Stockholm School of Economics - Master Thesis 2019
Department of Marketing and Strategy
MSc in Business and Management

Time to clear the air

Understanding how and why the cloud-computing offering has changed over time.
A qualitative case study from a supplier's perspective.

Abstract

Cloud computing has recently become a hot topic and has been predicted to revolutionize business. Despite the wide celebrations of the technology's benefits to organizations, researchers have given little attention to the business side of cloud and most existing literature on the subject has a clear technology focus. Hence, there is a lack of research that empirically explains how cloud has developed in a business context and what factors have influenced this change. To address this empirical gap, this study takes the perspective of a supplier of the technology, aiming to understand the supplier's role in the development of cloud. The study applies a value perspective from business-model literature together with a business-marketing framework, in order to investigate how the cloud offering has changed over time and what has influenced the suppliers to make these changes. To achieve this, we adopted a qualitative case-study approach and conducted 21 interviews with 18 experienced employees working in managing positions at one leading cloud supplier. The findings from the study imply that the offering has changed from emphasizing quantitative values to emphasizing qualitative values and a problem-solving ability, and that the offering has been influenced by a mix of the supplier's perception of the potential value contribution for customers, and the supplier's perception of what uncertainties customers are facing at that time. Furthermore, three external factors were also identified as influencing this change. The results contribute with valuable insights for suppliers of new technology, enhancing the knowledge of how a technology offering could be designed to increase customer adoption.

Keywords: *Cloud, Business models, Buyer-seller relationship, Supplier ability, Customer uncertainties.*

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Presentation
May 2019

Acknowledgements

This study would not have been possible to conduct without the case company and all of the interviewees. We would like to thank all the cloud sales- and technology- experts who shared and contributed to this thesis with their insights, experiences, and time.

Per Andersson, our supervisor, gave us valuable feedback and continuous support throughout this thesis and therefore he deserves a big thank you.

Additionally, we would like to thank all who contributed with constructive feedback after having the patience to read through our thesis.

Definitions

Supplier

A supplier is an entity (person or organization) who delivers and provides a specific product or service to another entity (person or organization).

Customer

A customer is an entity (person or organization) who purchases a specific product or service from another entity (person or organization).

End customer

An end customer for a specific supplier, is an entity (person or organization) who is the customer of the supplier's customer, i.e. the customer's customer.

Business-to-business (B2B)

Business-to-business (B2B) refers to the process of supplying and/or selling a specific product or service to another business, i.e. not to consumers.

Cloud computing

"Cloud computing is the delivery of different services through the internet" (Frankenfield, 2019). These services could include data storage/bases, analytics, servers, intelligence, software and more. There are also different service and delivery models of cloud, defined below.

Cloud service models

Cloud service models are often used in a B2B context. Mell & Grance (2011) list three service models for cloud computing - infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS). IaaS is renting, from a cloud provider, IT infrastructure on a pay as you go basis where the consumer gets access to servers, storage, networks etc (Mell & Grance, 2011). PaaS is a cloud computing service that provides an environment where developers can quickly create web or mobile apps by using applications and tools provided by the supplier (Mell & Grance, 2011). SaaS is a method

for delivering software applications over the Internet, typically on demand and on a subscription basis (Mell & Grance, 2011).

Cloud delivery models

There are four deployment structures of cloud; private, public, community and hybrid Cloud (Mell & Grance, 2011). Private cloud is in a private network where the software and hardware are only hosted for one user or organization. Public cloud is a public network, where the delivery is over the internet for multiple users (Makkar, 2015). Community cloud is in between public and private cloud, where a closed community shares the cloud (Mell & Grance, 2011). Hybrid cloud is a combination of all three delivery models, where an organization can use several cloud delivery models for different purposes (Makkar, 2015).

Application programming interface (API)

API works as an intermediary between different software platforms by transferring and receiving information (Scott, 2019). In essence, API allows for software platforms to talk to each other. Examples of API:s can be AI-applications, blockchain, geographic maps etc. (IBM., 2017a).

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1 Introduction

The concept of cloud computing, or simply "cloud", has recently become a hot topic in both media and research and rightly so, since the global cloud market is forecasted to grow at 18 percent per year and hit over $620 billion in market size by 2023 (MarketsandMarkets, 2019). Furthermore, Gartner (2008) argues in a press release in 2008 that *"cloud computing will be as influential as e-business"*. Others are more careful in their praises for the technology, questioning if cloud computing really is the panacea that will solve all organizational problems, for instance Quicke (2017) argues that *"the marketing around the cloud is so good, it makes it look like the perfect solution for all organizations"* (Stadtmueller, 2012).

Due to its recent fame and rapid development, a large body of research covering various topics of cloud has been written during a short time period, resulting in the general impression of cloud computing and its benefits being rather fragmented (Durao, Carvalho, Fonseka, & Garcia, 2014). Furthermore, the lion's share of literature has covered the technological perspective of cloud and has been published in journals focused on computer technology or engineering, hence researchers are arguing that there is a need for research explaining cloud computing from a business perspective (Bayramusta & Nasir, 2016). Previous literature has had a focus on the technical benefits from implementing cloud, treating cloud technology, its benefits, and customer organizations similar over time (Venters & Whitley, 2012). This could be misleading since cloud has developed and changed dramatically during the last years, thus it is difficult to understand how cloud has changed over time in a business context (Rudder, 2018). Furthermore, to understand impact on business, simply studying the technical benefits is problematic since buyers' perception of "value" from a product or service often differs from the benefits at a product level (Möller, 2006). This leaves us with a number of unanswered questions. It seems like cloud is here to stay but what is the hype all about? Has cloud really affected everyday business to the extent that some predicted years ago? And how have the different perceptions of value influenced the development of cloud?

To find an answer for these questions and to get a holistic picture of how cloud has impacted business over time, it is necessary to study both how cloud has developed as a product and the different perceptions of value. By taking the supplier's perspective and investigating the cloud

offering, we include both the product and the value aspect, thus aiming to get a better understanding of *how* and *why* cloud has changed over time and what has influenced this change.

1.1 What is cloud computing?

In order to understand cloud from the supplier's perspective, it is important to first understand how cloud computing has developed from a technological standpoint. There are a number of different opinions on when the concept of cloud computing was actually born. Some say the idea of "cloud computing" dates back all the way to the 1950s when suppliers of mainframe computers made it possible for multiple users to access a single mainframe by the use of something called "dumb terminals" (IBM, 2017b). However, the kind of modern cloud service that many of us know today started in 2006 with Amazon's launch of its "Elastic Compute Cloud", the service that later became Amazon's current cloud solution called Amazon Web Services (Miller, 2016). Amazon came up with the idea to better utilize their spare computing capacity by letting other companies or developers run their applications on top of Amazon's technology platform (Miller, 2016). In essence, cloud computing is a way for data to be stored and processed in a shared or private space, handled by a third party off the customer's premises.

Since cloud computing is an evolving field, The National Institute of Standards and Technology has provided a definition of the cloud computing paradigm, including service models and deployment structures (Mell & Grance, 2011). According to Mell and Grance (2011), cloud has three service models; infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS), and four deployment structures; public, private, community, and hybrid cloud.

1.2 Research gap

While the research on cloud has dramatically increased during the last decade, there are still gaps in the current literature. In this section, we identify three main research gaps.

Firstly, previous studies indicate that little attention has been given to the business value of the cloud offering and development (Venters & Whitley, 2012). These studies have focused on the technological implications of cloud, making it hard to understand for non-specialists (Yang & Tate, 2012). Secondly, from previous research, we have identified that little attention has been

given to the change in the cloud offering *over time* from a value perspective, and as predicted by Baden-Fuller and Haefliger (2013), the technology's impact on customers' business models have been largely overlooked. Previous research has instead treated cloud as a static entity, making it difficult to get a holistic view of the cloud change and business impact (Yang & Tate, 2012). Thirdly, the interaction between the supplier and customer, from a supplier's perspective, has been overlooked within the research area, where previous research has laid its focus on the customer and its implementation of a technology (Rayna & Striukova, 2016). Therefore, in order to better understand how cloud is impacting businesses, we believe there is a need to take the *suppliers' perspective* in order to explain *how* and *why* cloud has changed over time.

