role, for The Retailer, this means that the managers at each unit receive a key role. They have to create a climate where communication cross-functional is allowed and also since they often have more horizontal interactions, they have to evaluate their role as communicators to spread their units' information both horizontal and vertical throughout the organization which also Robson and Tourish (2005) pinpoint as an important aspect to increasing the organizational communication. This is a major challenge since the person with the message has the responsibility to encode the message to be understandable for the receiver.

The low awareness of the organization's communication climate and hesitation to investigate communication are raised by Robson and Tourish (2005) are common barriers to improve communication within organizations. From the empirical findings, it is possible to argue that this is the case at The Retailer since they are not aware that communication is a foundation of most of their issues regarding performance measurements and common understanding of each other. Robson and Tourish (2005) provide some helpful issues explained in chapter 3 (table 8) to consider for managers as a start to improving the communication climate. For The Retailer and its managers, the main aspects to consider from the list is to promote and progress on communication important issues, more information on the crucial change from managers both vertically and horizontally within the organization and consider if there is a lack of face-to-face communication rather than technologically based communication (Robson & Tourish, 2005).

When input from all units is taken into consideration, The Retailer can benefit from the cycle and different steps in the framework to overcome the "silos" of different units and their individual measures will be integrated with other measures to improve and measure the organizational performance. The Retailer seems to struggle a lot with the integration of measures and common understanding between the units and therefore a framework is presented in chapter 6, based on the empirical findings and the theoretical frame of reference.

6. SUGGESTED PERFORMANCE MEASUREMENT SYSTEM

From the theoretical frame of reference and empirical findings, several aspects regarding performance measurements and the retail industry can be captured. With this knowledge, a performance measurement system can be introduced to be used for companies in the retail industry. The system reflects the customer perspective and balances the trade-off between profitability and service level. This chapter will explain how the system is designed and how the parts are interrelated.

6.1 The Performance Measurement System - How it Works

The suggested performance measurement system is shown in figure 10. The framework is designed to reflect both a financial and product nature perspective, as this is pointed out in the theoretical frame of reference. The system is built of performance measures which can be categorized into the mentioned categories in the theoretical frame of reference: *result indicators, performance indicators, KRIs* and *KPIs* (Parmenter, 2015), *resource measurement, output measurements*, and *flexibility measurements* (Beamon, 1999), as well as *input measures, output measures,* and *composite measures* (Chan & Qi 2003).

The used measures are designed to conflict with each other, to avoid sub-optimizations. At the top of the framework is the main performance indicator, currently called BMI (abbreviation of the authors of this thesis and index), which reflects the performance of the organization and its units. BMI is broken down into a store and a warehouse perspective (fig. 11), this will help organizations to pinpoint improvement potentials for the system. As the system is built on primary and secondary measures mentioned by Anand and Grover (2015), resulting in a detailed view of the SC. Additionally, this will enhance communication between units where actual performance at units can be shown. The store and warehouse perspective are then divided into a financial and product perspective, which is described below.

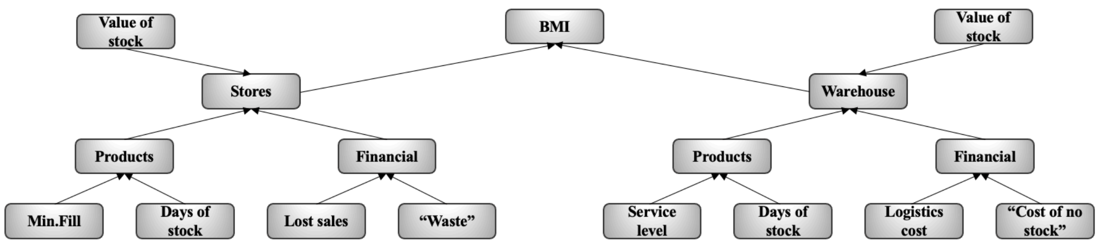

Figure 10. The entire performance measurement system, from the bottom to an aggregated KRI.

Each box corresponds to a performance indicator, result indicator, KPI, or KRI, and arrows show the aggregation and location of each performance measure.

