SELLING THE VALUE OF DATA WITH A CUSTOMER-CENTRIC APPROACH: CASE VAISALA

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ABSTRACT

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Abstract

The significance of big data for businesses is increasing rapidly along with its quantity. The research around utilizing big data as an external, sellable resource is gaining more and more interest. This has enabled the emerge of a completely new business model: selling data products. However, the value of data is a complex matter, and the research around value-based selling of data products is still lacking.

This study aims to contribute to the practical understanding of utilizing the means of value-based selling in the context of data products. The study discusses the value perception of data products and efficient communication of the value to B2B customers.

The key concepts considered in this study are big data, data value, perceived value, value-creation, and value-based selling, which form the conceptual framework to understand the value-based selling of data products.

This study adopts the qualitative research method and is abductive in nature. Data was collected by conducting three semi-structured interviews. The respondents of the study represent the customer perspective and they are product management professionals working in data-reliant logistics optimization. The findings of the research were analyzed using a thematic analysis method.

The findings of the study contribute to development of a better understanding of how value-based selling approach can be applied in the context of selling data products. The findings support value-based selling as a sales approach on data products. However, as a notification, this study suggests that the value-based selling approach on data products should incorporate a very precise communication of value for the customer. Customers may wish to solve a specific operational challenge by inputting new data source, and the supplier must help the customer to understand how the data can be turned into such insights that the customer is competent to put into use.

Key words Value-based selling, customer perceived value, value-creation, data product, value communication, big data
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Tiivistelmä Niin kutsutun *big datan* merkitys liiketoiminnalle on viimeisen vuosikymmenen aikana kasvanut räjähdysmäisesti uuden datan yhä kiihtyvän muodostumisen myötä. Vaikka tämä on johtanut myös lisääntyneeseen tutkimukseen aiheen ympärillä, datatuotteiden arvomyynti on edelleen vajavaisesti tutkittu aihepiiri Tämä tutkimus lisää käytännönläheistä ymmärrystä arvomyynnin periaatteiden hyödyntämistä datatuotteiden osalta. Tutkimus käsittelee datatuotteiden koettua arvoa ja tehokasta datan arvon viestimistä B2B asiakkaille. Tutkimus käsittelee ilmiötä big datan, datan arvon, koetun arvon, arvonluonnin ja arvomyynnin muodostaman viitekehyksen pohjalta. Näitä teemoja käsitelleen kirjallisuuden pohjalta muodostuu konseptuaalinen viitekehys tukemaan arvomyynnin periaatteiden soveltamista datatuotteiden kontekstiin. Tämä tutkimus toteutettiin laadullisena ja siinä noudatettiin abduktiivista lähestymistapaa. Tutkimuksessa kerättiin kolme puolistrukturoitua teemahaastattelua, joihin osallistuneet vastaajat ovat tuotehallinnan ammattilaisia, jotka työskentelevät dataa laajasti hyödyntävältä toimialalla, logistiikan optimoinnissa. Vastaajat edustavat tutkimuksessa asiakasnäkökulmaa. Tutkimuksen tulokset analysoitiin temaattisen analyysin keinoin. Tutkimuksen havainnot kehittävät laajempaa ymmärrystä arvomyynnin hyödyntämisestä datatuotteiden kontekstissa. Havainnot tukevat arvomyynnin hyödyntämistä datatuotteiden myynnissä. Tarkennuksena käsitykseen datatuotteiden arvomyynnistä, tämä tutkimus korostaa arvon viestintään kaivattavaa tarkkuutta datatuotteiden abstraktin luonteen vuoksi. Asiakkaat saattavat pyrkiä ratkaisemaan yksittäisen ongelman uuden dataintegraation avulla. Tällöin myyjän tulee auttaa asiakasta ymmärtämään, kuinka dataa analysoimalla voidaan tuottaa tarvittavaa arvoa ja toimittaa analyysin tulokset asiakkaan ymmärtämässä muodossa.	
Asiasanat Arvomyynti, koettu arvo, arvonluonti, datatuote, arvon viestintä, big data	
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CONTENTS

1 INTRODUCTION

1.1 Introduction to topic

Thanks to the abilities provided for us by the emerge of cloud computing, the amount of data available has sky-rocketed during the last few decades. Despite the amount of data being already overwhelming, the generation of new data is still increasing in velocity. (Kaisler, Armour, Espinosa & Money, 2013; Hashem, Yaqoob, Anuar, Mokhtar, Gani & Ullah Khan, 2015.) The volume, being one of the determining factors of so-called big data, is so staggering that along with the opportunities, it also forms challenges for businesses that wish to engage in basing their decisions on data. How do you determine which data is the most useful and how it will be useful at all?

Kaisler et al. (2013) name data value as one of the characteristics of big data. The concept of value also sheds questions over data. How is the value getting out of the data? Data must be put to use to help decision-making, otherwise it does not really provide any value. To make that happen, data science and analytic science are needed. They are the means of turning data into useful form. Afterall "the purpose of computing is insight, not numbers". (Kaisler et al., 2013.) The rapid generation of new data leads to more and more effort being put to utilizing the data. According to Delen and Demirkan (2013) "business analytics is gaining popularity more rapidly than any other managerial paradigms that we have witnessed in recent years". Business analytics aims to get the value out of data and to make it an actionable tool for decision-making. However, business analytics is extremely complex activity as it requires high quality of correct data combined with abilities to interpret that data and turn it into insights. (Delen & Demirkan, 2013.)

The use of big data as a tool of supporting data-driven business begun as companies pursued ways to put internal self-collected data into use (Thomas & Leiponen, 2016; Davenport & Kudyba, 2016). Later, due to the significance of

data-driven decision-making in today's business, a whole new business in forms of data and insight services has emerged, for example data-as-a-service (DaaS) and analytics-as-a-service (AaaS). At the same time, the need for data has multiplied and there are many new forms of data to be utilized, not only for decision-making but also for any other business activity. Hence, as the demand is increasing, more and more data providers are eager to enter the market. In this data provider business, the biggest challenge to overcome is turning data into actionable business value and moreover, convincing customers of the value. (Rajesh, Swapna & Shylender Reddy, 2012). After achieving the expertise and data quality to develop meaningful analytics from the data, the provider company needs to be able to communicate the value for the customers convincing them of the benefits that they are able to gain via the insights and analytics.

Communication of value has always been an extremely important task for any company's marketing department. The significance of customer perceived value has highlighted during the 21st century as it has been seen as a key source of competitive advantage (Zauner, Koller & Hatak, 2015). When it comes to data products, the importance of being able to communicate the value becomes even more vital since the data itself does not provide value for the customer, but it has to be able to provide actionable insights. One mean of communicating value in a situation such complex as data market, is value-based selling.

Understanding the importance of superior customer value has been increasingly appreciated during the last decades. However, the implementation can be difficult. Value-based selling is a modern selling approach that aims to communicate the end value for the customer. (Terho, Haas, Eggert & Ulaga, 2012.) Customer value can be separated into value-in-exchange and value-in-use (Eggert, Ulaga, Frow & Payne, 2018). Value-based selling concentrates on value-in-use, which describes the lifetime value of a product or service that the customer gains by using it. Value-based selling aims to present the customer exactly how they will benefit from the product or service instead of describing "only" the qualities and features of the offering. Terho et al. (2012) describe the core of value-based selling as follows: "crafting a market offering in such a way that translates the benefits into monetary terms based on an in-depth understanding of the customer's business model". The three integral parts of value-based selling are named to be "understanding the customer's business model, crafting the value proposition and communicating value to customers". (Terho et al., 2012.)

1.2 Objectives and research questions

This thesis aims to contribute further to the understanding of customers value perception on data products and services and utilizing value-based selling on their context. The pace in which big data has emerged has left us with a lot of questions that are yet to be answered, both theoretically and in practice. Especially the practical implementation phase of selling data products and

services is still covered with a lot of open questions, and combining value-based selling and data products is a dramatically understudied topic. Hence, the goal of the thesis is to provide practical evidence of how the value of data products and services could be communicated to new customers and how can data products be sold using the means of value-based selling.

In this thesis we will concentrate on the concept of customer perceived value on data products and understanding value in B2B via case company Vaisala. Vaisala is a global Finnish company based in Vantaa and their primary areas of expertise are in environmental and industrial measurements. In this thesis, we will concentrate on a specific data product of Vaisala, a one that is built around road weather and delivered via an API. The product in question meets the definition of service, as all data products do.

This thesis will be conducted as a case study and the information will be gained via semi-structured interviews of customers from the target segment, the logistics segment. In this thesis the concept of data value in logistics is researched, since it is still a segment, which has not adopted road weather as an integral part of their operations despite road weather already being commonly appreciated in fairly similar use cases on other automotive industries. Another reason for this segment to be studied is that logistics operators are highly experienced with inputting data into their operations. The goal of this thesis is to gain understanding of what aspects sales need to consider when communicating data-based value to B2B customers.

This thesis will contribute to the topic by answering the following research questions:

1. What kind of expectations customers have towards data value?
2. What is required for communicating data value in B2B?

The study will be limited to consider one specific case company, Vaisala, and a new potential customer segment that has somewhat similar use case needs as current customer groups but have still not engaged in the use of the data and analytics in question. The goal is to discover what kind of activities might be needed to sell data value and how the value could be communicated so that the value perception would end up being convincing.

1.3 Definitions of key concepts

This thesis concentrates on communicating the value of a data product. Data product can be defined as "the application of a unique blend of skills from analytics, engineering & communication aiming at generating value from the data itself to provide benefit to another entity" (Meierhofer et al., 2018). The term "data product" will be used to cover all data-based offerings as it has defined in prior research, even though all data products meet the definition of a service (Davenport and Kudyba, 2016). Therefore, "data products" should be

understood as a large scale of different solutions, most often including some form of service within them. Data products are crafted from so-called big data. There is no clear consensus between researchers on the definition of big data but as one definition, it refers to the massive amounts of data that is possible to collect during the times of cloud-computing. (Gandomi & Haider, 2014.) As the aim of this thesis is to contribute to understanding of utilizing value-based selling on data products, value-based selling should also be defined. Terho et al. (2012) define value-based selling behavior as "the degree to which the salesperson works with the customer to craft a market offering in such a way that benefits are translated into monetary terms, based on an in-depth understanding of the customer's business model, thereby convincingly demonstrating their contribution to customers' profitability."

1.4 Structure of the thesis

The structure of this thesis is as follows: First, we will discuss the concept of data and its value and productization process. We will also cover communication of data value and the concept of value-based selling. Second, we will discuss the methodology by going through the selected research methods, describe the case and present the means of data collection and analysis. Third we will present the results of the research. Finally, we will end the thesis in discussion and conclusions.

2 THEORETICAL FRAMEWORK

2.1 Data

The amount of data available is increasing rapidly. The high velocity of data emerging has led to the existence of so called "big data". Defining big data is quite tricky. Afterall, it refers to the massive amounts of data that is possible to collect during the times of cloud-computing. (Gandomi & Haider, 2014.) As the name suggests, size is the main characteristic that defines big data for a lot of people, but Gandomi & Haider (2014) remind that there are other dimensions to it such as velocity (of new data being generated and the speed it requires to analyze and turn into insights and actions) and variety (structural heterogeneity). The challenges regarding understanding big data lie deep, as the difficulties of defining it would suggest. Big data has risen suddenly which has left everyone from corporate leaders to academics a bit unprepared. Everyone shows attention to big data but there are a lot of questions floating around it. (Gandomi & Haider, 2014.)

The challenge with big data is that the big data itself is worthless until being put to use. The value in big data emerges when it is used as a factor in decision-making. This requires turning data into insights and analytics. (Gandomi & Haider, 2014.) Hunke, Engel, Schüritz and Ebel (2019) agree with the claim, stating that value is being created through insights that guide business actions.

Due to the indirect value approach to data, data business has only started to develop quite slowly. The possibilities that data can provide have been discovered in a larger scale only since the ability to utilize cloud computing has emerged and during this time the focus has been in internal issues in companies, in practice how can the data collected by the company be leveraged within the company. The use of external data has been studied and practiced only for a short period of time. (Thomas & Leiponen, 2016.) Davenport & Kudyba (2016) back this up stating that the emerge of data and analytics in business use took place as

a mean of internal decision support. Later along with the big data revolutions, companies started developing data and analytics as an external business in forms of data products.

Data analytics can provide significant customer value as it can provide insights for backing-up decision-making or even solve problems externally. Another benefit companies aim to achieve via data services and analytics is cutting costs by being able to externalize some problem solving to data service providers. (Hunke et al., 2019.) This is even mandatory for companies, since achieving the expertise required to analyze all the valuable data would lead to unbearably high costs, even if the data provided a lot of value.