1.3 Purpose and research question

The purpose of this study is to take a supplier's perspective to understand *how* and *why* the cloud technology has developed over time. In this thesis, a theoretical lens using a value-based business model framework, along with business marketing theory, is applied to investigate the context. Therefore, the following research question is formulated and explored:

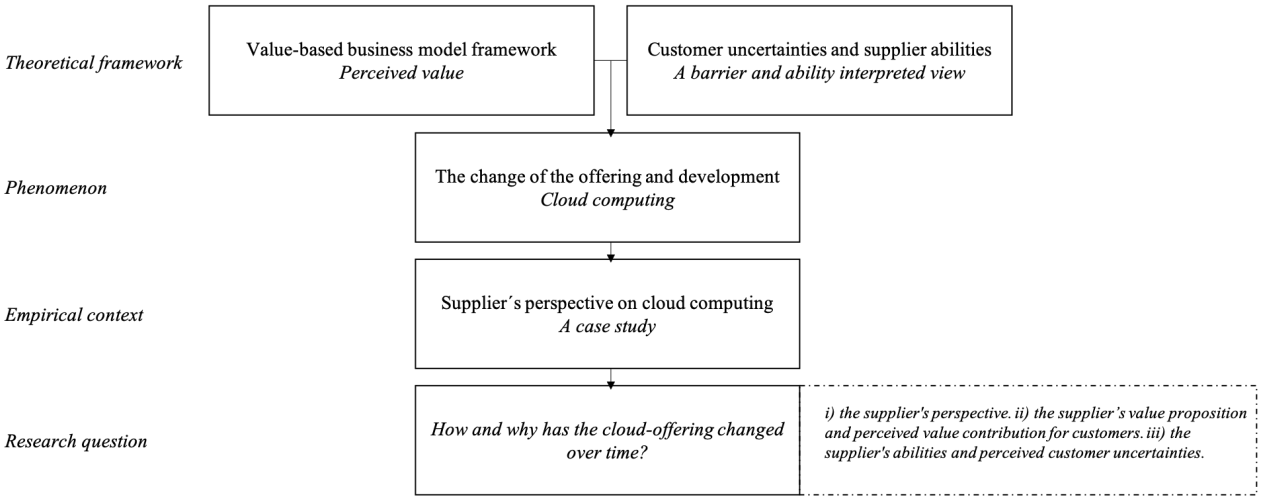
How and why has the cloud offering changed over time?

In order to successfully address the research gap and research question, we have decided to investigate the following aspects:

i) the supplier's perspective.
ii) the supplier's value proposition and perceived value contribution for customers.
iii) the supplier's abilities and perceived customer uncertainties.

This thesis will explore the process that cloud technology has gone through on a business-to-business (B2B) basis. Figure 1 below shows an overview of this study.

Figure 1 Overview of the study



1.4 Expected contribution

In this thesis, existing theories and models are used to investigate the cloud technology, and thus contribute to knowledge for this specific technology. Since current research is rather technically focused, this study aspires to contribute with insights from a business value perspective and from an interactive perspective between the supplier's abilities and customer's uncertainties. More specifically, we hope to explain and investigate the development and offering of cloud from a *supplier's perspective* and better understand *how* and *why* the offering has changed over time.

Thirdly, we aim to use a new combination of existing literature in order to set the foundation for other emerging technologies, such as AI, and additionally provide support and inspiration for both practitioners and researchers. This combination of literature, using a value-based business model framework and literature on uncertainties and abilities in the customer-supplier relationship, will hopefully create a new direction for technology-oriented studies in a business context. We also hope that this combination of literature can be generalized and provide insights for the early phases of future technologies.

1.5 Delimitations

In this study, the selling process and development of cloud, from year 2010 to 2019, is explained and investigated. Due to differences in selling processes between B2C and B2B, only one process

will be investigated, B2B. In addition, the study also explores how the process is impacted by suppliers' abilities and customers' uncertainties, from a supplier's perspective.

It should be noted that the study is only focused on one technology, cloud, and does not claim to make any conclusions for other technologies. Moreover, the qualitative data is gathered from one company, a supplier of cloud technology based in Sweden, hence no other geographical perspectives are considered. This thesis is also limited to participants that have longer experience within cloud sales and cloud technology, within the timeframe investigated in the study, in order to fully grasp the researched phenomenon. Therefore, other roles within the company are not included in this study.

The study will mainly focus on the cloud-selling process between the supplier and customer and the elements used in the selling process. General factors such as time of the year when the different sales took place, product price, the economic situation, and internal managerial structures are not included. These are factors that impact all suppliers and customers within all industries, hence not specific to this study. However, factors that directly impact the selling process and development of cloud in the scope of the study are investigated.

Finally, the thesis is limited to a value perspective of business models. This is because the study aims to explore an aggregated, high-level perspective of business models, in order to draw general conclusions. Therefore, a detailed level of customers' specific business models is outside the scope of this thesis.

2 Literature review

In the following section the literature review will be presented. It will start with literature based on the cloud phenomenon (2.1), followed by business model theory (2.2). This in turn will lead to the identified research gap (2.3) and then lastly, the theoretical framework (2.4) will be presented.

2.1 The cloud phenomenon

In this section a background to cloud research (2.1.1) will be presented, followed by an overview of benefits (2.1.2) and barriers (2.1.3) to cloud.

2.1.1 Background of cloud research

The idea of accessible computing in the "cloud" appeared in academia as early as the 1960s when researchers such as Douglas Parkhill (1966) and John McCarthy (1983) studied the topic of what they called "utility computing", with the idea that users would be able to access services on the Internet in a similar fashion as traditional utilities such as water, gas, and electricity. The model was developed over time and saw a dramatic increase during the dot-com boom, however, many early attempts of on-demand services over the Internet failed due to insufficient bandwidth and computing power (Kern, Willcocks, & Lacity, 2002; Susarla, Barua, & Whinston, 2003).

Around 2007, the concept of cloud computing emerged and became a concept known outside groups of specific professionals (Lohr, 2007; Venters & Whitley, 2012). Since then, the interest on the topic has increased dramatically and there has been a large number of academic articles written on the subject (Durao et al., 2014). However, most of the literature up until today has been focused on the technology itself and on technological issues in the wake of cloud computing, while far less has been written on the business-related issues that surrounds cloud computing (Bayramusta & Nasir, 2016; Marston, Li, Bandyopadhyay, Zhang, & Ghalsasi, 2011; Yang & Tate, 2012). There is however some literature touching on the business impact of cloud computing, and these will be brought up in the following sections.

2.1.2 Benefits of cloud

In the literature we found four general benefits of cloud computing: low costs, startup opportunities, innovation, and sustainable IT.

Low costs

The incentives for adopting cloud-computing services are often based on cost. Organizations that have invested heavily in information technology can often find these investments largely underutilized and studies have revealed that most servers are only using 10-30 percent of their total available computing power (Marston et al., 2011). Furthermore, maintenance and service costs related to information technology have ended up draining IT budgets all over (Gomolski, 2005). With this in mind, it is reasonable that cloud computing has been beneficial for many organizations. Cloud computing promises the same functionality as traditional IT services with dramatically reduced up-front costs and no need for organizations to staff maintenance people (Durao et al., 2014). Organizations that have previously been forced to build computing capacity for peak demand can now leverage the easy scalability of cloud services to only pay for what they use, hence optimizing costs (Durao et al., 2014).