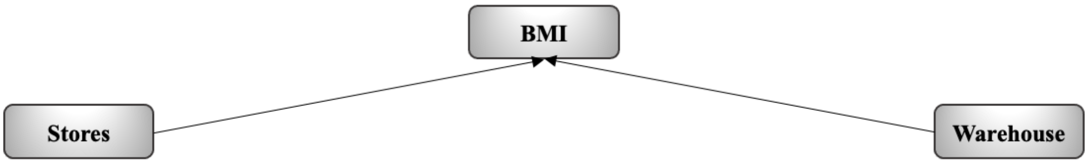

Figure 11. BMI aggregated from two performance measures (Stores and warehouse)

6.1.1 Measurements in Stores

The store measurement can be used on individual stores, clusters of stores as well as on a higher level of all stores. The store measurement is divided into three perspectives, a product, and a financial perspective, and the total value of stock (fig. 12). Each perspective as well as the aggregated product measure can be used for products, product groups, as well as an aggregated measure of the total amount of products. The three perspectives are used to have conflicts in between the performance measures, to avoid sub-optimizations. The product perspective should reflect amounts of products, where the goal is to have reasonable amounts of products in the stores, to have a good customer experience. The product measure is divided into two conflicting measures, *days of stock* and *Min.Fill*. *Days of stock* means how long the products are located in stores, this measure should be low to reduce tied-up capital, and due to limited space in shelves. To avoid reducing the number of products in stores too much, *Min.Fill* is used to having more products in stores and offering higher customer service. *Min.Fill* should be used as a guide of how many products should be located in the stores, and at the same time acts as a safety stock (can be compared to service level). Therefore, the point is not to have a minimum of how many products to have, instead the goal of this measurement is to decide a targeted number and then determine a satisfactory percentage of the targeted number. *Value of stock* is used to determine whether the amount of goods is at a satisfactory level. This is more or less a sum of the number of products multiplied by their price, which can be compared to historical levels.

The store measurement also has a financial perspective, which is used to verify and control that the organization has a profitable business at the stores. The measure is divided into *lost sales* and *"waste"*. *Lost sales* is measured by comparing actual sales with forecasted sales if products have run out or been at low levels, to account for the effect of having low amounts of products located in stores. The conflicting measure is *"waste"*, which reflects the cost of actually having the products located at stores. Included in this measure is the cost of handling, storing, as well as cost related to selling older products at a lower price. The balance between these two will result in a more balanced stock located in stores, where the main purpose is to maintain profitability. Aspects to consider are having extra stock in stores, compared to not being able to sell the same amount due to lover stock levels and customer service. This comparison is especially important on seasonal products and products sold in low volumes with a high value.

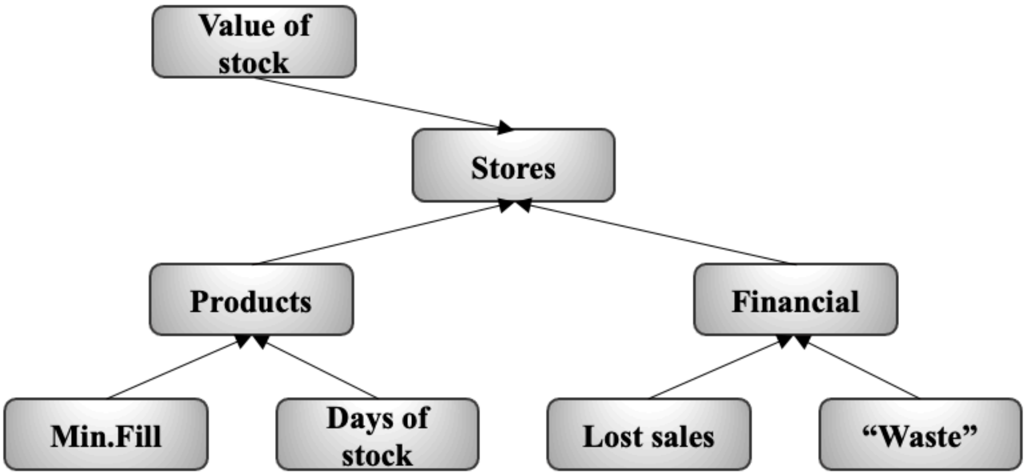

Figure 12. Measurements aggregated to a store measurement.