Along with the emerge of big data, the significance of data science has exploded to utilize it. Data science is the tool that is required to transform data into actionable insights. (Kaisler et al., 2013.) This is required to be able to offer actual value for customers. With the value of data science emerging, understanding the productization process of data to make it an asset that will provide value for customers can be the obstacle between quality data and valuable data. You need to know what insights you have to get out of data to make it valuable and desirable for the customers. The process of forming a product out of data and being able to offer data insights that lead to customers economic benefit is what makes a difference in the data market now. (Meierhofer, Stadelmann & Cieliebak, 2018.)

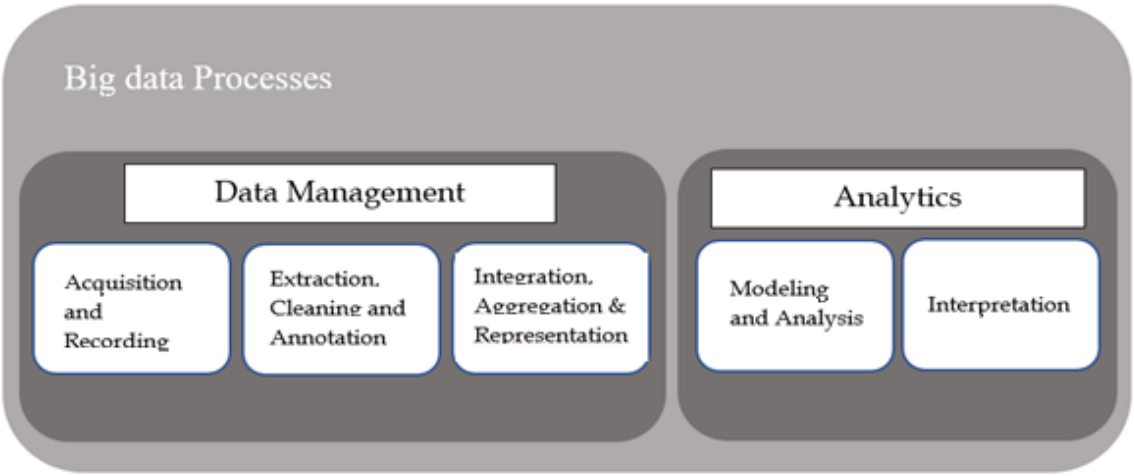

FIGURE 1. Processes for extracting insights from big data. (Gandomi & Haider, 2014.)

2.2 Value and productization

When it comes to providing value for a customer, Eggert et al. (2018) separate two perspectives on customer value: value in exchange and value in use. It is important to acknowledge these two ways of providing value to be able to

communicate value propositions to customers. The ways of providing value offer opportunities to differentiate for supplier companies. Differentiation is an extremely important asset in today's market when there is a ton of competition in many fields of business. (Eggert et al., 2018.)

According to Eggert et al. (2018) the significance of customer value in both, research and practice, has emerged in the late 1990s and has remained its status as the corner stone of modern day B2B markets. However, it is also noted that the eagerness to understand the concept of value dates far back to Aristotle around 350 BCE and Adam Smith in the 18th century. The separation of value in use and value in exchange is also known as early as in Adam Smiths "Wealth of Nations" in 1776 and the theory around the concept of value has evolved a lot since. (Eggert et al., 2018.)

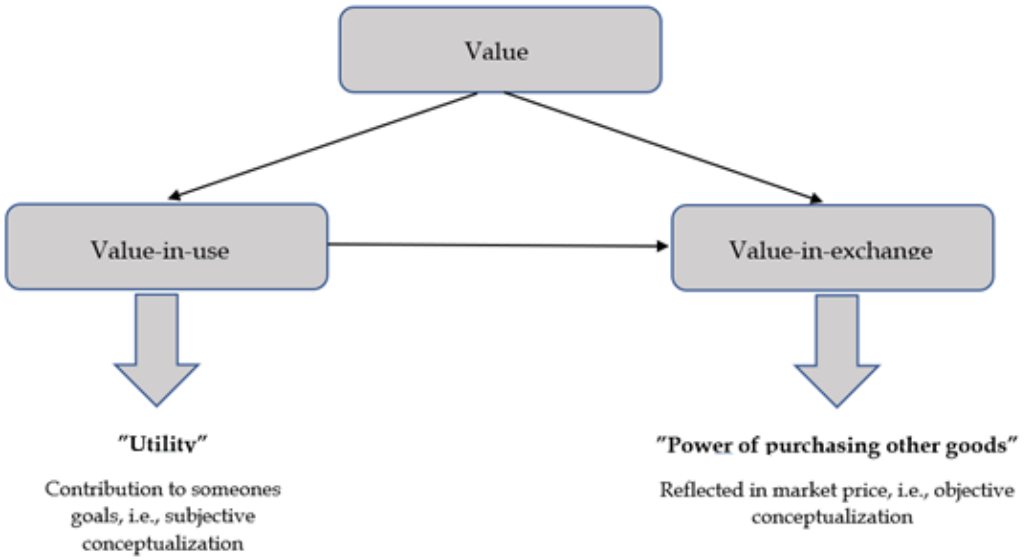

FIGURE 2. The value paradox. (Eggert et al., 2018.)

Nowadays the common understanding of customer value is based on the concept of co-creation of value (Payne, Storbacka & Frow, 2008; Terho et al.,2012; Eggert et al., 2018). According to Payne et al. (2008) in the core of the value co-creation is the seamless and continuous cooperation between supplier and customer to combine both parties' resources to value creation. This modern understanding of customer value and value co-creation evolves around the above-mentioned form of customer value; value in use. Grönroos and Voima (2012) express value co-creation in a similar manner, stating that value co-creation is an interaction contributing to value in use.

Payne et al. (2008) divide value creation into two separate parts that form the whole entity: customer value-creating process and supplier value-creating process. In addition, they mention "the encounter process", in other words the two-way interactions between the supplier and the customer to be an integral

part of the value creation process. According to Payne et al. (2008) and Grönroos & Voima (2012) for customer value creation process the product/service offered for them is the "facilitator" of new opportunities; in other words, the supplier can open new doors for the customer's value creation. In this understanding, service-dominant logic is in a key role and Payne et al. (2008) base their suggestions in the idea of the supplier understanding the potential in co-creation relationship experiences. In that way, the supplier can be capable of offering the customer the right tools that enable more resources and influence the customer's business in a positive manner. With the understanding, the suppliers can form their value proposition to match the very needs of the customer so that the value is communicated effectively. Overall, the value in use is seen as a more comprehensive matter; a service that includes, in addition to the actual core product, all the customer experiences and relationships that occur between the parties. (Payne et al., 2008.)

As for the supplier value creation process, the core is to first understand customer's value creation process. An important task for the supplier in value creation is evaluating the interactions with the customer so that the co-operation's value creation is optimized as well as that the value propositions are met. (Payne et al., 2008) Afterall, value in use is created by supplier utilizing the product or service (Grönroos & Voima, 2012). This approach is very customer-oriented, and it offers opportunities for superior co-creation of value. (Payne et al., 2008.)

Grönroos and Voima (2012) share a similar point of view to the concept of co-creation of value, but they present it as three different spheres of value creation (Figure 3). Whereas Payne et al. (2008) described value co-creation in two separate partials; customer value-creating process and supplier value-creating process supplemented by "the encounter process", Grönroos and Voima (2012) separate value co-creation to involve provider sphere, customer sphere and joint sphere. In this understanding the providers role is to be the facilitator in provider sphere and customer sphere but in addition the customer who is primarily the creator of value in use can invite the provider to co-create value in joint sphere. Yet, it is important to note that the customer is still in charge of value creation in joint sphere and if the provider tries engaging to value creation uninvited, a risk of value destruction exists. Therefore, it is vital for the provider to stay easily reachable for the customer in case an opportunity of value co-creation occurs, but the provider needs to avoid becoming extensively proactive regarding that. (Grönroos & Voima, 2012.)

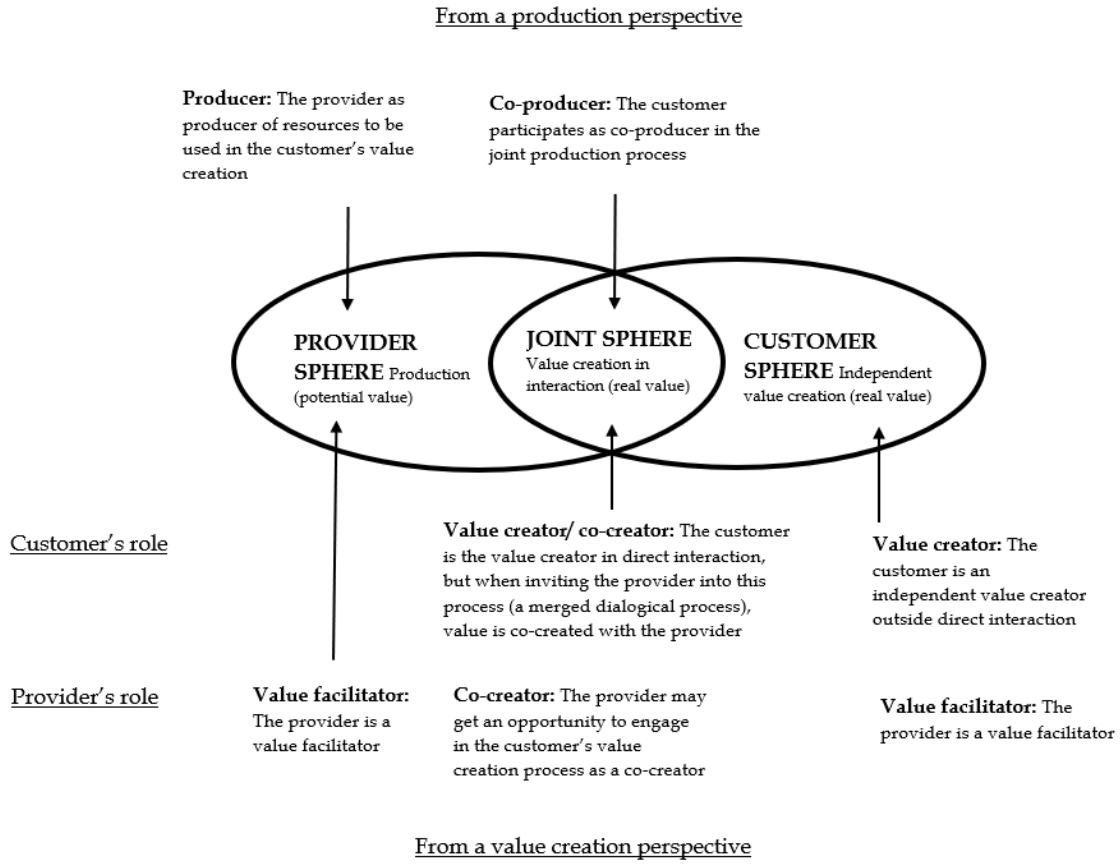

FIGURE 3. Value creation spheres (Grönroos & Voima, 2012)

As the modern understanding of customer value is very customer-oriented and relies on relationships as well as co-creation, how should this be implemented in practice? A successful productization process for data products is vital to make sure the offering is tempting for customers. Data and analytics being a complex and subjective matter, the specifics of the formed product need to be clear for the customers to understand. Meierhofer et al. (2018) define data product as "the application of a unique blend of skills from analytics, engineering & communication aiming at generating value from the data itself to provide benefit to another entity." An important note that Meierhofer et al. (2018) as well as Davenport and Kudyba (2016) point out is that "every data product meets the definition of service". This is because as understanding data requires high levels of expertise to analyze. Related to that, a common form of a data product is so called data-as-a-service (DaaS). It is a member of the "as-a-service" family being at the same level as perhaps a bit more well-known software-as-a-service (SaaS) (Rajesh et al., 2012). Even though all data products are not necessarily in the "as-

a-service" -form, a fairly large number of them can be seen as such, for example the case product in this thesis. Therefore, we will briefly cover their definition.

The "as a service" family is a relatively new business model that has emerged mostly during the digital transformation. Its importance is remarkable, as Newman (2017) stated; the global "as a service" market will grow with CAGR of nearly 40% between 2016 and 2020, and the growth happens on a variety of businesses. Even though the growth rate for the period was, in fact, a bit lower averaging at 26% the significance of XaaS is undeniable as the growth is projected to continue through 2024 (Sundarraj, 2020). As for DaaS itself, Rajesh et al. (2012) and Vu, Pham, Truong, Dustdar & Asal (2012) have defined data-as-a-service as the data being provided on demand to the user to a variety of platforms.