In addition to increased usage levels of hardware, suppliers of cloud services can benefit greatly from economies of scale. It is estimated that more than half of the cost of a data center is related to the electricity consumption and cooling of the data center (Zhang, Cheng, & Boutaba, 2010). By placing data centers in strategic geographical locations with cheap power and cooling, suppliers can save a great deal of money. In addition, the sheer size of the data centers makes it possible to benefit from lower variable costs for staff and operations (Venters & Whitley, 2012). According to Armbrust et al (2010) the benefits from economies of scale reduces the overall costs for computing by five to seven times, and these cost savings can in theory be distributed to customers of cloud suppliers.

Furthermore, buying services on the cloud can have another significant financial benefit for organizations. Through buying computing on demand, there is no longer a need for high investments in hardware and software (Venters & Whitley, 2012). Hence, IT services can be reclassified as operating expenditure instead of expensive capital expenditure that often requires specific financing that can be difficult to raise (Venters & Whitley, 2012).

Startup opportunities

Another consequence of cloud computing is the new competitive landscape for incumbent firms. Cloud computing has dramatically reduced the cost of entry for small firms that want to compete

in computing-intensive markets (Marston et al., 2011). Since startups have no legacy systems, the cost benefits and agility of adopting cloud are more significant than for large companies (Forrest, 2009). According to Hardy (2018), startups are quick to adopt cloud services and as a result they are seeing their goods and services as software-centric entities from which they can constantly derive data in order to continually make updates that benefit the users. This has resulted in new ways of working where processes are increasingly iterative and organizational functions blur (Hardy, 2018).

Innovation

Cutting costs and being able to better focus on core capabilities are the most frequent reasons for traditional outsourcing (Lacity, Khan, & Willcocks, 2009). However, it is generally understood that traditional commoditized outsourcing can be incompatible with business innovation because of different motives between the parties (Venters & Whitley, 2012). In contrast to traditional outsourcing, cloud services may offer opportunities for innovation in addition to cost savings (Venters & Whitley, 2012). Traditionally, experimenting and testing new applications and services were time-consuming tasks and simply managing the technological infrastructure for experiments could take weeks or even months (Venters & Whitley, 2012). In a cloud environment, information will flow in both directions across computing systems that are much more flexible than traditional systems. Hardy (2018) explain that the rapid flow of information opens up for new innovation opportunities since data collection and data analysis can be performed almost instantly. With cloud it is also possible to involve more stakeholders, both inside and outside the company, in the development process, and changes to product software deployed in cloud will immediately be available to all users (Hardy, 2018).

Sustainable IT

Given the importance of sustainable business practices, organizations may look to cloud in order to reduce their carbon footprint (McKendrick, 2011). The reason for the reduced carbon footprint is twofold. Firstly, computing resources are used more efficiently, resulting in a reduced energy consumption related to running and cooling hardware (Marston et al., 2011). Secondly, since the computing power can be accessed over long distances, it is possible to locate data centers in areas with readily available clean energy sources (Marston et al., 2011). According to Winston (2011),

if an organization runs their applications in the cloud, it can reduce its energy use and carbon footprint of computing by up to 90 percent.

2.1.3 Barriers to cloud computing

In the literature we found there are three general barriers of cloud computing: contractual uncertainty, security concerns, and organizational barriers.

Contractual uncertainty

At a glance, cloud computing seems almost paradoxical. Compared with traditional outsourcing and other services, cloud computing appears very simple and straightforward. However, organizations are still experiencing uncertainties in the evaluation and adoption of cloud services.

In general, cloud services are usually of a simple and standardized nature. A simple and standardized contractual arrangement has been necessary in order to target a large number of customers with the service (Venters & Whitley, 2012). Well-defined cloud services are even available for purchase over the Internet by credit card with little to no direct communication between the supplier and the user (Armbrust et al., 2010). Yet, Venters and Whitley (2012) express that despite the simplistic nature of cloud service contracts, many organizations face difficulties in understanding and adopting the services. In reality, organizations have trouble evaluating the actual benefits of cloud for their specific requirements and they have a poor understanding of the costs and risks of making a move to the cloud (Venters & Whitley, 2012). To further complicate things for buyers, there have been incidents of bad practice on the market when false information regarding response time and availability has been submitted simply to attract the attention of potential customers (Durao et al., 2014). Consequently, some authors on the subject have argued that there is a lack of clarity in the contracts regarding cloud services (Durao et al., 2014).

There is also a need for an attitudinal change in order for mass adoption of cloud. Since going to cloud will result in handing over control of information and data to a vendor, many organizations are understandably wary of the possibility of data loss or vendor lock in (Marston et al., 2011). This is especially a result of an absence of standards, or a perceived absence of standards, in the cloud-computing paradigm (Marston et al., 2011).

Security concerns

In a study by Benlian and Hess (2011), security threats were the number one factor that influenced IT executives' overall risk perception of cloud computing. Since the control is handed over to someone else, there is no longer a possibility to physically go and deal with any eventual problems, something that can make decision makers hesitant to adopt the technology (Venters & Whitley, 2012). For many cloud customers, security is a primary concern and they desire *"security equivalence"*, meaning that the cloud provider need to deliver security that is at least equivalent to that of running servers locally (Marston et al., 2011; Venters & Whitley, 2012). As a result, a dominant share of the literature regarding cloud computing has been written on this topic (Durao et al., 2014). Despite the large body of academic literature on the subject, security concerns are still a key barrier for the adoption of cloud. As a response to the security concerns, some argue that cloud services could actually be *safer* than traditional computing methods since cloud providers may be able to invest heavily into sophisticated security measures (Venters & Whitley, 2012). Another question worth asking is if the expressed security concerns are genuine or if they are simply a defense mechanism, providing a reason to exist for IT departments who fear their existence might be lost to the cloud (Venters & Whitley, 2012).

Organizational barriers

One of the main benefits of moving systems to a cloud environment is the reduction of costs, where one potential saving is cutting back on IT personnel (Venters & Whitley, 2012). However, this may lead to resistance from IT departments since they might be afraid of losing their jobs. This fear may not be unsubstantiated since some authors mean that the adoption of cloud technologies will make IT departments obsolete (Durao et al., 2014). Others mean that the conventional IT department as we know it from the 1990s and 2000s will disappear (Carr, 2003). However, IT departments will not cease to exist, but they will rather have to reinvent themselves in order to adapt to the new technological environment (Carr, 2003). Yet, it is evident that many of the traditional IT roles will become redundant in a cloud-based environment, since cloud in many ways has been developed to overcome many of the limitations of that very IT department (Durao et al., 2014).

2.2 Business model theory

As mentioned above, cloud computing seems to have the potential of really impacting business today and it might help businesses to obtain a competitive advantage (Hardy, 2018). The question is if the technology by itself can bring this competitive edge. According to Rayna and Striukova (2016), the role of business models in creating business performance from a new technology has commonly been underplayed in research. Since it has been easy to observe positive effects on business performance from new technologies, questions of how business models have changed in the wake of innovation have often been overlooked (Baden-Fuller & Haefliger, 2013). The fact is that business models and new technologies frequently interact and that technologies link to business performance through the business model (Baden-Fuller & Haefliger, 2013).

2.2.1 What is a business model?

Ever since the internet boom in the mid 90s, the concept of business models has become increasingly important and it has gained much popularity in both business press and academia (Massa, Tucci, & Afuah, 2017). However, despite the large body of literature around the subject, researchers have failed to agree on how to define business models and what constitutes a business model (Faber et al., 2003; Rayna & Striukova, 2016). Although there are many loose definitions of what a business model is, there is typically a general consensus that a business model describes the *logic* of how a firm do business; it is basically describing how a company, or a network of companies, generate revenue and create value for their customers (Kamoun, 2008).