6.1.2 Measurements in Warehouse

When measuring the warehouse, three measures are used as well. The measure reflects a product perspective, financial perspective, and value of stock is used too (fig. 13). As with the store measures, the performance measures are of conflicting nature to avoid sub-optimization regarding the performance connected to the warehouse. When measuring the warehouse, the performance measures can be used on individual products, product groups, or at an aggregated level of all products. The product perspective is broken into two parts, *service level* and *days of stock*. *Service level* is measured by comparing how much of the demand of the stores can be delivered, showing the availability of products at the warehouse. Basing this measurement on forecasted demand from stores will result in a more accurate picture of the performance. Additionally, this will help the organization to be fast-moving to changing demand and can work more proactively. To prevent having too large amounts of stock at the warehouse, *days of stock* is used to reduce this. Showing for how long the products are located in the warehouse. *Value of stock* is also used at the warehouse, to monitor the number of products in stock and incoming goods and secure availability. This can be used to monitor the estimated in-and output at the warehouse, to avoid imbalances with stock levels below predetermined and satisfactory levels.

When measuring the financial perspective of the warehouse, the measures used are *logistics cost* and *“cost of no stock”*. *Logistics cost* consists of costs related to the product, included in this is the cost of handling, storing, etc. As defining a precise cost to the product can be hard, a percentage of the value of the product can be assumed to reflect the actual cost related to the product. This percentage is decided by the organization, to reflect actual cost in the best possible way. This ensures that the organization maintains a good margin of their products, as logistics costs constitute a large part of the costs but also contribute to the commercial value of the products for retail companies (Zentes et al. 2012). *“Cost of no stock”* can be related to the measurement *“lost sales”* at the store level, meaning that there is an alternative cost of not having products available. Logistics cost and “cost of no stock” can be referred to as the balance between "lost sales" and "waste" mentioned in chapter 6.1.1. By basing "cost of no stock" on forecasts, a more accurate picture of the performance is given as fluctuations will be considered.

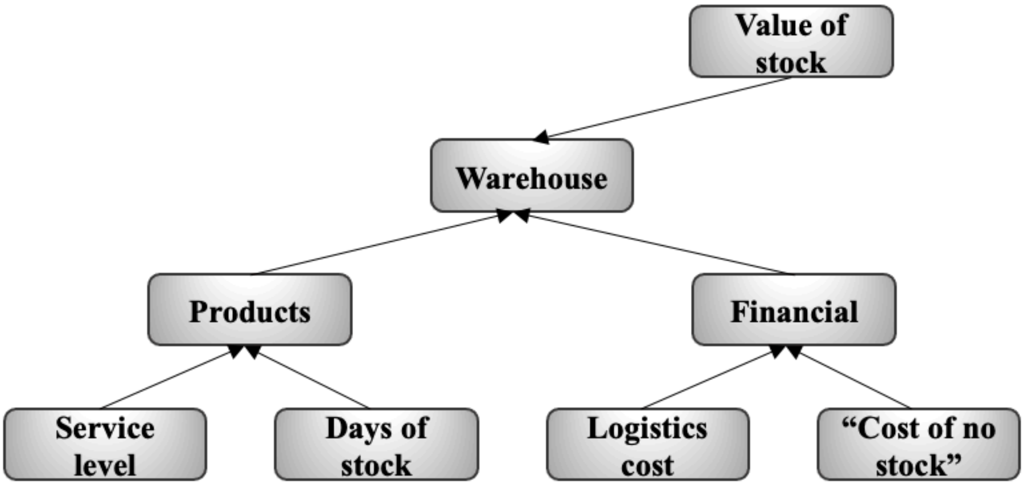

Figure 13. Measurements aggregated to a warehouse measurement.

6.2 Concluding Words

By using this performance measurement system, a retailer's goals and strategy can be achieved. By using a combination of result indicators, performance indicators as well as KRIs, and KPIs, the system can be assured to capture all important factors for the organization to succeed. Additionally, by using both financial and non-financial measures, perspectives from several involved actors are taken, both the customer perspective as well as units within the focal company, such as SC Unit, Sales Unit, and Store Unit.

As mentioned earlier, the measurements can be used on individual products, product groups, or at an aggregated level of all products, which increases applicability. As the measures can be used on daily, weekly, monthly, yearly, and future performance, the ability to follow progression over time is possible. The weighting of the measures depends on what the organization prioritizes, which should be considered for future development, as this has a significant impact on the outcome.

To consider when choosing measurements within the framework is the "positive" and "negative" collision between measures. For example, the collision between "*lost sales"* and "*waste"* at the store level or, "cost of no stock" and "logistics cost". It is important to have in mind that some loss in sales can be beneficial for the organization due to the higher costs in case of higher inventory levels increasing the costs.