In practice, DaaS is a cloud-assisted service which often uses Application Programming Interface (API) to deliver the desired data to the customer, but the data can also be delivered, for example, by files or cloud data stores (Vu et al., 2012; Sundarraj, 2020). According to Rajesh et al. (2012) DaaS model was first applied in web mashups but now it is being applied more and more also commercially. What makes the DaaS model valuable is that due to being a cloud-based solution, it saves data storage resources from companies remarkably. Since data is available on demand from cloud, it allows different software to utilize it directly, therefore also less software is required particularly for transforming datasets into human-readable form. Also, since the data storage does not take away resources when committing to accessing the data via DaaS, a larger amount of data can be processed which leads to smarter algorithms. (Rajesh et al., 2012.) Yet another benefit in DaaS model is that in a large enterprise there are many parties that require access to heterogenous set of different data and when the solution is fetchable from the cloud, the data can be accessed simultaneously by many units. (Sundarraj, 2020). Rajesh et al. (2012) have summarized the benefits of DaaS to include agility and cost-effectiveness that are recognized in all studies concerning DaaS, but also third important factor in data quality, since the data comes from one place. They also defined requirements for DaaS, which were the following:

- Cloud-enabled elastic
- Scalable, high-performance
- No need for Capital Expense
- All costs must be Operating Expense
- No infrastructure related decisions needed

Why is the significance of data-as-a-service (and data products and services overall) increasing? Data is the driving force behind every decision made in a company, or at least it should be. The value of data lies in understanding it and especially being able to analyze and interpret it. If data cannot be converted into business insights, its value is not realized. (Sundarraj, 2020.) In addition, if the data and insights are not able to flow freely within the organization, the goals of data turning into benefits are not met. Therefore, DaaS model is an enabling factor that can help global companies access the same data and insights all over

the world simultaneously, instead of being stuck in a more local non-cloud-based system (Sundarraj, 2020; Rajesh et al., 2012).

What is then still preventing Data product business to grow even faster? According to Rajesh et al. (2012) "before a true revolution in data as a service can occur, organizations must be convinced of the value". Since most IT revolutions are expected to show their value straight away in the form of ROI, data products provide value that is not necessarily seen directly in increased profits or decreased costs. Committing to data product subscription requires a complete rethinking of how data should be managed. (Rajesh et al., 2012.) For example, according to Grover, Chiang, Liang and Chang (2018) there is a big uncertainty in data investments as roughly 40 percent of companies planning to invest, or ones that already have invested on data, have no idea if the investment would lead to positive or negative ROI. Hence, the eagerness to invest is lacking until the value potential and concrete benefits are communicated in the most comprehensive way.

2.3 Customer perceived value

Afterall, the products and services creating profit for the supplier is dependent on customers to feel they receive value out of them, and therefore, wish to purchase. Hence, the concept of customer perceived value is important, yet extremely challenging, for marketing professionals to understand as the perceived value is a subjective matter. Therefore, the seller cannot determine the value of their product or service, but it needs to be individually understood from each customer. (Zauner et al., 2015.) For a deeper understanding, we need to first determine, how is this relationship focused customer value constructed?

Ulaga and Eggert (2005) described relationship value in business context as the separation between benefits and sacrifices. They recognized the benefit dimensions to be "product-related benefits, service-related benefits, benefits related to the supplier's know-how, benefits related to the supplier's capacity to improve time-to-market for its customer, and social benefits." They defined sacrifice dimensions to be price and process costs. (Ulaga & Eggert, 2005.) Töytäri, Rajala and Alejandro (2015) take this approach a bit further to define perceived customer value as "the difference between perceived benefits received and perceived sacrifices made by a customer. Both benefits and sacrifices are multi-dimensional concepts, combining operational, strategic, social, and symbolic dimensions of value."

The four dimensions defined by Töytäri et al. (2015) are as follows:

Operational dimension refers to improving operational performance of the customer. In other words, it leads to "lower operational costs or higher output value, or both."

Strategic dimension refers to organizational learning and change, leveraging existing capabilities or developing new ones.

Social dimension highlights the significance of relationships in value creation. It refers to company joining a business network and leveraging relationships in forms of acquiring new contacts and utilizing references, for example.

Symbolic dimension refers to symbolic value that carries to individuals with goods and relationships. In this context, Töytäri et al. (2015) describe its manifestation to include internal motivation pride, and job satisfaction.

According to Töytäri and Rajala (2015) especially symbolic and social value are rarely included in supplier-customer communication even if they are considered by one party or both. However, including these dimensions into communication might lead to prevailing new sources of value.

For the supplier it is vital to understand how the value perception of each customer is and the ability to find a solution that provides both parties value is reachable via this understanding. Regarding data products, it is even more challenging due to the subjective valuation of data. Visualization of how mutually beneficial pricing is implemented in figure 4.

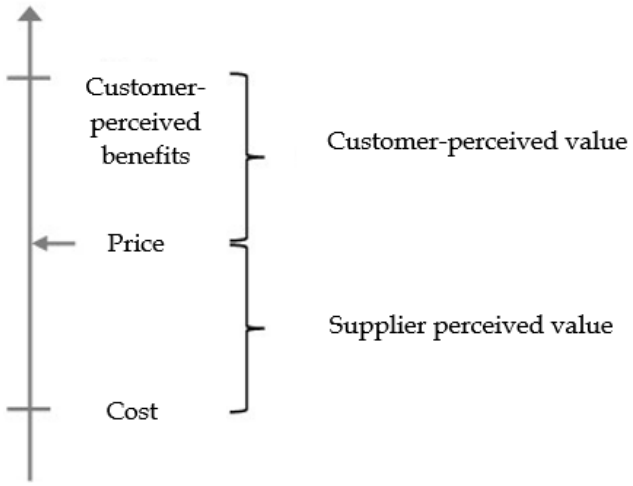

FIGURE 4. Price in relation with customer-perceived value and supplier cost. (Töytäri et al., 2015)

2.4 Challenges in selling data

The success rate and strategic value created from big data and analytics projects remain unclear (Grover et al., 2018). Also, Hunke, Heinz and Satzger (2021) state

that research is still lacking on analytics-based services and Hunke et al. (2019) discuss that even though the growth rate of data and analytics in business is growing rapidly, theoretical and conceptual work is still lacking. The lacking knowledge prevents companies from engaging in data purchases, mostly since the widely adopted accounting practices do not support data inclusion to justify investments on data using traditional practices. (Grover et al., 2018.) Hence, it is critical to understand the value creation process out of data to be able to form the product and communicate the value for the customers.

According to Rantala, Apilo, Palomäki and Valkokari (2020) in commercialization of data, it is vital to gain understanding of customers' needs in very early phase to be able to develop data analysis capabilities that can provide actual value for the customers. This is the first step in becoming a data service provider. Thomas and Leiponen (2016) offer further insights in commercializing big data. They separate 6 different commercialization business models: data suppliers, data managers, data custodians, application developers, service providers and data aggregators. Here in this thesis the focus is on service providers as that fits our case company.

In data commercialization service provider model, the value can be provided in different levels. Banerjee, Bolze, McNamara and O'Reilly (2011) divide the forms of data value in 3 tiers: raw data, insights and transactions. They visualize the tiers in a Value Pyramid (Figure 5) where raw data forms the lowest value of a data service and transactions are the highest value. Offering raw data service means basically forwarding collected data to a buyer without handling it at all, leaving the job to process it to a consumable and useful form to a buyer. Offering insights means that the service provider has used its expertise to develop actionable insights from the raw data and is able to deliver already useful analytics for the buyer. Offering transactions means that in addition to the company developing insights from the collected data, it also takes the next steps and provides suggestions of the suitable practical actions to the buyer. Hence, the higher the provided value in the value pyramid, the more resources it requires from the service provider. (Banerjee et al., 2011.) As there are several different options to provide value in a DaaS model, it is vital to know the ways to communicate and deliver the value.

FIGURE 5. Data value pyramid. Banerjee et al. (2011).

Davenport & Kudyba (2016) back this up stating that when the data provided is taken further by analytics, the value potential increases due to the easier facilitation of the offering. According to them, data analytics can be divided in descriptive analytics, predictive analytics, and prescriptive analytics. Here descriptive analytics are based on describing what has happened, predictive analytics aim to contribute to the future stating what is about to happen and prescriptive analytics are taken further, to recommend concrete actions for predicted scenarios. (Davenport & Kudyba, 2016.) Hunke et al. (2021) have a similar approach to analytics-based services, but in addition they separate diagnostics analytics, which aims to describe why something has happened. Their summary of four identified analytics-based services' archetypes is presented in Table 1.

Archetype	Separating characteristics	Typical applications
Making data usable to customers	Descriptive analytics to make data useful/accessible for its customers Data created by customers' processes or by publicly available sources Customer involvement ranging from a (reactive) recipient to an (active) data provider	Aggregated reports, dashboards, APIs
Delivering data-based insights	Diagnostic analytics to deliver supportive, actionable insights Customer data generated by dedicated business process or elsewhere Customers involved as data providers	Target benchmarks, meaningful alerts
Providing data-based recommendations	Predictive analytics to provide pre-emptive, actioninspiring, tailored decision support Customer data generated by dedicated business process or elsewhere Deep integration of and high interaction with customers	Automated situative recommendations
Providing data-based recommendations	Predictive analytics to enable improved/novel ways to conduct business Newly created data sources to derive highly unique and customer-specifc information Data-collecting objects deeply integrated into customers' workflows requiring close interaction	Workfow integrated sensor-based IoT objects (i.e., smart products and services)

TABLE 1. Four archetypes of analytics-based services. (Hunke, Heinz & Satzger, 2022)

As mentioned, the emerge of the data service business was only enabled since cloud-computing made it possible to handle big data and the data service businesses emerged only after internal use of independently collected data. Nowadays, the number of companies offering data analytics as a service is increasing due to the advancement in analytics technology and the velocity of new data being generated. (Hunke et al., 2019.) The trouble for all of them still exists in the lack of research considering the value creation out of big data and analytics (Gandomi & Haider, 2014; Hunke et al., 2021). The amount of big data available also creates another challenge for the data service providers. The ability to recognize valuable data sources and units for each customer is in the core of providing value with a data product. As Hunke et al. (2021) state, it is important to figure out which data inputs are the most beneficial and meaningful for the customers instead of just relying on the massive volume of big data. This can be implemented by active dialogue with the customer. Davenport and Kudyba (2016) agree with the idea of product development for data products, that the importance of responsiveness to customer feedback highlights significantly in the context of data.

The emerge of big data, and the analytics it enables, have created a whole new business playground for B2B operators with capabilities to collect and analyze data. Being a completely new business, big data has forced data providers to determine "what is sold, how selling should take place, and how to make money from it" (Rantala et al., 2020).

2.5 Value-based selling

Sales is often the final department to be in contact with the customer, so it is important for them to implement this value-oriented approach. Value-based selling focuses on customers value in use and relies on understanding the customers business model, crafting the value proposition, and communicating customer value. (Terho et al., 2012.) These three basic "building blocks" of value-based selling require a lot of attention from the supplier to achieve optimal potential of value-based selling. According to Töytäri and Rajala (2015) for example the extent to which crafting of value proposition is developed is extremely important. As customers are individually different to each other, also the optimal value propositions can differ between similar customers. Another important point Töytäri and Rajala (2015) highlight is that one mean of communicating customer value after crafting the value proposition is affecting customers' expectations on value perception. This is another extremely challenging task for the supplier but when successfully implemented the probability of customer satisfaction rises.

The idea behind value-based selling is that the whole starting point of sales has to be altered. Instead of seeking opportunities to push out as many products and deals as possible, the goal is to figure out how can we make our customer(s) more successful. The idea is similar to the concept of customer success

management. Customer success management is a newer concept that has only begun emerging around 2015. It is a further evolved form of customer relationship management (CRM) that "proactively prioritizes customers' experience and engagement toward maximum value-in-use". (Hilton, Hajihashemi, Henderson & Palmatier, 2020.)

Value-based selling is a concept that focuses further into customer's ability to perform. Whereas more traditional customer-driven perspective on sales aims to fulfill all customers' expressed needs, value-based selling aims to comprehensively understand the customers business model (and eventually key drivers for earning logic) to offer the best value for their business goals. (Terho et al., 2012.) The idea here is not just presenting the benefits the customer can gain through the offering but proactively pursuing the most beneficial solutions for the customer's use, crafting the most compelling value propositions and reaching for the best possible outcome for the customer when providing this value. Afterall, it is vital that this value leads to monetary benefits, since that is the primary goal for businesses. (Terho et al., 2012.)

Perhaps the main challenge in value-based selling is the understanding of customers' business model. According to Terho et al. (2012) it is often difficult to predict the customers financial outcomes from the provided value. And before interpreting the financial outcomes, the supplier should first be able to understand what creates value for the customer which, of course, differs for each customer (Zauner et al., 2015). However, when the supplier understands the customers business it can "sell value" which is the desired outcome, since value is something that each customer is eventually looking for, even though they rarely know how to explicitly show their value needs to the supplier. (Terho et al., 2012.) The challenge that sales department faces here, is that even if you would be able to develop a concept that creates value for the customer, how do you align your views on this value?