2.2.2 Business models for new technology

According to Kamoun (2008), the idea of business models became increasingly important during the dot.com boom and subsequent bubble, when many people started asking the question of how the internet companies could compete and actually make money. Since then, the concept has been even more central to both researchers and business leaders and with rapid technological development, the supplier-driven logic of the industrial age is no longer a viable model for companies (Teece, 2010).

For ventures based on innovations and new technology, finding a fitting business model is crucial. Chesbrough and Rosenbloom (2002) argue that technological innovation per se is useless and that the innovation's value remains latent unless it is commercialized somehow. However,

managers are often forced to widen their perspective in order to find a new and appropriate business model to capture value from the new technology (Chesbrough, 2010). Sometimes a new technology can generate value for a firm through a business model that is already in use by the firm. However, if other firms discover and employ a different business model that is better suited for the technology, they may be able to generate far more value from the technology compared with the original firm (Chesbrough, 2010).

Although businesses are pressured to find a suiting business model, many experience great difficulties in finding one, because of high levels of technology and market uncertainty together with problems in predicting the different options for commercialization (Reymen, Berends, Oudehand, & Stultiëns, 2017). To deal with these uncertainties, it is necessary for businesses to take on a dynamic process in the business model development where the business-model components are revised throughout the development process (Sosna, Trevinyo-Rodríguez, & Velamuri, 2010).

Another barrier for business model innovation in incumbent firms could be the configuration of existing assets and processes (Zott, Amit, & Massa, 2011). When configured to a certain old business model, these may be subject to inertia in the company and make the shift to a new business model difficult (Zott et al., 2011).

2.3 Identified research gap

Based on the review, we have identified a gap in the existing body of literature. Although research regarding cloud computing has increased dramatically, a large majority of the research have focused on the technological side of cloud computing (Venters & Whitley, 2012). Furthermore, much has been written in a way that makes it difficult for non-specialists to digest the information and translate it into a business context (Yang & Tate, 2012). Of the more limited research that touches upon the business side of cloud computing, a majority of the literature has been limited to security and privacy issues and has not taken a holistic view on the business impact of the technology (Durao et al., 2014). From what we find in existing research, most business-related articles still depart from a technological standpoint of what business-impact cloud computing could *potentially* have. Venters and Whitley (2012) argue that in much of the literature, benefits of cloud are described as a product attribute rather than as a value proposition from which the

customers define the value. Furthermore, the supplier perspective in a business context seems to be greatly overlooked (Yang & Tate, 2012). During the literature review we did not encounter any articles aiming to explain the suppliers' role in driving cloud adoption and how the dynamic between suppliers and potential buyers influenced the supplier's offering. Yang and Tate (2012) argue that there is a clear need for studies covering the cloud-supplier's perspective and there seem to be an absence of empirical research of how cloud computing suppliers perceive the potential value that cloud can create for businesses and how this has changed over time. Much of the existing research has treated cloud computing as a static entity in regard to business impact and it is difficult to get a holistic picture of how and why suppliers' offerings have changed over time as the technology and market have matured (Venters & Whitley, 2012).

Furthermore, in the business model literature, scholars express the importance of finding new business models in order to maximize the value generation from a new technology (Chesbrough & Rosenbloom, 2002; Chesbrough, 2010). New technologies are characterized by high levels of technological and market uncertainty and firms are experimenting with business models in an iterative way, hence different business-model components are revised and impacted at different moments during the maturity process (Reymen et al., 2017). In our literature review, we found a number of articles arguing that the business model *will* change as a technology develops. However, we do believe there is a lack of literature explaining empirically *how* the different components change over time. This is especially true for a cloud-computing context where such literature is virtually absent. In addition, from what we have learned during the literature review, previous research has almost exclusively studied this from the perspective of a user of a technology, studying how implementation has resulted in opportunities for business model innovation. Similarly, to the gap in previous cloud research, we have not yet encountered the perspective of the supplier (Yang & Tate, 2012). Hence, we believe there is a lack of understanding of how this experimentation with business models is perceived by suppliers and how that perception in turn is influencing the supplier's offering and communication of the technology.

2.4 Theoretical framework

The theoretical concepts described below were selected and used as a guide in the empirical research and as a foundation for the subsequent empirical analysis. With the theoretical concepts

the aim is to close the identified research gap and provide an answer to the main research question:

How and why has the cloud offering changed over time?

This thesis is aiming to investigate the supplier's perception of the different values on the cloud computing technology. We are not aiming to explain the benefits from a product-attribute perspective but rather from the perceived value of using this technology. In the following section the theoretical framework will be presented, starting with a value-based business model framework (2.4.1), followed by the buyer-seller relationship (2.4.2).

2.4.1 A value-based business model framework

As discussed earlier, there is a fragmented view of what a business model really is. However, a common denominator for most different views in the business-model literature is the centrality of the concept of *value* (Zott & Amit, 2002). There is a fairly broad consensus of four integral components of value; value proposition, value creation, value capture, and value delivery, summarized in figure 2 (Rayna & Striukova, 2016). These value components will be analyzed further in order to investigate the link between cloud computing as a technology and the business model of customers.

Value proposition

Relative to other areas of strategy literature, the business-model concept generally has a large emphasis on the role of the customer. As a result, one central element of the business model is the value proposition (Zott & Amit, 2002). The value proposition is describing the value generated for consumers of the offering (Chesbrough & Rosenbloom, 2002). Johnson et al (2008) say that as a business you are essentially solving problems for your customers and explain it with the analogy of businesses helping customers getting a specific job done. The value proposition is in turn telling us how that specific job is getting done. The better the job and all its dimensions can be understood, the easier it is for a company to design an offering to match it (Johnson, Christensen, & Kagermann, 2008).

Understanding this is important because it is the value proposition that makes a customer buy a product or service in the first place (Osterwalder & Pigneur, 2010). The value proposition

consists of a mix of different elements catering to the needs of the customers. Osterwalder (2010) explain that these elements could be either:

- *Quantitative*, something that could easily be measured and compared, such as price point and cost reductions.
- *Qualitative*, something that is perceived and rather subjective, such as design and customer experience.

As the needs of the customers change, it is necessary to adapt the value proposition in order to stay competitive (Osterwalder & Pigneur, 2010).

Value creation

Another central element of the business model is value creation. Bowman and Ambrosini (2000) introduce two different types of values at an organizational level, use value and exchange value:

- *Use value* refers to how consumers perceive the quality of a service, product, or task in relation to their needs. It is basically the consumer's subjective valuation of the benefits of consumption. Examples could be the speed, quality, or aesthetics of a product or service.
- *Exchange value* on the other hand refers to the monetary amount received for a product or service at a certain point in time, it is the amount a consumer actually pays.

Value is created when a consumer either starts to value the perceived consumption benefits or when the valuation of the benefits increases (Priem, 2007). According to Priem (2007) there are three ways value is created for consumers:

- When the consumer is willing to pay for a new benefit.
- When the consumer perceives something to be better and is willing to pay more for it.
- When the consumer can pay less for a previously available benefit.

In the eyes of the consumer, value is created either when the use value is increased or when the exchange value is decreased (Priem, 2007).