However, this framework is far from completed and several aspects and performance measures can and should be considered in the future development of this framework. Furthermore, the framework is considered to be relatively flexible, depending on the organizational strategy, CSFs, vision, and product types. Performance measures can be added and changed depending on the organizational goals and strategy, as well as depending on the characteristics of the products and the environment that the organization acts in. The framework suggested by Neely et al. (1997) (table 4), which describes a good framework for finding usable performance measures by considering output, input, and behavioral impacts. in a given context. Which shows the broad range of usability and applicability. Hence an important aspect to consider is the balance between the measurements on the same levels to not sub-optimize processes or activities.

As mentioned earlier, weighting the measures should be considered for future research within the area. Furthermore, implementation of performance measures and performance measure systems should be considered. To handle the barriers discovered in RQ1, as well as finding additional success factors of implementing performance measures and performance measure systems. As the measures should be based on the organization’s goals, vision, strategy, and CSFs, a framework of finding appropriate measures would be beneficial for organizations to find the appropriate measures. Since the theory within the subject is limited to some extent.

7. CONCLUSION

This chapter will explain the conclusions of this thesis and is structured after the research questions stated in chapter 1.2. of the thesis.

> ***RQ1. What are common barriers in measuring service level in multi-unit retailers?***

From the empirical finding, it can be concluded that there are several barriers at The Retailer connected to performance measurements and especially service level. The main barriers that can be generalized for the retail industry are communication, cross-functionality, as well as definition and evaluation of the measures.

Internal communication can increase awareness of threats and opportunities as well as increased productivity and performance when managed carefully (Downs & Adrian, 2004). Keyton (2011) defines communication as *"the process of transmitting information and common knowledge between individuals requires an understanding of the information and knowledge as a result since otherwise there is no communication"*. The empirical findings showed a lack of communication since plans for sales and campaigns are not well communicated to the SC unit from the Sales Unit. This leads to a lot of assumptions from both units regarding product availability. This also happens between the SC Unit and the Store Unit as stores manually order products, as there is a lack of communication about forecasted demand and planned deliveries.

Organizational cross-functionality provides a clearer picture of the overall organizational performance, as different dimensions of the organization are brought together (Anand & Grover, 2015). Due to the low understanding of performance measures across units (such as service level) within The Retailer, a clear picture of the overall organizational performance and measurements are missing. Generally, this is a common issue for organizations as performance measures are inadequate due to the low degree of interaction between units (Beamon, 1999). As performance measurements affect the whole organization and its performance, strategic decisions by top management should include different units to encourage cross-functional collaboration. The Retailer proves a low integration between units as no common understanding of what measures are used for and their consequence, as well as working in isolated islands as each unit operates to a high degree by themselves. Each unit is measured on its own and sub-optimization occurs regularly which affects the overall performance at The Retailer. As a collaborative approach between units gives insight into each other's activities, operations, and measurements (such as service level) it will increase the operational performance and current operations (Ho et al. 2000).

What is a good value refers a lot to the two earlier mentioned barriers, communication, and cross-functionality. Performance measurement should reflect goals and situations for the organization; therefore, it is important to evaluate if the performance is at a satisfactory level, this is seldom done by organizations according to Mentzer and Konrad (1991). Empirical findings highlight that there is a low understanding for the values of different measurements, and especially Stores -and Sales Units did not understand how service level and its value could help them improve their activities or operations. The meaning of the value, therefore, needs to be broken down into, why it is measured, how it is measured, potential benefits for the organization, as well as consequences for other units. Additionally, targeted numbers had no real foundation in achieving organizational goals, from the interviews these appeared to be randomized and fitted to operations and activities.

RQ2. What Performance measurements can be used within a multi-unit retail company to measure service level to balance customer service and profitability?

Customer service and profitability do not always go hand in hand since high customer service tends to increase the logistic costs, which contributes to a large portion of the total costs of organizations within retailing (Zentes et al. 2012). On the other hand, logistics plays a vital part since it provides the opportunity to find the balance between optimal customer service and costs and thereby profitability. Service level, Min.Fill, days of stock, value of goods, and lost sales are used by The Retailer to maintain profitability and provide high customer service. At The Retailer, measurements are combined to reflect and measure the customer service. They have tried to integrate service level and Min.Fill to extend the service level into a customer service perspective, since well-filled shelves have been shown to sell more. Chen et al. (2017) state that several other measurements such as quality, on-time delivery, price, and delivery accuracy are important to increase the service level further. The Retailer is currently looking for measurements regarding this, to measure delivery accuracy from suppliers as well as why orders are changed which will increase both delivery accuracy and on-time deliveries.