When the seller is taking this required proactive take on providing customers value, value-based selling is well suited for selling "novel and complex" offerings (Töytäri & Rajala, 2015). Therefore, value-based selling should definitely be considered when selling data-based products and services due to the challenging qualities of data value. Since data value can be difficult to express for customers, as it depends on the quality and level of analytics that can be provided along with the data itself, being able to communicate the desired value for the customers is vital. The problem here is that there are often conflicts between suppliers and customers perceptions of value (Töytäri & Rajala, 2015). However, when the expectations are met, value-based selling is seen to be a very effective sales method. Töytäri and Rajala (2015) remind that the responsibility to align value expectations and perceptions is a responsibility of the supplier. Therefore, the ability to affect customers value perception is a key part of successful value-based selling along with being able to adapt to what is required. Either way can lead to a desired outcome, with the ability to influence the customers value perception to match given value propositions being perhaps the more beneficial way for the suppliers. For suppliers to achieve these capabilities

it needs to acquire a certain supplier status of manifesting "trust, access, and receptivity". (Töytäri & Rajala, 2015.) However, Rantala et al. (2020) point out that the suppliers' ability to influence customers' buying process has become increasingly challenging. Due to the volume of open information via internet the customers are often highly informed before the first actual contact with the supplier and have formed their view of the topic in advance. This may set significant challenges for the supplier to be able to influence these pre-formed views, which still is almost mandatory for sales department to achieve for aligning the value perceptions.

Even though the supplier carries major responsibilities in enabling the use of value-based selling, there are some qualities required from the customers to make it possible. If the customer focuses too strictly to only short-term results and is unwilling to share information with the supplier, the implementation of value-based selling becomes considerably more difficult (Terho et al., 2012). Hence, the inclusion of the multitude of value dimensions is beneficial for successful implementation of value-based selling. Including all four dimensions of value (operational, strategic, social, and symbolic) into supplier-customer communication can help both parties discover new sources of value creation. (Töytäri & Rajala, 2015.)

When it comes to value-based selling regarding data-based value the extent of previous studies is lacking. Even though both value-based selling and data-based value are reasonably well researched topics, their common dimension could use further research. (Rantala et al., 2020.) This thesis aims to contribute to this gap by presenting practical research on case company entering a data service to a new market by utilizing the means of value-based selling. The goal here is to figure out how well value-based selling can fit the needs of data sales and what needs to be considered to make value-based selling suit the needs of the sales of a data product.

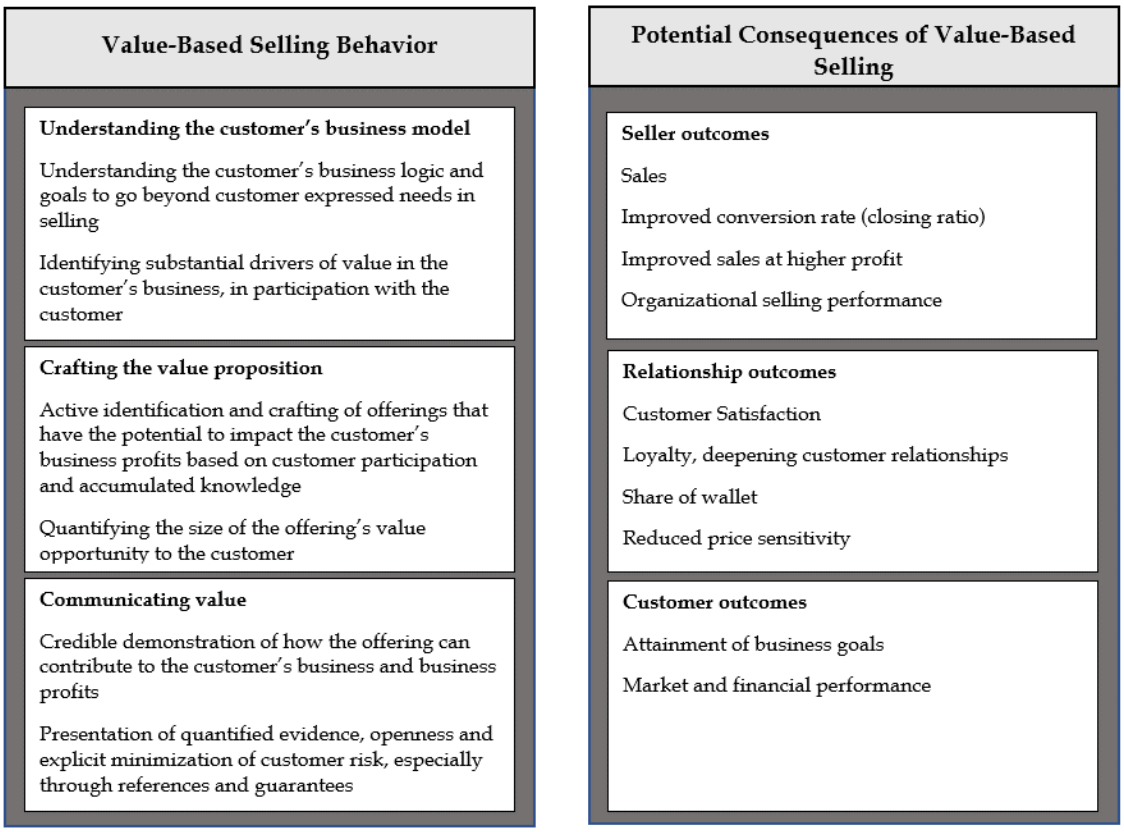

FIGURE 6. Conceptualization of value-based selling and its potential consequences (Terho et al., 2012.)

2.6 Summary

To summarize, there is a lot to consider when launching a data product. Accessing quality data, gaining the expertise to turn data into insights and an especially challenging part is communicating the value for the customers in a desirable way. With data products, the focus is in creating value-in-use since data products can provide value in a less traditional manner. Purchasing data or access to data does not transform directly into ROI, but only provides tools to increase customer value in an indirect way. Value-based selling is one way of handling the sales of such complex matters as data. However, implementation of value-based selling is not very easy and the whole approach is understudied within the context of data products. Value-based selling requires understanding of the customer's business model and earning logic. In addition, the value-creation can occur in several ways, it is important to engage in a dialogue with the customer to achieve optimal value-creation in each sphere (customer-, provider- and joint-sphere). Also, the level of desired data analysis may vary between customers, whether they require raw data or analytics of some extent.

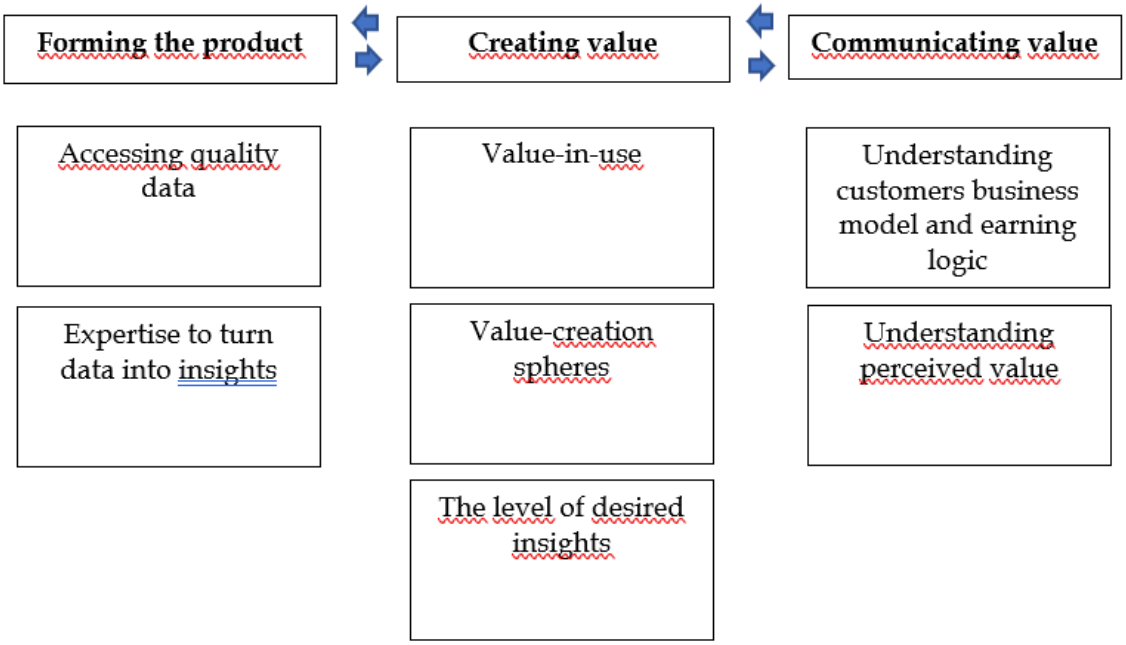

FIGURE 7. Conceptual framework.

3 DATA AND METHODOLOGY

Study methodologies can be separated to quantitative and qualitative methods. Malhotra (2017, 150) defines qualitative research as ”unstructured, primarily exploratory design based on small samples, intended to provide depth, insight and understanding” and quantitative research as “research techniques that seek to quantify data and, typically, apply some form of measurement and statistical analysis”. The concept of value being a highly complex and subjective phenomenon, it would be extremely difficult to research by quantitative methods. In addition, as the research on data products and their value is still lacking, we need to discover qualities that are related to the topic instead of being able to test any existing theoretical foundations per se. Therefore, in this thesis a qualitative research will be conducted.

As we are addressing value in this thesis, the research method has to suit its complex qualities in a fitting manner. Out of the selection of methods in qualitative research the one that suits the situation most is conducting a case study. According to Cassell and Symon (2004, 332) case study allows us to study phenomena in their context. Value, being an extremely context-sensitive matter, is best research using this method. Another reason Cassell and Symon (2004, 332) give to conducting a case study is that it allows us inductive research for building theory instead of testing existing theoretical implications. The value of data is still an area that is lacking research, so building theory is required and this case study will aim to do so.

3.1 Case description

Vaisala is a global leader in weather, environmental and industrial measurements based in Finland. Founded in 1936, Vaisala has provided its customers insights and abilities to measure and understand environmental and industrial phenomena for more than 85 years. Vaisala has offices in several countries and their net sales in 2021 were 437,9 million euros. Being an innovative

company, Vaisala relies its growth on market leading research and development as well as data-driven operations. The portfolio of Vaisala's offering varies from physical sensors and measurement device to software and data services. Vaisala has customers all over the world on a variety of industries, both private and public. (Vaisala, 2022.)

This thesis concentrates on the communication of value of a data product. This is implemented by considering a specific data product of Vaisala, a data product built around road weather. The product provides road specific weather data and insights via an API (application programming interface) and it can be used in a variety of ground transport use cases. The product in question meets the definition of service as it is provided as a data-as-a-service (DaaS) model. It is already widely popular among major operators on some business areas but there are still many business areas where the whole concept of road weather can be unacknowledged, even though the benefits enabled by it could be similar or even more valuable. In this thesis we will concentrate on an area of business where road weather is yet to be utilized to get to study the requirements for selling value. The case is used to study the perception of the data value as well as communicating the value of DaaS to a new customer segment.

Despite being a top priority factor in road delays, the inclusion of weather-awareness in logistics operations can be seen lacking. Nowadays, regular atmospheric weather, if anything, is commonly used in logistics to understand driving conditions. However, road weather would offer a more direct approach to road surface itself, but the concept and its value seems to be rather unknown in the logistics industry. Until now, logistics operators are commonly basing their road surface interpretations on regular atmospheric weather. The opportunity to utilize further surface insights provided by Vaisala Road Weather seems not to be considered even though the value potential seems inevitable. Most likely the reason behind this is that the whole concept of road weather remains unknown among logistics market. Therefore, it is interesting to find out how the value perception and understanding of value in logistics segment is and what are the means for communicating that value. This will help us determine the process of selling data value and recognize what it requires.

3.2 Data Collection

The data for the case will be collected by using semi-structured interviews. Semi-structured interview allows us to perform a combination of interview questions that contribute directly to the topic of the research while still leaving respondents able to bring up their own thoughts that we would not be able to anticipate. Hence, semi-structured interviews will enable us to collect both theoretically driven understanding and more practical understanding form such a complex research topic as value perception. (Galletta & Cross, 2013, 24.) As we need to remember, we are lacking knowledge of the topic, and therefore we have to be able to react to the information we gain during the interviews. The interviews

were implemented online using Zoom meetings due to geographical distances. They were recorded and afterwards transcribed into text.

When forming questions for semi-structured interviews, it is vital to ensure the interviewer is able to keep each question meaningful to the purpose of the study and so that the interview maintains its course while collecting information based purely on theoretical background as well as respondents practical experience (Galletta & Cross, 2013, 45-46). For this thesis, operationalization table (included in as appendix 1) is used to form the questions guiding the interviews.

The selection criteria for respondents aimed to ensure that they are able to provide meaningful results for the research. The respondents were selected from companies that offer data-based services for logistics providers but are not currently using road weather as a part of their operations. Hence, the aim was to reach operators who base their business in the use of data but are not yet engaged with the particular data studied in this thesis. Reaching suitable respondents was a challenging task and guaranteeing the anonymity of the respondents was vital. In the end, three extremely informative interviews were conducted.