Value capture

The component of value capture is often confused with that of value creation and even though the two components may occasionally overlap, that is not always the case (Pitelis Dr., 2009). When value is created for the consumer, their willingness to pay is often increased (Pitelis &

Teece, 2009). However, that does not automatically guarantee that the company that created the value in the first place is able to raise their prices to capture the value and as a result, capturing value can be seen as absolutely central for any profit-seeking company (Pitelis & Teece, 2009). Value capture can often be divided into two subcomponents (Holm, Günzel, & Ulhøi, 2013):

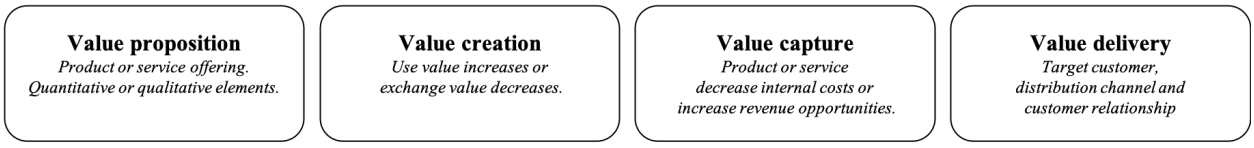
- *Cost structure*. If a new product or service decreases the monetary consequences of resources employed in the company, it is possible for the company to capture value.
- *Revenue model*. New products and services can result in new ways for a company to make money, leading to new revenue streams and a possibility to capture value.

Value delivery

In order for a business to be successful, understanding the value delivery component in the business model is critical and an organization must make a number of conscious decisions to deliver value efficiently (Osterwalder & Pigneur, 2010). Value delivery can in turn be divided into three subcomponents (Holm et al., 2013):

- *Target customer*. The customer segment to which the company will offer its products and services.
- *Distribution channel*. The means by which the company will reach its targeted customer segments.
- *Customer relationship*. The desired relationship between the company and its customers.

Figure 2 Value-based business model framework



Note. based on Chesbrough (2002); Osterwalder (2010); Priem (2007); Holm (2013).

2.4.2 The buyer-seller relationship

Ford (2002) say that in an ideal world, a business knows their specific needs or problems and knows the very solution that can satisfy their needs. They also have suppliers they trust so they can get what they need without the risk of being fooled (Ford, 2002). In addition, a supplier knows exactly what competencies they have and how they should meet their customers' problems

(Ford, 2002). Bottom line, it is very straightforward to purchase and sell products and services in an ideal world. However, the world in which companies do business today is quite far from the ideal world and the interaction between the supplier and customer is not as straightforward as one might have hoped. Firstly, customers are likely to face a number of *uncertainties* when doing business (Eriksson & Sharma, 2003). Secondly, the supplier has to meet several customer problems and perceptions with different *abilities* and competencies (Ford, 2002). Håkansson, Johansson, and Wootz (1976) present a framework for analyzing the interaction between the supplier and customer. The framework includes the customer's *uncertainties*, and how the supplier should meet these uncertainties with their *abilities*. The authors continue with illustrating that the interaction between the customer's uncertainties and supplier's abilities is an ongoing process going back and forth, see figure 3.

Customer uncertainties

According to Håkansson et al. (1976), customers can face three types of uncertainties: *need uncertainty*, *market uncertainty*, and *transaction uncertainty*. These will be explained further below.

Need uncertainty

Organizations often face uncertainties regarding their specific needs when they purchase products and services (Ulaga & Kohli, 2018). This could be either due to difficulties defining the initial problem, or due to lack of knowledge of which solution would be best suited for solving a problem (Houman Andersen, 2001). Håkansson et al. (1976) describe that the need uncertainty will strongly affect the relationship between the buyer and supplier in two ways. Firstly, since the buyer is experiencing a high level of uncertainty, it is likely to seek answers from their suppliers (Eriksson & Sharma, 2003). This will favor suppliers that the buyer already has an established relationship with (Håkansson, Johanson, & Wootz, 1976). This could also favor well-known suppliers with strong brands that can be "trusted" simply because of their good reputation (Ford, 2002). Secondly, when the buyer is experiencing need uncertainty, it is more likely to seek a close relationship and "get into bed" with one trusted supplier (Håkansson et al., 1976).

Market uncertainty

In other cases, buyers will find themselves in a situation where multiple suppliers could provide a variety of solutions for a particular problem (Ford, 2002). Furthermore, Ulaga and Kohli (2017) say that if the technology in an area is changing at a rapid pace, new and different solutions may

emerge on the market at any time. When this is the case for an organization, it is experiencing market uncertainty (Houman Andersen, 2001). Market uncertainty will in many ways work in the opposite way of need uncertainty (Håkansson et al., 1976). Since there is no obvious supplier for a specific solution, a buyer is likely to spend much time and effort to examine the market and shop around with different suppliers and their potential solutions (Ford, 2002). With a high level of market uncertainty, the buyer will also be afraid to lock him- or herself into an unfavorable relationship with one single supplier and it is therefore more likely to develop relationships with multiple competing suppliers in order to spread the purchasing and with that, spreading the risk of getting into bed with the wrong supplier (Håkansson et al., 1976).

Transaction uncertainty

In a third case, the buyer has a good understanding of its needs and has a good picture of the different offerings available on the market (Ford, 2002). However, it may still have some doubts in the suppliers and whether they will actually deliver what the offering promised (Ulaga & Kohli, 2018). There can be doubts regarding delivery on time, at the right performance, at the correct price, and if all this can be consistent over time (Houman Andersen, 2001). According to Håkansson et al. (1976), when a buyer is experiencing high transaction uncertainty, the relationship between buyer and supplier can be affected in two ways. The first approach would be to thoroughly examine the supplier and check its operations, performance, and deliveries as a first step (Håkansson et al., 1976). The second step would be to make an effort to develop the supplier and its abilities in order for it to better satisfy the buyer's needs (Ford, 2002). This approach requires some investment from the buyer's side in building the relationship, in order for the effort to bear fruit (Håkansson et al., 1976). The second approach would be for the buyer to work the market by purchasing from different suppliers at the most beneficial terms on a time-to-time basis (Håkansson et al., 1976). A buyer adopting this approach is still likely to experience significant transaction uncertainties but can also avoid the costs and effort required for the relationship investment (Ford, 2002).

Supplier abilities

Khalid (2002) state that the customer uncertainties, explained above, should be met with the supplier's abilities. The supplier can either try to improve their own abilities, or they can try to manipulate the customer's uncertainties to better match with the supplier's abilities (Houman

Andersen, 2001). Håkansson et al (1976) identify two different supplier abilities: *problem-solving ability* and *transfer ability*. Ford (2002) explain that these two abilities work as a tradeoff between each other, as it is hard to divide a company's scarce resources between the two. These abilities will be further explained below.

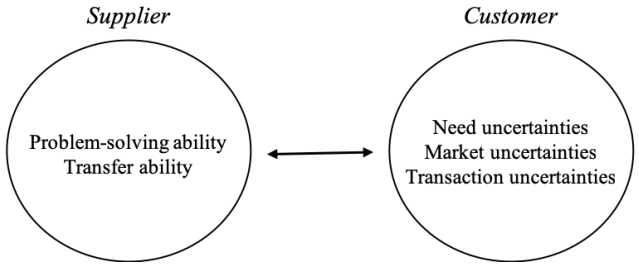
Problem-solving ability

The problem-solving ability refers to the supplier's ability to solve a customer problem, thus fitting in situations when the problem is complex or unique (Khalid, 2002). In addition, the problem-solving ability is important when the need or market uncertainty is high for the customer (Ford, 2002). However, this might become very costly for the supplier since the solution is often individualized towards a specific customer problem or situation, leading to the supplier charging higher prices (Håkansson et al., 1976). Therefore, in standardized or simple customer situations, the problem-solving ability is not as appreciated since it comes with higher prices and costs (Ford, 2002).

Transfer ability

Khalid (2002) explain that transfer ability refers to the supplier's ability to fulfill the promise and deliver the solution to the customer. The transfer ability is often related to quantitative measures such as cost control, consistency, timing, and conformity (Houman Andersen, 2001). This ability has its advantage when customer problems are simple and standardized (Ford, 2002). In addition, the supplier's transfer ability is important when the customer's transaction uncertainty is high (Håkansson et al., 1976). However, in cases when the supplier's transfer ability is high and the customer's problems are complex and individualized, the supplier will not meet the customer with the right ability since it could require the supplier to be very lean oriented in cost, production, timing, location etc (Ford, 2002).