As mentioned earlier it must be a trade-off between optimal customer service and profitability due to the increased cost for logistics that can occur. Beamon (1999) states that there are three important characteristics that are vital for the organization's competitiveness, *Resource* measurements, *output* measurements, and *flexibility* measurements, which all have specific goals and purposes to fulfill. *Resource* measures are argued by Beamon (1999) to be critical for an organization's profitability, as these create efficient resource management. These include aspects such as resources and distribution costs, inventory levels, and utilization, where common measures are inventory costs, cost of resources, and return on investment, etc. Hence an important aspect of resource measurements and management is the main purpose of using the organization's resources in the most efficient way (Beamon, 1999).

RQ3. How should the service level be designed/organized to reflect a retail company's strategy, goals, and visions?

Improving SC performance is a continuous process and requires a performance measurement system designed for the organization's strategy to be understandable and implemented in the organization's daily work and routines (Andand and Grover, 2015). Performance measures are a crucial part for organizations to explain what would be measured and how it should perform to meet expectations, where staff that carries out activities need to see how well they perform (Neely et al., 1997). Andand and Grover (2015) suggest that retailing companies should use both financial and non-financial performance measures to measure the performance of their SC. According to Neely et al., (1995), a performance measurement system should include several individual measurements reflecting the environment, which are integrated in order to measure the overall organizational performance. Furthermore, performance measurement systems are generally designed in a narrow way with few dimensions, instead, companies should use a balanced set of measures reflecting customers, financial, and non-financial (Neely et al., 1997). Competitive performance and organizational performance can be increased by good management of the SC; hence it is vital to develop measures that are based on the organization's CSFs to in the end reflect the organizations' goals, strategy, and visions (Chen Et al., 2017).

To address the important factors above as well as factors mentioned in RQ1 and RQ 2, a performance measurement system has been designed (explained in chapter 6). The performance measurement system was designed with regard to both the literature and empirical findings to extend the service level in order to address The Retailer's issues of seizing the customer's point of view, to balance the trade-off between profitability and service level. The customer perspective reflects The Retailer's visions, goals, and strategy, as they want to increase their sales year by year but also improve their internal operations and activities to be a market leader. The performance measurement system measures the entire organization, resulting in fewer sub-optimizations, and increasing the opportunity to pinpoint potential issues and improvements. The performance measurement system can be adopted and changed for organizations acting within the retail industry, however, measures should be adjusted to fit their organizations' strategy, goals, and visions.

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APPENDIX

Appendix I, Interview Template

- Describe your role at The Retailer, work tasks, responsibilities, position, etc.

Environmental factors

1. What view of The retailer do you want the customers to experience? (how do you want them to look at the stores? serves all their needs, be cheapest, quality, etc.)
    a. What’s your unique value to the customers?
2. How does The Retailer work in order to continue improving and create value (innovation and learning perspective)?
    a. How service level help you creating value?
3. How can A KPI help to improve your internal processes? (handling products, communication, etc.)
4. Do the measures match the organization’s culture
5. How does the current KPI relate to the external environment? (competitors, demand, specific stores/products, etc.)

Information related to the current KPI

6. What is measured by the current KPI? (service level)
7. Have all the appropriate elements (internal, external, financial, non-financial) been covered?
8. Have measures that relate to both the long- and short-term objectives of the business been introduced?
    a. Does the KPI reflect past, current, or future performance?
9. Does the performance measure conflict with other measures?
10. Why is the current KPI used? (what should be achieved?)

The process behind the KPIs

11. The formality of The Retailer’s performance measurement system design process:
    a. what problems did it encounter in the daily work? (connected to achieving organizational goals)
    b. what problems did it encounter when designing performance measurement systems?

12. Describe the process when designing today's performance measurement systems? (specific framework, internal process, data, etc.)
13. Have measures that relate to the rate of improvement been introduced?
14. Have the measures been integrated both vertically and horizontally throughout the organization?
15. How is the performance evaluated? (what is a good result)

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