The respondents who attended the research represented companies with global customer base. Everyone interviewed had a strong connection to product management and development so that they had a clear understanding of how and where road weather data might provide value. The respondents job titles and the dates and durations of the interviews are presented in the table 1 below. To ensure anonymity the accurate sizes of the companies or other information will not be provided, as the profile of the companies is already quite specific. To provide some scale of the company sizes, respondents 1 and 3 represented smaller companies with revenues ranging in millions of US dollars. Respondent 2 represented one of the biggest operators out there with remarkably higher revenue. All three companies operate globally.

Informants	**Position of informant**	**Interview time and duration**
Respondent 1 (R1)	Chief Product Officer	20.02.2023 30 minutes
Respondent 2 (R2)	Product Manager	07.03.2023 40 minutes
Respondent 3 (R3)	Product Manager	08.03.2023 35 minutes

TABLE 2. Interviewed informants

The interview questions are mostly based on the first research question "What kind of expectations customers have towards data value?". The second

research question "What is required for communicating data value in B2B?" will be answered based on the expectations customers express and theoretical background.

3.3 Data Analysis

The collected data was analysed utilizing thematic analysis method. Thematic analysis can be used to capture themes from the collected data, that are meaningful for the research questions (Willig, 2014). In this research, multiple meaningful themes were identified on the conceptual framework and therefore thematic analysis suited the needs for the research topic well. After collecting the data, all interviews were transcribed based on the themes around the interview questions from the operationalization table. As the interviews were implemented as semi-structured some of the questions were answered partially in a few separate turns of speaking, so it was important to make sure that the transcription was performed with that in mind. The operationalization table also separated four themes. The four themes; data value qualities, product needs, data value creation and perceived value were used to separate transcribed interviews into themes. Themes were determined in the conceptual framework of the literature, with product needs combining *forming the product* -phase overall.

As selling value in a context of a data product was a topic that is lacking practical research an abductive take on the analysis was required. Abductive analysis suits the topic well, as it leaves room for new observations outside the theoretical background and its implications. Abductive take on analysis allows the researcher to keep their eyes open for surprising or unexpected findings from the collected data. (Reichertz, 2014.)

The goal of the thesis is to support sales of a data product by figuring out what kind of expectations customers will have of the data product (based on what they already know) and how are they experiencing the value potential. The ideal outcome of this research would be to discover what kind of aspects sales departments in B2B need to consider when introducing a data product to a new market. As the respondents addressed their views on the interview topics on their own words, their core takes will be presented as direct quotes to minimize the possibility of the author's perceptions affecting the results and allowing their opinions to show as constantly as possible. Another goal of presenting the answers with quotes is to deliver the nuances of their views as accurately as possible.

3.4 Assessment of research quality

According to Eriksson and Kovalainen (2008) qualitative researchers and method books are divided in opinion on whether the traditional indicators, reliability,

and validity, can be utilized in qualitative research. They refer to a seminal work by Lincoln & Guba in 1985, where reliability and validity are substituted with a four-dimensional concept of trustworthiness, where the four aspects are credibility, transferability, dependability, and confirmability. In this thesis, the research will be evaluated using these four aspects.

Credibility is used to determine whether the study provides credible outcomes that another researcher could agree with based on the same materials. Credibility of the study requires the researcher to familiarize with the topic and the data used for the study must be sufficient. (Eriksson & Kovalainen, 2008.) To assure credibility it is therefore important to make sure the literature used to build the background of the study is sufficient, relevant and new. Also, the empirical data needs to be comprehensive enough and it needs to address relevant sub-topics of the researched phenomenon.

According to Eriksson and Kovalainen (2008) transferability refers to being able to link the research to former research. Determining transferability is based on the sufficient amount of similarity between the results of the study and prior research so that they build understanding in a sensible way. For the transferability of the study, it is important to make clear links between the literature and empirical data. The findings should link to prior research and build to a coherent continuity. For this study specifically, it is important to note that the respondents were not formerly familiar with the data in question which may have affected the study to some regard.

Eriksson and Kovalainen (2008) describe dependability as the responsibility to provide the reader with information that shows that "the process of research has been logical, traceable, and documented". Dependability can be assured by describing the research process profoundly. The reader must be able to understand why the research has been carried out in the selected manner.

Conformability refers to being able to link the findings to the used data to prove that the interpretations are not just imaginary (Eriksson & Kovalainen, 2008). To assure conformability it is vital for the researcher to reason their interpretations from the data. A thorough justifying of findings is required.

In this research, the theoretical background was constructed around prior research on data products and value. They were formed into four themes in the operationalization table. The amount of suitable background research was relatively comprehensive, of course in the restrictions of how much these topics have been studied, and the theoretical background should provide reasonable comprehensiveness of understanding around the topic. The empirical part was implemented around a concrete data product that I am quite familiar with, and the interview respondents were perfectly suitable to answer the questions due to their expertise around the researched market and their technical capabilities. The results of the interviews are interpreted based on prior research and the themes provided in the operationalization table.

As for transferability, the thesis focuses on the concept of selling value of a data product. The thesis builds around a practical case example of an existing product and an existing industry to provide actionable managerial implications.

The case as well as the respondents are introduced with as much precision as possible to provide background on to which extent the results are generalizable to other data products. Based on prior research the findings are linked to generalizable observations on data value.

With dependability, the whole research process is clearly documented within this thesis. It begins with a research gap of lacking practical research in value-based selling of data products and communicating their value, and it is implemented by constructing a clear, logically progressing background and crafting the methodology around themes gathered from that background.

The findings of the interviews are clearly linked with (and compared to) theoretical frameworks provided in the background to support the conformability of this thesis.

3.5 Research ethics

The respondents of the interviews were provided with a research notification addressing the topics and goals of the research as well as a privacy notice informing them their rights along with the handling of their responses and anonymity. The interviews were conducted with total confidentiality with the researcher being the only one accessing their answers. The interviews were recorded for transcription. During the transcription all identification information was left out. Both the recorded interviews and transcriptions will be deleted after finalizing the thesis. All material was kept on the researcher's personal computer protected with a password and no material was stored in cloud.

4 RESULTS

The conducted interviews pointed out several interesting reoccurring themes between them as well as differences between the respondents' thoughts. The themes were formed in conceptual framework but due to the abductive nature of this research new themes based on empirical observations might be formed.

4.1 Product needs

The first theme studied in the interviews was discovering what kind of product needs the respondents saw as the primary concerns for their product development. This was studied by hearing their thoughts on the product development priorities to provide background to the significance of the data in question, road weather data, into perspective. When it comes to product needs the answers varied a bit but there were clear similarities too. Product needs reflects *forming the product* -phase from the conceptual framework from a more customer-driven point-of-view. When asking for the biggest challenges at the moment, one theme that seemed to occur in one way or another was the challenges with data integration and information exchange. When we are talking about fleet optimization it is not about the ability to perform in one small part of the optimization but an overall capability to perform in everything that the logistics fleets wish to optimize. Even though logistics operations have been optimized for a long time, there are still no common standards. It was clear to see from the interviews that, in addition to being first of all able to manage to keep all strings in your hand, another thing that is required is flexibility. As the standards are lacking, every customer can be very different from each other. In addition, the issue in technology adoption was brought up during all the interviews at some point:

Respondent	Challenge of technology adoption
R1:	*I think the biggest challenge is the technology adoption itself. Dispatchers who actually create the routes and drivers who are using some kind of technology doing the deliveries, they don't trust the technology as much. They think they know their business better than some system can tell them. So it's sometimes hard for them to accept if an optimization generates a route for them. They don't necessarily think that it will work. So there is an adoption challenge among the people who are currently running the delivery operations.*
R2:	*And how it is easy for the users, all kinds of users, to adapt to the software. … and to go back to the beginning of the conversation, we need a really good user experience, because if we don't have it we would not receive the correct information. The users, they wouldn't put the information in the correct places and then we wouldn't have the correct information.*
R3:	*Because usually the users of these systems are not IT guys. They are more like process managers or warehouse senders … so we need to develop a solution that is fitting this kind of user. So again, the main difference I see is around how you can adapt the system.*

The respondents had a bit different issues to emphasize even though their overall view of the market seemed relatively similar: the first respondent stressed technology adoption and lack of standards in two-way information exchange, the second respondent stressed the challenges in combining every single data source together and the third respondent stressed flexibility to be able to best serve every customer when everyone has their ways of working.

The same themes were of course present in the discussions of how their software should be developed. Especially integration issues seemed to be major challenges right now, as all the required information may come from several different sources in several different forms, or the information may be simply lacking. As for route optimization and ETA calculation the real time data on traffic was perhaps the most emphasized possibility for improvement along with the same issues of technology adoption and data integration.

Weather was necessarily not a factor that was mentioned as one of current top priorities, but everyone had some interesting thoughts about it. The most important thing about weather for the respondents was the significance of different geographies. It was seen that for more stable climates it did not necessarily have as much of a significance as on more varying climates where snow, ice, floods, or storms occur more often. Actually, weather data was seen to be a bit overlapping with live traffic data, which was a matter of high interest, since weather events are only one of many reasons that lead to traffic issues. However, the forecasting capabilities in weather were seen as benefits over live traffic data at least to some amount for example in the second interview. This represented the value potential of the studied data in comparison to current solution. It is important to note here, that even if weather data was not seen as

the number one priority at the moment, it was considered an interesting data source that might serve as a capability to improve optimization at some point by integrating a new data flow. More added data applies new capabilities to improve the algorithms as for example the third respondent stated: "*And this comes to weather of course with a constant improvement of optimization because we are in a market that competes. Of course, our goal is not only to bring a solution that's sufficient for our customers but it's also sufficient enough that they do not consider changing to another supplier.*" Other benefits outside of regular route optimization and ETA calculation will be discussed later.

Respondent	Impact of weather for their business
R1:	*It definitely has an impact depending on what geography you are looking at. If its in the winter in the northeast of the US where there are the most storms and things are more frequently occurring it is definitely a factor but not the only factor. … so I made it through the weather to the location but now I still cannot deliver.*
R2:	*For sure it has an impact. Not so much in all geographies, where it is the same all the time; no rains or snow for example. The weather is not a concern. For some geographies around Europe and US, Canada there is a big impact. … we use the traffic information but sometimes the traffic information comes from the environmental situation. Maybe then if we knew this before it would be really good.*
R3:	*I would say that strictly depends on the country and the geography you are trying to address. Because for example, maybe in some places you need to consider weather conditions such as heavy rain that may lead to higher traffic and delays or even road blockages while in some other places weather may be more stable or less dangerous.*

After discussing the challenges and possible development needs we covered from where the development processes begin. This was a particularly interesting topic to cover, as understanding where the motivations for integrating new data sources emerge in the first place. Understanding this is vital for familiarizing with the customer's business model as well as communicating the value of a new data source. Most development was very customer-driven, but all the companies did also conduct their own research for internal development. The second respondent explained also that the development process depends on the size of the company, so that smaller companies or start-ups are operating based on customer's demand whereas bigger companies have the resources to proactively develop by their own research. This was clearly seen in the respondents' answers, as the size of the company that they represent affected especially their takes on product development.

Respondent	Product development
R1:	*It is definitely more customer-driven because otherwise if you do research on certain things and you find a solution then you have a solution that is chasing a problem. You want to start with a problem and come to a solution rather than trying to… I mean I am not saying we should not do research but you don't want to end up in a position when you have some interesting solution but you don't know exactly where to apply it.*
R2:	*When we first started to get big customers, it was what the customers need us to do. It was really important to grow fast and to keep the customers (when a smaller company). But big companies are mostly about research and understanding what the market needs, not that customer-guided anymore. We have these two situations at the market and it's really important to see the difference when we have a start-up or are a big company.*
R3:	*We have two (development) pools. As to call it in a certain way we do our own research and conduct our own trend forecasts. … and on the other side of course we have a number of different customers from many different verticals and we conduct research on them … but also we identify as well needs on their side that need to be solved (almost immediately) or we should rather start working on a solution now.*

As customer demand was named as an important source for their development, it was interesting to hear what the major motivations for their customers were to look for new features or developments. Respondents were agreeing that their customers (logistics fleets) were desiring cost reductions and efficiency over anything else. Other motivations were also recognized, such as safety, customer satisfaction and sustainability, but everything depended more or less on the costs. Especially the third respondent also stressed the low level of digitalization and transparency to be a major issue for logistics fleets so that they wish to have a better understanding of their processes and to integrate everything better together. Of course, this also led back to hoping to achieve better efficiency and reduce unnecessary costs. Overall, this implied that the desires of the end-customer of the data, in this case logistics fleets, were an important driver of inputting new data sources.