Figure 3 Buyer-seller relationship framework



Note. based on Håkansson et al. (1976); Ford (2002).

2.4.3 Summary of theory

From the theoretical framework presented above, three main areas will be used in this study to address the research gap and research question; *"How and why has the cloud offering changed over time?"*. Firstly, based on the supplier's perspective, the change in the supplier's value proposition and perceived value contribution for customers will be investigated. Secondly, the change in customer uncertainties will be studied based on the supplier's perception and view of the customers. Finally, the study will investigate how the supplier communicates its abilities in order to meet these uncertainties. The focus is to explore and explain how these interrelated concepts have evolved throughout the development of cloud computing. See table 1 below for a summarized view of the theoretical framework, including a practical translation used later for the analysis.

Table 1 Summary of the theoretical framework and a practical translation

Theoretical framework summarized	**Practical translation used in the analysis – a supplier's perspective**
Values summarized	*Perceived values in the process of selling and implementing cloud*
Value proposition	*Communicated benefits in order to sell a specific product or service*
Value creation	*Perceived benefits for the end customer*
Value capture	*The monetary benefits of a product or service, i.e. lower cost or revenue opportunities*
Value delivery	*New delivery opportunities for the customer (segments, channels, relationships)*
Customer uncertainties	*Barriers restricting customers to adopt cloud*
Need uncertainty	*Difficulties in defining the problem or the solution*
Market uncertainty	*Difficulties in deciding between suppliers and solutions due to changes in the market*
Transactional uncertainty	*Difficulties in assessing if a specific supplier can deliver and fulfill its promise*
Supplier abilities	*Supplier's ability to mitigate different customer uncertainties*
Problem-solving ability	*Ability to solve a customer problem - fitting in complex or unique situations*
Transfer ability	*Ability to fulfill the promise made to the customer - fitting for standardized situations*

3 Methodology

The following section presents the methodology chosen for this study. First, the research approach (3.1) will be described. This will be followed by the data collection (3.2), presenting how the data was collected. The analysis (3.3) of the data will then be described, including the documentation of the data. Finally, the quality consideration (3.4) is presented.

3.1 Research approach

In this section the research purpose (3.1.1), research method (3.1.2), research reasoning (3.1.3), research case (3.1.4), research scope (3.1.5) and selection of case company (3.1.6) is presented.

3.1.1 Research purpose

Since the business aspects of cloud is a relatively new research field, we aim to take an exploratory stand by providing preliminary data and give direction for further studies within this field (Saunders, Lewis, & Thornhill, 2009). Therefore, the objective is to identify essential steps in the selling process of cloud throughout the development of cloud and how it has impacted the value components in business-model literature.

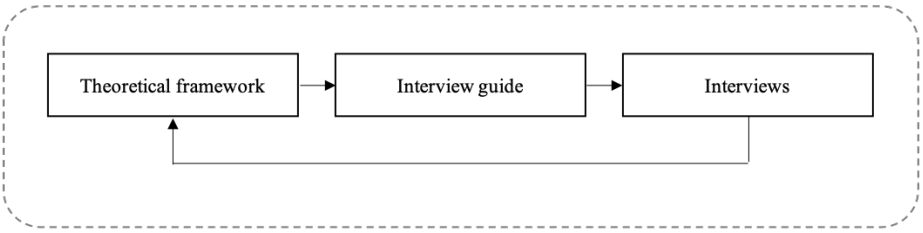
3.1.2 Research method

A qualitative approach was chosen in order to answer the research question *"How and why has the cloud offering changed over time?"*. The approach enabled us to receive an in-depth understanding of the supplier's perceptions of the cloud-offering's development (Kvale & Brinkmann, 2014). Furthermore, since the perceptions of the supplier are socially constructed phenomenons, a qualitative approach was deemed appropriate (Alvesson & Sköldberg, 2008).

3.1.3 Research reasoning

Throughout the study, an abductive approach was applied. The development of the interview guide was based on the initial choice of theories and models and as the process progressed through data collection and results, theories and models were added and refined. The abductive method, suitable for qualitative studies, allowed for a combination of both inductive and deductive methods (Alvesson & Sköldberg, 2008; Suddaby, 2006). Figure 3.1 exemplifies the abductive approach used in this thesis.

Figure 4 The abductive approach exemplified



3.1.4 Research case

For this thesis a single case-study approach was used, which is a commonly adopted research design suitable for an abductive approach (Alvesson & Sköldberg, 2008; Eisenhardt & Graebner, 2007). This case study builds on both an explorative and an illustrative approach. The reason for this is twofold; firstly, since this is a rather new research topic, we wanted to identify key questions and objectives that can guide further research, and secondly, we are aiming to describe the research area to make it more familiar (Hayes, Kyer, & Weber, 2015). The approach allowed us to understand the particular nature and complexity of the case and to ask questions such as why and how, leading to an understanding of the phenomenon of the selling processes and business models (Stake, 1995; Yin, 2014). One organization is researched for the single case study, which can lead to deep insights but also difficulties in generalizing (Yin, 2009; Yin, 2012). However, this case study approach is considered suitable since it is looking into a current phenomenon in its specific context (Yin, 2009).

3.1.5 Research scope

The research scope is limited to the supplier's perspective of the technology and focuses on giving a more intense and in-depth analysis of the researched case company. Even though the customers of the technology are not investigated, the relatively broad number of participants chosen have been exposed to various amounts of customers during the time investigated, and therefore their perspective of the customers is studied. This is further explained in section 3.2.4, sample selection. In addition to the research gap and theoretical reasons for why the supplier's perspective is studied, we have also identified practical advantages with this perspective. For instance, in a scenario where customers would be included, there are difficulties in choosing which customer(s) to investigate, since the case company might have given us access to customers which they have a better relationship with and therefore, they would not be representative for

the entire customer cluster (Martínez-Mesa, González-Chica, Duquia, Bonamigo, & Bastos, 2016). In choosing some specific customers to analyze, there are difficulties in assessing the maturity and the representativeness from a holistic time perspective, which this thesis puts much weight on when analyzing the development of cloud throughout time (Martínez-Mesa et al., 2016). Moreover, this thesis attempts to fill a research gap, including an aggregated picture of the development of cloud from a supplier's perspective, and provide high-quality insights that could give direction for further studies.

3.1.6 Selection of case company

Since deciding on a case company for a case study is a crucial decision, an analysis of potential organizations was made (Dubois & Araujo, 2007). The decision on a case company was based on the following criteria:

- The company should offer and sell B2B cloud since this is the technology studied in this thesis.
- Since the scope of the study only covers the Swedish market, the company should operate in Sweden.
- The company should have experienced employees within this industry, both in terms of technical and sales experience. This is necessary in order to collect high-qualitative data that can explain how the researched phenomenon has changed over time.
- Since the study is conducted from January-May 2019, the case company should be available during this time period.

Moreover, the final decision was also impacted by where we would potentially receive great learnings and insights (Bryman & Bell, 2011). The chosen company has long experience within the industry in Sweden and globally. Also, the participants from the company had experience with cloud throughout the investigated time period. Since the cloud market is immensely competitive and since the results included a lot of sensitive data such as strategies and customer information, the organization, interviewees, and customers mentioned, will remain anonymous and be renamed throughout this thesis.

3.2 Data collection

This section will include interview structure (3.2.1), interview guide (3.2.2), secondary data (3.2.3), sample selection (3.2.4) and interview setting and documentation (3.2.5).

3.2.1 Interview structure

The main data from this study was collected through semi-structured interviews, which is a preferred design in qualitative research (Miles & Huberman, 1994; Saunders et al., 2009). Semi-structured interviews allow the interviewees to elaborate further beyond the questions from the interview guide, supporting the study with more reliable data (Saunders et al., 2009). The interview guide helped set the setting and give direction to the interviews. However, since the questions touch upon complex customer cases and individual perspectives of the selling process, a semi-structured approach helps to fill in gaps, insights, and depth that is difficult to achieve with only standardized questions (Ahrne & Svensson, 2011; Saunders et al., 2009). Moreover, it also allowed us to adapt the questions in a way that coordinated with the participants' specific experiences (Merriam, 1998; Yin, 2011).

3.2.2 Interview guide

Based on the initial choice of theories and models, and research of the cloud market, a first draft of an interview guide was created. It was structured based on five main parts*: 1) background and experience, 2) cloud-customer cases, 3) maturity and timeline exercise, 4) trends and market uncertainties* and *5) concluding and other questions.* This first draft with various questions within each area, was tested with two participants, in total 2,5 hours. The first participant had most experience in sales and the second one was from the technical side. It helped map the time distribution of the different areas and questions and it allowed for some reformulation before the launch of the study (Peat, 2002). Furthermore, the full launch of the study was designed in the same way as the first draft, however with some formulation changes (see appendix 1 for full interview guide). Moreover, the semi-structured approach allowed for different directions in the interviews with follow up questions that varied based on the interviewees' answers and experience (Saunders et al., 2009; Yin, 2014).

The interviews started with *1) background and experience* and included questions around the participant's professional background, exposure to, and experience with cloud, which helped with

getting to know the interviewee and also did not require much reflection. Moreover, a short introduction of us and the study was held in order to set a scope of which things that would be discussed during the interview. Basic questions about role, age, and amount of years in the company was asked prior to the interview in order to spend time and focus on the more reflective questions.

In the second area of the interview, *2) cloud customer cases*, the goal was to receive examples throughout the cloud B2B development and to make the participant start reflecting back in time. In this part of the interview many follow up questions were asked in order understand the full depth of the relationship between the supplier and customer. Moreover, the different selling arguments in the different cases, implementation, and the customer understanding of cloud was also included in this area.

In the third area, *3) maturity and timeline exercise*, the participants were asked to map out the different selling arguments and customer needs, i.e., value propositions and perceived value contribution, on a whiteboard in order for us and the participants to visualize the content and to understand when the different examples in area 2) happened. The mapping consisted of two axes, time (x) and maturity (y), where time represented the start of investigated cloud-selling process to where we are today, and maturity represented the different customers' maturity throughout time.

Moreover, throughout the fourth area, *4) trends and market uncertainties*, more insights were added to the board. This area also included questions around why and how different developments of maturity and value proposition and contributions happened, and what might have held it back. The final and fifth area, *5) concluding and other questions*, allowed for final questions by us and comments from the participants that might have been overlooked during the interview.

3.2.3 Secondary data

Secondary data contributes to a *triangulation effect* (Yin, 2009). By using several sources of data, it is possible to confirm the data collected from the interviews, and it also adds to the collected empirical results, making the study more reliable (Yin, 2009). For instance, research reports and articles connected to the cloud market but written by other entities were discovered and used

throughout the study, further adding to the triangulation effect (Saunders et al., 2009). This secondary data is used in the empirical results to add to the context of the case company. Furthermore, from the participants, various internal and external documents were collected in order to complement the interviews and to provide additional data to the areas discussed. The documents collected from the case company were:

- Internal document 1, 2010 - A paper from the company's technical resource center, intended for developers.
- Internal document 2, 2013 - An overview of the company's cloud offerings and cloud strategy.
- Internal document 3, 2018 - A presentation from an internal training course in cloud.
- Internal document 4, 2019 - An overview of the current state and predicted future of cloud.

3.2.4 Sample selection

The total amount of interviews conducted throughout the study was 21, with 18 interviewees. The number of interviews includes two pilot interviews with the purpose to test the interview guide. According to Marshall (1996), there are three main approaches to selection of the sample - convenience, judgement, and theoretical sampling. In this thesis, the approach was mainly based on judgement sampling, since the sample was selected based on their expertise and knowledge within the area (Marshall, 1996). After each interview, the participants also had an opportunity to recommend other people, using a snowball-sampling approach. This sampling method is suitable in small populations that are difficult to get access to from the outside (Brewerton & Millward, 2001). Since this study was reliant on finding interviewees with sufficient experience in the area investigated, this sampling method was applied. The sample was selected based on three main criteria (See appendix 2 for a full illustration of the sample):

- The sample should have either sales and/or technology experience and exposure to customers.
- The sample should have industry experience from the investigated time period, further defined in section 3.3 below.
- The sample should be available during the study, January-May 2019.

Furthermore, we had to go beyond saturation in order to be sure that we reached saturation, when no new themes, insights, or concepts emerge in the interviews (Glaser & Strauss, 1967).

The data collected was enough to illustrate and explore the different mechanisms that have impacted the selling process of cloud and how this process itself has impacted the value contribution. Moreover, the size of the sample allowed us to find clear patterns and to have a detailed analysis (Brinkmann, 2013).

3.2.5 Interview setting and documentation

Data from the interviews was collected from March to April of 2019. The interviews lasted between 45-90 minutes, on average 60 minutes, depending on the information, reflection, and expertise each participant could and would contribute with. For the participants to put in minimal effort in participating, and for them to be in a comfortable environment, the interviews were held at their workplace in different conference rooms. Moreover, the interviews were held in Swedish which allowed the interviewees to speak in the language they are most comfortable with and to minimize misinterpretations, since this is also a language we speak natively.

During the interviews, we took turns in asking questions and taking notes, in order to be as objective as possible and reducing personal bias. The interviews were recorded and transcribed in order to not miss any relevant data and it allowed for follow up interviews to clarify any uncertainties. Within 24 hours after each interview, a discussion was held with the aid of notes and recordings, in order to gain key insights closely after the data collection (Bazeley, 2013).

3.3 Data analysis

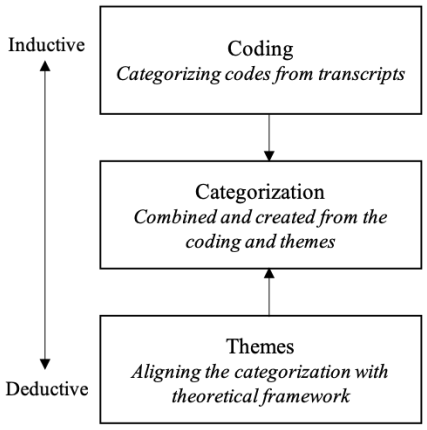
As mentioned in section 3.1.3, research reasoning, this thesis takes an abductive approach, starting from theory to design the interview guide, followed by a refinement and updated theoretical framework. The data analysis follows a similar structure, through a thematic approach, where themes are deductively created, and the interview data is inductively coded and categorized. The coding categories and theoretical themes were then compared and analyzed throughout a unified framework. (see appendix 3 for a further elaboration of the analysis)

As a first step, we coded all data from the interview transcripts individually. Initially, from this inductive strategy, the coding focused on the interviewees actual words and descriptions and did not connect to theory (Braun & Clarke, 2006). In case of dissimilarities, during the comparison of the individually coded data, a discussion was held (Miles & Huberman, 1994). We also included

a third analyst to review the transcripts for correct translations of the quotes from Swedish to English and final categories from the coding. Moreover, codes that occurred less than three times were excluded in order to only analyze the most pertinent data.

A theoretical thematic method was used to analyze the data. The thematic approach helped categorize the data and revealed considerable important themes, patterns in the information, to the research phenomenon (Boyatzis, 1998; Daly, Kellehear, & Gliksman, 1997). In addition, using a deductive strategy, the theoretical themes were compared to the categorization from the coding in order to ensure a complete capture of the relevant codes. Figure 5 below summarizes the data analysis process.