Respondent	Logistics fleets motives for desiring features
R1:	*The biggest motivator, there are two. If you are delivering to actual end customers and not to intermediaries, if you are directly delivering to the end customer then one of the motivators is customer experience. … The second thing that is a motivator is cost savings, improvement in efficiency. Logistics companies always work on very slim margins … so anything that gives them a way to improve their efficiency, the ability to save costs or by better utilizing their capacity that is what is going to be a motivator. … Yes (safety is also a big motivation), because whether it is the safety of the vehicle or the driver or the safety of the merchandise that you are carrying any damage is going to reduce your capacity to deliver.*
R2:	*(Laughs) They want to decrease the costs. Every time. Always they ask for something and they talk about some indicator that was not good and they want something to solve that indicator and to decrease the costs. … When they say they have problems we just talk about cost reduction and how can we reduce their costs with our software. That's why they contact us.*
R3:	*The biggest (issue) that every company has is that in general they have a really low level of digitalization. And this (leads to) a lot of processes with a lot of things being manual with a lot of lack of transparency on information management. … Sometimes it's very… a process is a black box where you know how much you put in and how much came out but it's very hard to find what's happening in the middle. … In the end what they want to do when they buy a software is that the software produces some time and cost savings. That's the end goal that they have. Yes and use less resources, reduce emissions and all the other benefits that this software produces but in the end if I am investing money on to something I will want that money to pay off in some sort of, in this case as a saving on later on costs.*

As all the respondents were relatively like-minded in the product development needs, and also their experience on what their customers desire were more or less similar, the primary means of differentiation between companies was discussed. What was interesting, according to all of the respondents the operational capabilities of the software are rather similar between the competition. This implied that integrating new data sources to improve overall performance was not a major motivation for them, but their focus seemed to be on very specific developments. The biggest differentiation seemed to be the industries that they addressed. Some logistics software providers can be specialized only on one or two specific industries (i.e. pharmaceuticals, laboratory samples, clothing, food, or basically any industry) whereas other aim to address all the industries with a more flexible software. According to the respondents, the software providers often begin with a specific industry or even developing their solution around one big company to address one specific challenge that the other providers have not solved yet. Other

differentiations were based on overall capability to perform with user experience: information integration capabilities and feasibility of adoption. Industry-based differentiation was an interesting observation, as it suggested that new data sources were not necessarily inputted to improve overall performance but to solve a specific problem.

Respondent	Differentiation
R1:	*A lot of the software operators start from a specific vertical, so they probably went out solving the problem for let's say furniture logistics or food logistics and then as they build up their platform, they try to expand it into other verticals. They do that and that's then why you have a so many different solutions in the market.*
R2:	*Biggest differentiation is how you provide the information, all information you have. … And how it is easy for the users, all kinds of users, to adapt to the software.*
R3:	*From what I see at the moment, let's say that the optimization capabilities are more or less similar in market level. Then what mainly changes is the industries we address or the verticals we address and how flexible we are for each one of them. Because let's say as an example, Amazon will not have the same shipping standards as an automotive company may have to send car parts to their dealers. … But in general, time and performance-wise there is no huge difference. It's more like the industry fit and how it is to use. … So again, the main difference I see is around how you can adapt the system or how strong is your fit with a certain product or process. And then integration with third-party services.*

The final thoughts on the product development needs were discussing their idea of how the logistics optimization software market will develop in the future, what are the major trends that will have a significant impact during the upcoming years. This was discussed in order to gain understanding of possible major drivers that might affect the future development of the whole industry in a remarkable manner. A global trend of sustainability was mentioned often, however, there was some doubt if sustainability was considered only due to its cost reducing potential. Other themes mentioned were automation and information management.

Respondent	Future development
R1:	*One other motivator for bigger shippers is also sustainability, being able to reduce their CO2 emissions, being able to use more climate friendly metrics to do their deliveries and getting the most out of them. … Not so much for small and medium sized shippers but definitely for the bigger fleets that is also coming up now, in the last few years.*
R2:	*One of the things we believe for example would have (a growing significance) in US (is that) people are putting (more attention to) the electrification, they are using electric trucks. They complain that, and remember everything is about the reduction of costs, they are not necessarily "good" for the environment but they just do this because they can give back carbon creds, for example. … I believe in the future, very near future, we are talking about environmental impact and efficiency more than we talk now.*
R3:	*I think we have moved forward to two directions. One is again transparency, information management. … And then on the other side optimization-wise we are also going into the direction towards as much automation as possible. … The two biggest trends are automation and information management and transparency and integration with all other systems.*

4.2 Data value qualities

In the interviews we also covered data value qualities. The aim was to find out more profoundly what was the respondents value perception of weather data, were they familiar with road weather as a concept and did they perceive any difference in the value potential between weather data and road weather data.

None of the respondents were currently using weather data in their operations. However, they saw some value potential in it and figured that they, or their customers, may still be benefitting from weather data via some third-party operator. Still, they did not know for sure if their operations did or did not benefit from weather data through a third-party service. One possible reason for this could be that understanding weather data is a very specific area of expertise that the logistics optimization companies do not understand profoundly. Integrating a new data source requires capabilities to utilize the data to provide practical benefits for the business. The second respondent referred to this by wondering if their customers think that utilizing weather data would not be within their area of expertise.

The primary reason for weather data not seen as a priority was that weather conditions were seen as a cause, but the effect, in this case traffic disruptions, was seen as the valuable insight. It seemed that the logistics fleets experienced this the same way, as none of them had heard their customers requesting or wishing for integration of weather data into their platform.

Respondent	Logistics fleets take on weather data
R1:	*More than weather itself they (logistics companies) look at the consequences of weather so they are looking at Google Maps and traffic congestion in the areas that they deliver. … So they are not directly looking at the weather itself but the impact of weather which is reflected in the form of drive and congestions maps and stuff like that through the mapping software that they are using.*
R2:	*I don't know if they (logistics companies) pay attention (to weather) but they never talked to us about it. I don't know if they believe we could not provide this or … I never heard about anybody asking for this but I don't know if they are thinking about it and connect it with our solution somehow.*
R3:	*I would say not so much (on if logistics companies consider weather in their operations). … We use providers that may consume this information but we as a company, we do not consider our strength, the usage of weather data at this point. … We consult also third-party services … I don't say that they do not use weather data. So I will not say we are not benefitting from it as well.*

When we were discussing road weather and its difference to regular atmospheric weather, the first respondent was somewhat familiar with the concept whereas the rest were not very familiar with it. After describing the difference, the respondents interpreted road weather to have some value potential over regular weather, but the focus was still also on atmospheric phenomena. The lack of use case evidence was probably the biggest uncertainty, as it was seen that on paper, road weather being a new data source could very well improve the operations, but the questions was to what extent.

Respondent	Impression of road weather compared to atmospheric weather
R1:	*Is that (road weather) a big factor in my ETAs, is that a big factor in my asset utilization, is that a big factor in my customer experience. If yes, then for sure. … What is the net difference of having that additional piece of information. That will determine whether having that information and acting on it will be consequential or not.*
R2:	*(First described a concrete example where atmospheric measures such as temperature were vital due to the sensitive nature of the delivery) I think mostly, for the other cases, it would be the road weather, it would be more important (due to the more direct approach).*
R3:	*It's a yes and a no answer (if road weather has an edge over atmospheric weather). … Every piece of information that is useful and that will help us consider and have a more accurate prediction of how a logistics process can be fulfilled at some point will be relevant. But it's a tradeoff between the effort it implies, the complexity it has and the impact it will truly have. … So let's say I can see the impact, I am a bit skeptical on the potential benefit it can bring on a business perspective.*

4.3 Data value creation

In the interviews the value creation was discussed next. It was important to learn how additional data, in this case road weather, would create value for the logistics optimization software. As we have already seen from the previous answers regarding weather, the value that most weather data can provide is indirect. As weather data does not provide intrinsic value, it is important to be able to make meaningful and actionable conclusions out of it.

The potential benefits of understanding the weather effect were seen mostly in forecasting capabilities and risk estimation. For the respondents the current standard over weather knowledge was to use live traffic data which takes weather, along with other variables, into account. As this was seen as more or less a substitute to weather data, it was important to learn what would be required of weather data to be able to create value. It was in interesting starting point for figuring out the value potential as the respondents perceived totally different type of data to be almost a direct substitute for the studied data. The idea of value creation was seen from two perspectives that were still relatively similar. On one hand, straight forward suggestions were desired: for example, in case of this weather event X, the drive from point A to point B will be affected by causing a delay of Y minutes, or due to weather effect X this particular route will involve delay or accident risks between time period Y to Z. On the other hand, as the optimization is based on algorithms and automation, raw data would be needed to feed into algorithm, where artificial intelligence and machine learning would be used to process it into insights. It is important to note, that in both ways of utilizing this new data the expertise of the supplier would be extremely important for turning the data into operational benefits. Still, there might be more challenges in utilizing a new data source as the first respondent reminded here again about the challenges in adoption.

R1: "I think it is a combination of both (practical insights and impact of weather, and raw data for AI/ML purposes). In the situation when there is a contradiction (between weather data related suggestions and their intuition) I think they would go with what their experience tells them. … I think what you might want to do is instead of making of a change (using an optimization algorithm) you make a suggestion saying that do you want to explore this, we have CVC (for example) this data point and we think there is going to be an impact and this is the impact: do you want to change your plans. And when they don't change their plan you might want to ask them why didn't you change the plan."

4.4 Perceived value

Towards the end of the discussion, it was interesting to hear where the respondents thought that road weather (as well as regular weather) data would be useful and what might be the practical use cases in logistics. The respondents had practical ideas and examples of where it could be beneficial. The common themes occurred around sensitive deliveries (in order to be able to deliver at a safe time with a suitable vehicle weather-wise) and the potential use cases were in ETA optimization and route optimization.

An interesting observation for the value perception was that the respondents still relied on to their prior understanding of general atmospheric weather data a bit. It is understandable as general weather is something that all of us understand whereas road weather is a more complex entity to thoroughly understand.

Respondent	Use cases for road weather data inclusion
R1:	*I think the big use cases would be for the time sensitive deliveries. … There you want to know even if there is a difference of 15 minutes or half an hour that can make a big difference. So wherever the criticality of time is very important, that is where they might be more interested. … If you have a lab sample (for example) that will perish if it's not delivered in two hours. Now there the impact of road weather becomes important because it tells you whether you should hold back the sample and not release it until you have better conditions so that you can do the delivery in two hours or something else.*
R2:	*For example for the route planners. Totally for the route planners because we could decide better on to which roads we go and which time or which type of vehicle for going through between on place to other. … (Another thing that comes to mind) It's like Waze (the application) for the driver. It's a one kind of solution I imagine it can be used for. Because you can see about the roads and how is the weather and you can provide information for the driver and how can he drive between for example a blocked road or really difficult roads to deliver something. … The "Waze" it will be real time information and the other one (route planners) (forecasting).*
R3:	*Like under certain weather condition the maximum speed that the vehicles can drive… or it's dangerous for vehicles to take this road because a certain condition makes it not recommended. … So I would say that if we could have an input on how let's say the speeds are affected or how any other condition like strong winds that may reduce the accurate speed of the truck, ice may make it dangerous. Of course, it's something would help us to make a better prediction and if we have a more accurate ETA maybe we can fit an extra order in one vehicle. And if you scale that…*

4.5 Use case dependency

The interviews mostly highlighted themes already recognized in the conceptual framework. However, there was one observation in particular that was found a bit surprising. Conceptual framework included understanding customers' business model, expertise to turn data into insights and value creation but I would argue that these themes do not comprehensively cover the significance of specification of use cases for data products.

When asking the respondents to think of examples where the data might have valuable usability, they brought up very specific examples instead of suggesting overall performance improvement for example. This was surprising, even if the surprise might be partially explained by lacking understanding of their business models. The literature suggested that the customers' relation towards new data might be reserved due to the indirect value approach of data products, for example the justification of purchase in context of data products is a bit more challenging task. However, as we could see from the respondents' contribution their mind went directly towards extremely specific needs where the data might be used and within that framework, they could think of several ways to benefit from the data. This is important for the sales, as it implies that the value perception of a data product from the customer point-of-view can be found from with a more specific take on the usability and going beyond understanding "just" the business model and overall performance capabilities.

5 DISCUSSION

The interviews conducted for this thesis offered a good view of the market that was studied along with the case example. The interviews provided interesting insights that resonated well with the theoretical background of this thesis. The interviews were implemented in a very case dependent perspective to gain as direct understanding from the respondents' practical opinions and thoughts.

5.1 Expectations towards data value

The first research question for this thesis was *what kind of expectations customers have towards data value.* The interviews provided practical evidence of a few qualities that the customers expected from the data product. First of all, this thesis supports the prior understanding of data value, where the value is only achieved after utilizing data as a mean of improving business. To be able to form a product that is capable of doing that, the first step has to be understanding the business model and earning logic of the company.

As was described about the nature of big data, its value emerges only when it is processed into actionable insights and analytics that can be used for decision-making support (i.e. Gandomi & Haider, 2014; Hunke, Engel, Schüritz and Ebel, 2019.) The same was clearly seen in the interviews where the knowledge of road weather itself was not perceived as anything valuable, but ideas of how it could be refined to create value were discussed. However, the value creation was not very simple as only turning the data into *weather-related* insights was not necessarily valuable yet, even if the insights might have been useful to some regard. This brings us back to the data value pyramid by Banerjee et al. (2011) presented in figure 5. In the data value pyramid, we can see how the value of data increases when advancing from raw data to insights and then again to transactions. In this case, even if providing transactions might lead to the highest amount of value potential, it is important to note what was discovered about the challenges in adoption. In this case, providing the highest level of data value from

Banerjee et al. (2011) data value pyramid, would mean in practice automated route optimization and ETA calculation, for example, it might not necessarily provide the highest value. As the end users might struggle with the adoption, it might be more valuable for them to receive insights in form of suggestions instead of direct decisions which might make them feel uncomfortable using the data overall. On the other hand, it can be argued that the greatest value could still be achieved by transactions, even if it might lead to temporary resistance from the end-users. Either way, this brought out interesting practical evidence of how the reception of a data product might be unpredictable unless familiarizing with the market in case. In this particular instance the interviews highlighted that it was vital to understand the challenges of customers when they are addressing again their customers. This was also supported by Terho et al. (2012) in their concept of value-based selling.

Another interesting practical point was discovered around value creation. As the customer in this case would not be the end-user, it is important to also understand their customers. Therefore, the concepts of value co-creation and value-in-use are very fitting to the value of data products, also in this case. Grönroos and Voima (2012) presented the different value-creation spheres in figure 3. Due to the challenging task of turning specific data into insights (and transactions) remarkable expertise is needed. As the second respondent speculated, maybe their customers do not expect them to be able to provide advanced weather expertise and the third respondent stated that it is not their expertise area, value co-creation would be necessary. As much as the provider might have quality data and as much as the customer could benefit from the insights, they must work tightly together to unleash the value potential by combining their capabilities around the data analytics and use case expertise. This supports the suggestions from the literature, according to Hunke et al. (2019) externalizing some data analytics to more capable partners can be vital in accessing new data, since gaining the expertise themselves could lead to major costs. This, however, brings us back to the challenge of the original research question of selling the value of a data product. If the customers do not have the expertise, how can they justify the purchases with limited experience around the data in question?

For the customers to gain interest towards a data product, the quality of the data in question has to be proven and the expertise to turn this data into usable insights for the customer is a ”must have”. This is strongly related to the value-creation phase of a data product. The value of data always emerges as value-in-use, as the data itself does not provide any value-in-exchange. As turning data into insights requires significant expertise around the data in question, value co-creation is necessary. The customer company will most likely not have the expertise to manage new data sources. They will know, quite specifically, what they wish to achieve with the data, but they are unable to use the data in the right manner. They expect the data to be handled in co-operation where they will possess the use case expertise to recognize the insights that will help them

improve their performance, but they will need assisting in turning the data into such insights. Therefore, the first proposition is suggested:

P1: Customers expect that data is turned into efficiently delivered insights in co-operation between the seller and the buyer, so that the insights are actionable in the customer's process.

5.2 Communicating data value

The second research question of this thesis was *what is required for communicating data value in B2B*. This question was answered by conducting interviews with product management professionals and recognizing common expectations on data value among them.

Rajesh et al. (2012) and Grover et al. (2018) argued that the eagerness to invest in data product is lacking due to the indirect value of data. Grover et al. (2018) stated that the provider has to be able to prove the value of a data product in the most comprehensive way for the customer to justify the purchase. Töytäri and Rajala (2015) argue that the value perceptions between supplier and customer often have conflicts. This challenge in particular highlights even more with data products, as understanding the capabilities that the data provides requires strong expertise of the data in question. The interviews conducted for this thesis supported this thoroughly, as all of the respondents, while seeing some value potential, were mostly requiring concrete numerical proof of the benefits. There were also some differences between the respondents' perception of how the data could be refined to support their business and what kind of insights could be achieved from the data. The respondents were concerned that the costs of implementing this new data source would overcome the benefits, because there is no way to comprehensively determine the impact without practical evidence from a similar use case.

To be able to provide such evidence, it is vital to understand what form of value the data product could potentially provide for them. Töytäri et al. (2015) introduced the four dimensions of value. Out of these, it was seen that the respondents hinted seeing the value potential in operational dimension and to some extent strategic dimension. Operational value refers to "improving operational performance" which the respondents implied with adding new data sources, which again would lead to improved accuracy and higher output value. On the other hand, strategic value (organizational learning and change, leveraging existing capabilities or developing new ones) was implied when the respondents discussed specific sensitive deliveries that would require new capabilities. This would lead to ability to operate on new verticals or industries. As Töytäri and Rajala (2015) argued that especially symbolic and social value are rarely included in supplier-customer communication. This thesis supports this view, as the respondents did not bring up anything that would imply these

dimensions. Of course, it is possible that they are not relevant in this case in particular, but this provides interesting topics for future research.

To go more into detail, for all the respondents their value perception started directly from receiving insights and metrics in a form within their area of expertise instead of raw data. However, there is an exception in this in case the data in question would be processed using artificial intelligence or machine learning, but even in that case they would require counseling in understanding the data and turning it into insights. Another interesting point was that they all had a very specific approach towards the value potential, all expressing really detailed potential use cases instead of improving their overall performance. Therefore, the second proposition is suggested:

P2: For communicating data value in B2B the supplier must communicate using metrics within the customer's area of expertise and help customers: 1) to understand the potential use-cases of data products and 2) to apply data-based insights to improve business performance or solve selected challenges.

Based on the interview findings I would suggest some data product - specific clarification to the conceptual framework presented with the prior literature. As the results of this study suggest, value-based selling can be a very fitting and effective way to sell data products and services. However, due to the rather abstract nature of data, there are a few things that require special attention when it comes to selling the value of data.

First of all, for the forming of the product it is important to consider a few alternative ways for the customers to put the data in use. With data analytics being able to turn the data into insights and transactions, that provide the most value for the customer, it is also important to note that another effective way of utilizing data is by feeding it into a machine learning or artificial intelligence algorithm. As was seen by the results of this study, the customers can have several different needs for the data product. They might require raw data for their algorithms but at the same time they might need insights and transactions for other use cases. Related to that, this study showcased the challenge of lacking information exchange standards, at least on the studied field of business. For the supplier being able to provide a solution for the variety of data needs of the customer, the means of transferring data need to be suitable for several levels of data and analytics.

As for value creation, the importance of value co-creation highlights in context of data products as the reason behind investing in a new data source often lay in externalizing the cost of a new expertise. It is vital to remember that the customer, even in a case of requiring raw data for machine learning or artificial intelligence systems, does not understand what the purchased data actually means for their business. They will most likely require assistance in understanding the data, at least for the beginning of the customership.

Finally, for the communication of value, when utilizing the means of value-based selling for data products and services references and substantial evidence

is extremely important. To justify the investment on a data product, the supplier must be convinced of the benefits over costs and with data being as abstract as it is, practical use cases are great for showcasing the value of the purchase. Of course, as this is not necessarily possible when acquiring the first customer, as was the case in this study, there are other ways to try and convince the customer of the value that the data can provide. The interviews conducted for this study showcased an interesting observation regarding the customers' perceptions of data use. All respondents were discussing extremely detailed use cases for the new data source instead of the contributing to their overall performance. This is an important aspect to consider when selling the value of a data product, as being able to present the insight value led from the data as precisely as possible would lead to more tempting value perception. Related to that, as the respondents discussed the use cases for the new data source in question, they could directly picture what the value potential of that data would be for their operations. Before acquiring the first customers to produce references of the data value, the supplier can still communicate this value potential efficiently after gaining sufficient understanding of the customers business model. This is particularly important with data products, as the justification of data purchase is more difficult for the customer compared to many other forms of purchases.

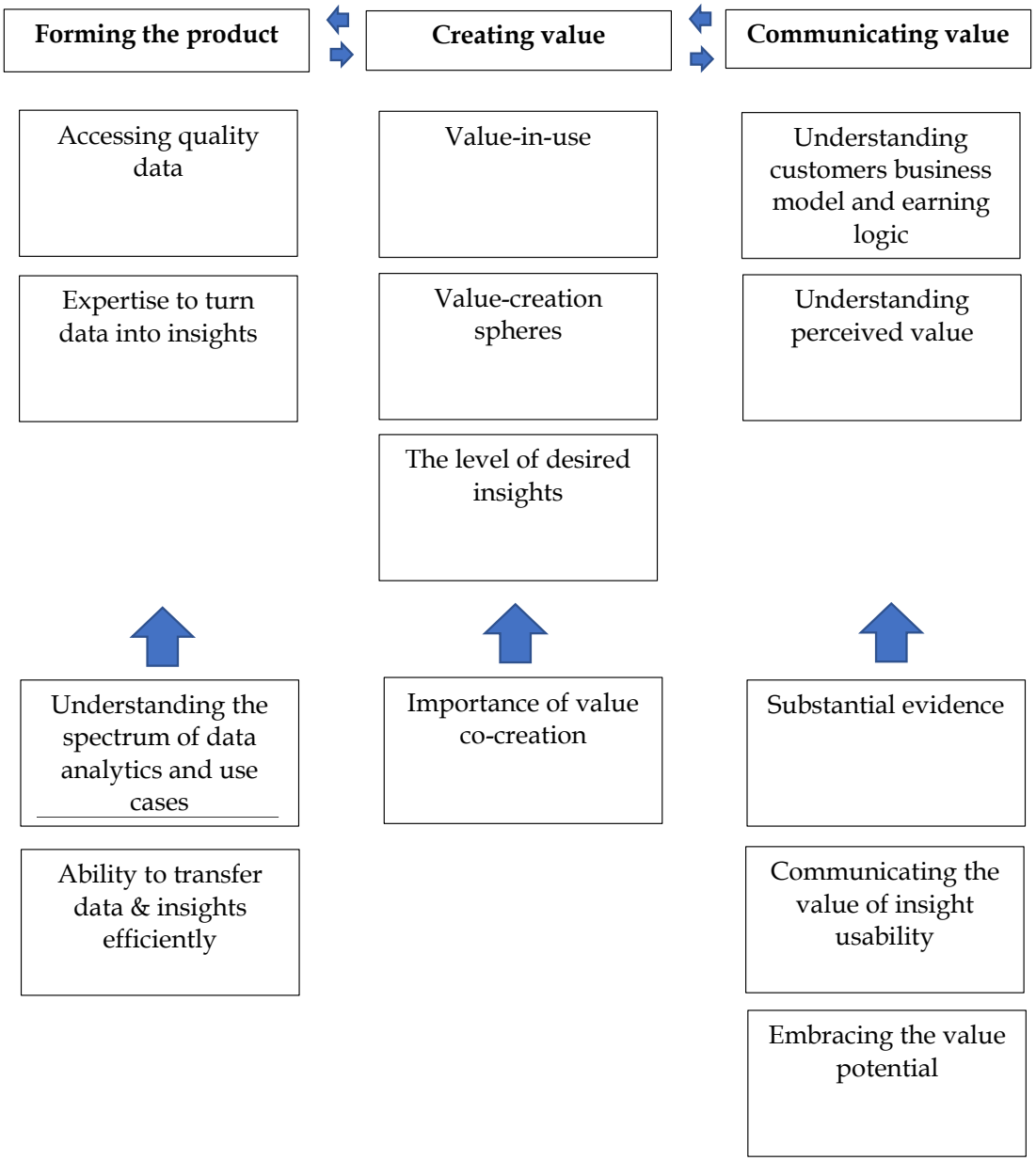

FIGURE 8. Revised conceptual framework

6 CONCLUSIONS

This study's purpose was to provide practical evidence of how the value of data products and services could be communicated to new customers using the means of value-based selling. This purpose was fulfilled by answering to two research questions: 1. What kind of expectations customers have towards data value? 2. What is required for communicating data value in B2B? The interviews conducted for the study provided insights of the customers' expectations towards the value of new data, and based on those findings, suggestions to utilizing value-based selling for data products were provided.

6.1 Theoretical implications

The extent of data business has increased tremendously during the last decade and with even more big data being formed every day, the value of data will likely still increase in the future. However, the research around selling the value of data is still lacking. This thesis aimed to present a practical take on suiting the principles of value-based selling in the context of data products.

The thesis was structured around two research questions: 1. What kind of expectations customers have towards data value? 2. What is required for communicating data value in B2B? These research questions were approached by presenting prior research on the topic as the foundation and conducting interviews to turn the perspective into a more practical framework. The interviews provided a more comprehensive lens on the topic, leading to some suggested alteration to the conceptual framework formed based on prior research.

The contributions of this thesis suggest that the customers expect deep co-operation in turning the data into usable insights for them. Gaining new capabilities is often costly and the opportunity to access additional data from external sources is a tempting option for companies. The challenge is in interpreting the data correctly and there the assistance of the supplier is required.

As Hunke et al. (2019) describe it, externalizing some data analytics and expertise may be the most cost-efficient option to achieve new capabilities. Overall, value co-creation is without a doubt a vital angle to consider when selling a data product. As there was evidence from the interviews, that basically any kind of new data source might be beneficial, the customers are likely to be a bit skeptical towards the cost-benefit relation due to the indirect, and beforehand unmeasurable value of data products. Therefore, the challenge in pricing of a data product arises, and figuring out the cost-benefit ratio will be vital to make sure that a solution that satisfies both parties is reachable.

The indirect nature of data reaches to causing challenges for communicating the value. This thesis supports the prior research where communicating the value of a data product is seen as a challenging task. Prior research implied that traditional reasoning for B2B consumption, for example return-on-invest or other numerical evidence, does not support data purchases as the results are uncertain. (Grover et al., 2018.) However, the value potential of data is undeniable and with the right tools and understanding, the value can be communicated more efficiently. Another challenge of communicating the value is that there are often conflicts between the value perceptions of supplier and customer (Töytäri & Rajala 2015). This study suggests that the challenge highlights even more with data products, as understanding the data and what capabilities it enables requires remarkable expertise that the customer is lacking. The customer might not understand what the data in question actually includes and what kind of insights it can provide. Therefore, it is the responsibility of the supplier to gain knowledge of the industry specific challenges that the customer aims to solve, to be able to communicate the value of the data product efficiently. Introducing value-based selling into data product business more is certainly a tempting opportunity, yet under-researched one for the time being.

This thesis had an abductive take on the research and some clarifications were discovered. The concept of value-based selling suits the sales of data products very well. However, based on the study I would suggest some specific aspects to notice when applying value-based selling to data products. An important observation from the interviews was that the customers tend to have an extremely precise view on the value perception and look to solve one specific challenge by introducing new data into their operations, instead of improving their overall operational performance. Even if the data might be used to improve their business as a whole, the more likely reasoning for investing in a data product would come from a more specific use case.

Another important aspect to consider when selling the value of data is that as the reason behind investing in a data product is to externalize analytics and expertise to save costs, in the sales situation the supplier is the expert of the data in question whereas the customer might not understand the data at all. This situation highlights in data as turning it into valuable insights requires remarkable expertise that is costly and time-consuming to achieve. It is important to communicate the value in metrics that the customer is familiar with.

6.2 Managerial implications

This thesis contributed to applying value-based selling to the context of data products. It offers managerial implications to companies that are selling data products or considering turning into data business. The implications of this study are best suited for a company selling a data product, that meets the definition of a service. The contributions may also benefit companies purchasing data products and services but due to the focus of the thesis being on sales, the benefits are lesser.

The primary suggestions of this thesis are paying attention to several small details that need to be considered when utilizing the means of value-based selling in the context of data products. As represented in the revised conceptual framework some interesting observations were discovered from the interviews that seemed to be typical for data purchases. Along with considering the aspect specifically related to data products, the importance of understanding the customers' business model cannot be highlighted enough. During the whole process of selling the data product, starting from forming the data product, customer's business model should be considered as thoroughly as possible. It is also important to note that customers might be reserved, or even reluctant, to invest in new data sources, even if they might see some value potential in accessing the data. As argued by prior research, when it comes to data value, existing use case examples and references are extremely efficient sales arguments. However, there is a major challenge in getting the first reference. For getting the first reference customer for a data product, value-based selling is a good shout for securing the first deal, but there are some influential aspects related to data products that should be understood.

There was one particularly interesting observation in this research. During the times of big data, data can be often seen as a comprehensive tool of improving overall performance. Customers might look to solve a very precise problem with new data, the kind of problem that might not be able to recognize without industry specific expertise. Therefore, it might be beneficial to take a small step back from value-based selling and combine it with more traditional sales approach, where the supplier aims to solve a challenge presented by the customer. This approach might lead to more persuasive take on communicating the value of a data product. This goes to show, that the target audience for a data product can be quite remarkably thinner than the supplier company may have imagined, if the challenge to be solved with the data is extremely industry-dependent for example, and only a handful of potential customers are addressing that industry.

6.3 Research limitations

This research concentrated firmly on one case. The interviews were conducted in a very case dependent manner. This enabled capturing the respondents' thoughts in the context of their practical area of expertise which led to extremely informative interviews. However, on the other hand, the findings are, hence, very case specific.

Another limitation for the research was that in the case of the thesis, the customers were not familiar with the data product in case even existing before the interviews. This may have limited the understanding of respondents to address the topic, but on the other hand allowed them to express their opinions without prior beliefs affecting their attitude, which showed more with the concept of general atmospheric weather, where it was already seen as "a dead end" to begin with. It would be interesting to learn if the findings would vary significantly in a context of a more familiar type of data.

On the other hand, there are a multiple different forms of data products and services, and they all have some different dimensions to them. This thesis aimed to make an overall contribution on practical perspective of data products and analytics connected to them without restricting too strictly on a specific form of a data product. However, as the case company and product represent a data-as-a-service -model, the results are best suited for the same DaaS product type.

6.4 Further research

Despite the major potential of big data, the practical research around sales of data products seems really lacking. There is some research on value-based selling of data products existing but considering the magnitude of big data during cloud computing times, the topic deserves more attention.

As this research was limited to consider one case example, it would be good to extend the research on several different case areas to find out if there are some findings that are only case specific. Also, considering specific types of data products and services along with the differences between them would showcase what kind of product-specific qualities the data products have on different markets.

Another limitation of this study was that it only considers value-based selling approach on data products without comparing to more traditional approaches to see what the actual difference between them is. There are several studies discussing value-based selling in comparison to other selling approaches and it would be interesting to learn how do the overall differences that are observed link to practical case examples of data products. In relation to that, a specific case study where the value-based selling approach is tested on selling a data product would contribute to an even more practical understanding of the themes discussed in this thesis.

In addition, this study's findings were limited to consider operational and strategic value due to the fact that the respondents only referred to these value dimensions. Research figuring out the possible social and symbolic value in the context of data products would be a topic that would shed more light on the value-based selling of data products.

REFERENCES

Banerjee, S., Bolze, J. D., McNamara, J. M., & O'Reilly, K. T. (2011). How Big Data can fuel bigger growth. *Accenture Outlook,* (3), 28-35.

Cassell, C., & Symon, G. (2004). *Essential guide to qualitative methods in organizational research.* SAGE.

Davenport, T. H., & Kudyba, S. (2016). Designing and developing analytics-based data products. *MIT Sloan Management Review, 58*(1), 83-89.

Delen, D., & Demirkan, H. (2013). Data, information and analytics as services. *Decision Support Systems, 55*(1), 359-363.

Eggert, A., Ulaga, W., Frow, P., & Payne, A. (2018). Conceptualizing and communicating value in business markets: From value in exchange to value in use. *Industrial marketing management,* 69, 80-90.

Eriksson, P., & Kovalainen, A. (2008). *Qualitative methods in business research*. SAGE.

Galletta, A., & Cross, W. E. (2013). *Mastering the semi-structured interview and beyond: From research design to analysis and publication*. New York University Press.

Gandomi, A., & Haider, M. (2015). Beyond the hype: Big data concepts, methods, and analytics. *International journal of information management, 35*(2), 137-144.

Grover, V., Chiang, R. H., Liang, T., & Zhang, D. (2018). Creating Strategic Business Value from Big Data Analytics: A Research Framework. *Journal of management information systems,* 35(2), 388-423.

Grönroos, C., & Voima, P. (2013). Critical service logic: Making sense of value creation and co-creation. *Journal of the Academy of Marketing Science, 41*(2), 133-150.

Hashem, I. A. T., Yaqoob, I., Anuar, N. B., Mokhtar, S., Gani, A., & Ullah Khan, S. (2015). The rise of "big data" on cloud computing: Review and open research issues. *Information systems, 47*, 98-115.

Hilton, B., Hajihashemi, B., Henderson, C. M., & Palmatier, R. W. (2020). Customer Success Management: The next evolution in customer management practice? *Industrial marketing management, 90*, 360-369.

Hunke, F., Engel, C. T., Schüritz, R., & Ebel, P. (2019). *Understanding the anatomy of analytics-based services–a taxonomy to conceptualize the use of data and analytics in services.* ECIS 2019, Stockholm-Uppsala, Sweden.

Hunke, F., Heinz, D., & Satzger, G. (2022). Creating customer value from data: Foundations and archetypes of analytics-based services. *Electronic markets, 32*(2), 503-521.

Kaisler, S., Armour, F., Espinosa, J. A., & Money, W. (2013). *Big Data: Issues and Challenges Moving Forward*. 46th Hawaii International Conference on System Sciences, Wailea, HI, USA.

Lindgreen, A., Hingley, M. K., Grant, D. B., & Morgan, R. E. (2012). Value in business and industrial marketing: Past, present, and future. *Industrial marketing management, 41*(1), 207-214.

Malhotra, N. K. (2017). *Marketing Research.* Pearson Education Limited.

Meierhofer, J., Stadelmann, T., Cieliebak, M. (2019). Data Products. In: Braschler, M., Stadelmann, T., Stockinger, K. (eds) *Applied Data Science.* Springer, Cham.

Newman, D. (2017). Why the "as-a-service" model works so well for digital transformation. *Forbes.*

Payne, A. F., Storbacka, K., & Frow, P. (2008). Managing the co-creation of value. *Journal of the Academy of Marketing Science, 36*(1), 83-96.

Rajesh S., Swapna, S. & Shylender Reddy, P. (2012). Data as a Service (Daas) in Cloud Computing [Data-As-A-Service in the Age of Data]. *Global Journal of Computer Science and Technology,* 12(11), 24-29.

Rantala, T., Apilo, T., Palomäki, K., & Valkokari, K. (2020). Selling data-based value in business-to-business markets. *Technology Innovation Management Review, 10*(1), 45-53.

Reichertz, J. (2014). Induction, deduction, abduction. In Flick, U. (2014). *The SAGE handbook of qualitative data analysis.* SAGE.

Sundarraj, M. P. (2020). Building blocks to enable data as a service (DaaS) within a global enterprise. *Software Quality Professional, 23*(1), 11-15.

Terho, H., Haas, A., Eggert, A., & Ulaga, W. (2012). 'It's almost like taking the sales out of selling'—Towards a conceptualization of value-based selling in business markets. *Industrial marketing management, 41*(1), 174-185.

Thomas, L. D.W., & Leiponen, A. (2016). Big data commercialization. *IEEE engineering management review, 44*(2), 74-90.

Töytäri, P., & Rajala, R. (2015). Value-based selling: An organizational capability perspective. *Industrial marketing management, 45*, 101-112.

Töytäri, P., Rajala, R., & Alejandro, T. B. (2015). Organizational and institutional barriers to value-based pricing in industrial relationships. *Industrial marketing management*, 47, 53-64.

Ulaga, W., & Eggert, A. (2005). Relationship Value in Business Markets: The Construct and Its Dimensions. *Journal of business-to-business marketing, 12*(1), 73-99.

Vaisala. (2022). *Vaisala as a Company.* https://www.vaisala.com/en/vaisala-company

Vu, Q. H., Pham, T., Truong, H., Dustdar, S., & Asal, R. (2012). *DEMODS: A Description Model for Data-as-a-Service*. 2012 IEEE 26th International Conference on Advanced Information Networking and Applications, Fukuoka, Japan.

Willig, C. (2014). Interpretation and analysis 1. In Flick, U. (2014). *The SAGE handbook of qualitative data analysis.* SAGE

Zauner, A., Koller, M., & Hatak, I. (2015). Customer perceived value-Conceptualization and avenues for future research. *Cogent psychology, 2*(1).

APPENDICES

Research question	Theme	Interview question
1. What kind of expectations customers have towards data value? 2. What is required for communicating data value in B2B?	Product needs	1. What are the biggest challenges/factors for your ground transport operations (i.e. ETA and routing)? 2. What are the priorities (i.e. efficiency and safety) for customers? 3. How much does weather affect? 4. How have you tackled the challenge? 5. What are the primary means of differentiation for you and your competition? 6. How does the development process begin? 7. What would be the next development steps for your product? 8. How do you see the market developing in the future? What are the emerging trends?

	Data value qualities	9. Are you integrating weather into your operations now? How? 10. Do your customers wish for weather data integration? 11. Are you familiar with the concept of *road weather* and how it differs from "regular" weather? 12. Can you imagine how road weather might have an edge over regular weather?
	Data value creation	13. What level of data or insights you input? (Data, insights, suggestions…)
	Perceived value	14. What would be the use cases for road weather in logistics?

APPENDIX 1. Operationalization table