Figure 5 Summary of the data analysis process



3.3.1 Defining stages of the cloud development

The empirical data is structured based on three stages of the cloud development, uncovered in the empirical data from the timeline exercise. These stages are spanning from around 2010 to 2019, without a precise time span per stage since these are somewhat overlapping. The categorizations from the empirics were divided into these three stages, where the first stage is the beginning of the investigated time period and the third stage reflects the market today. Figure 6 below presents these three stages.

Figure 6 The three stages of cloud development

In reality, these stages are quite simplified for the purpose of this thesis. However, since there is no literature defining any stages in the development of cloud, this helps to set a foundation for this study and for future research.

3.4 Quality consideration

In order to ensure validity and reliability of the study design and execution process we aimed to gather, analyze, and interpret the data in a quality manner. This section will start with an analysis of the researcher (3.4.1), i.e. our position throughout the study, followed by an assessment of credibility (3.4.2), consistency (3.4.3), and transferability (3.4.4) (Lincoln & Guba, 1985; Merriam, 2009).

3.4.1 Researchers' position

In two identified ways, our position in this study could potentially impact the collection, analysis, and interpretation of the data. First, we declared any underlying values, assumptions, backgrounds, and potential biases that could impact the study (Creswell, 2015). For instance, one researcher had previous working experience within the tech industry and had previously been in contact with some of the participants from this study, which could influence the interpretation of the data. However, this risk was decreased due to that the other researcher did not have previous contact or experience within the field. In addition, the analysis of the data started with individual coding and interpretation and we took turns in asking questions and taking notes during the interviews. Secondly, in order to have an objective data gathering and to reduce personal bias, we were attentive to our responses throughout the interviews, and we reflected and analyzed this further when going through the interview recordings.

3.4.2 Credibility

When establishing trustworthiness, credibility is considered to be the most essential criterion, linking the study's findings to the reality of the data (Merriam, 2009; Yin, 2011). By mentioning our previous exposure and experience within the industry, the transparency of the study increases (Creswell, 2015). Moreover, we also increased credibility by using several data sources and another analyst to review some of the data, not including information that would disclose the identities of the interviewees and case company, leading to a triangulation effect (Yin, 2009). Thirdly, in any case when the data was unclear, the participant in question was contacted for clarification. Finally, we reached saturation in our data when no new themes, insights, or concepts emerged in the interviews (Merriam, 2009).

3.4.3 Consistency

Consistency, also referred to as dependability, is when the results can be repeated and lead to similar findings (Merriam, 2009; Yin, 2011). In order to have consistency in this thesis, the data was carefully analyzed and interpreted. For instance, the translations from the specific quotes used in this thesis were reviewed by a peer in order to ensure correct translation from the initial quote (Gibbs, 2007). Moreover, the transcripts were also double checked with the audio files by the researcher that did not transcribe the specific interview in question. Furthermore, we assured consistency by including the researchers' position and by using triangulation (Merriam, 2009).

3.4.4 Transferability

Transferability, also referred to as external validity, refers to if the study's findings can be used in another context, i.e. the study's generalizability (Lincoln & Guba, 1985; Merriam, 2009). The use of a case company could decrease the transferability since it is difficult to replicate a specific context and setting. However, a detailed description of used methods and processes were included in order to improve the transferability. Moreover, we aimed for comprehensiveness by describing the data approach, collection, and analysis as thoroughly as possible in order to improve future replication. The purposive participant sample was chosen from a global organization, i.e. operating in many markets, in an attempt to increase the transferability for other geographical markets.

4 Empirical results

The following section presents the empirical results from this study. It is structured based on the three stages outlined and defined in the data analysis (3.3), assuming this being the most relevant structure in order to understand the timeline of the different events explained by the participants. This section will start with a background to the empirical results, followed by the three stages. Each stage will start with a market setting, based on data from external sources. This will be followed by empirical evidence, where data collected from the interviews and secondary data received by the interviewees will be presented. (see appendix 4 for a full illustration of the quotes)

4.1 Background to empirical results

The case company is a leading cloud provider on the market and has global presence. As already mentioned in the methodology section, the interviewees have different backgrounds, some within sales functions have been working closely with customers, while interviewees with a technical background have a more general idea of the current market and where the market is heading in the future. As a result, the empirics will include stories based on both specific cases but also from general discussions with some of the leading cloud experts in Sweden.

The empirical study is divided into three stages, identified by the authors, in order to explain the journey cloud has been on throughout the researched timeframe. The stages will describe the supplier's view of how cloud was perceived by buyers on the cloud market, and it will go deeper into what values the supplier side communicated in order to match the customer's perceptions of the benefits. Furthermore, the empirics will describe which barriers and factors the supplier perceived as restricting the customers from adopting cloud and how the supplier addressed them.

4.2 Stage 1

4.2.1 Market setting

In the beginning of the analyzed time frame, around year 2010, cloud was still a new and fairly unknown concept outside expert communities. The world had just started to recover from the financial crisis in 2008 and many companies had been through a rough time (Yang & Tate, 2012). Cloud quickly got the reputation of being a cost-cutting technology and as a result a large

number of suppliers, both well-known incumbents and smaller startups, established themselves on the market, wanting to capitalize on the emerging technology (Linthicum, 2009).

4.2.2 Empirical evidence

As cloud's popularity grew rapidly, stories started circulating of how much money could be saved by moving to the cloud. Some analysts estimated that it was possible to cut costs by 30 to 40 percent and this got the attention of business leaders that had just made it through one of the worst financial turmoil in history[1]. Some clever accountants had also realized that the pricing model of cloud, where you bought on demand instead of investing in hardware and software, made it possible to get additional accounting benefits by shifting IT-expenses from capital expenditure (CapEx) to operating expenditure (OpEx)[2].

> *"When we talked about the cloud back then it was all financial arguments. You could shift CapEx to OpEx and you didn't need any CapEx budget for IT-infrastructure. I also heard that there existed some kind of technical accounting trick, giving companies additional benefits from cloud. They actually contemplated updating the accounting regulations, so organizations had to declare it as CapEx anyways. I mean, what they did was basically buying IT-infrastructure with a payment plan"* ***Björn***

This was very beneficial for companies since they did no longer have to raise capital for expensive investments in IT, they could cover the expenses with their operating budget instead. At this point in time, the suppliers were quick to get on the bandwagon and started proclaiming the potential cost savings a move to cloud would bring[3]:

> *"It wasn't just our company, but most suppliers saw this as a cost play."* ***Daniel***

In addition to the now absent need for large investments in IT, cloud had another potential cost-saving benefit for customers; a rationalization of the workforce[4]. Since a move to cloud essentially meant outsourcing IT to a cloud vendor, suppliers argued that organizations could either lay off

1 Daniel

2 Björn, Daniel

3 Mentioned by 16 interviewees

4 Kim, Bengt

IT-personnel or have them focusing on value adding tasks instead of simple maintenance of hardware and software, making the organization more effective[5]. This is also something the company itself brings up in an internal report released in 2010, where they claim that two of the most fundamental benefits of cloud are *"reduced costs"* and a *"refined usage of personnel"*, hence confirming the opinion of the interviewees[6]. Furthermore, as a side benefit in addition to cost savings, there was also a measure of efficiency since cloud could facilitate quick access of information for employees.

> *"In the beginning it was all about cost savings, effectiveness, and efficiency. It became more efficient since more people could have access to information."* ***Marcus***

However, despite the very bright outlook for cloud, the supplier's customers remained hesitant to commit and adopt the technology. One of the major concerns that customers expressed was security[7]. Since this was a relatively new technology, customers were afraid of data breaches and they were not ready to let go of the control of where the data was physically stored and who could access the data[8].

> *"Back in the days, customers were very skeptical of putting anything at all in the cloud due to security concerns. Some are still a bit skeptical today."* ***Robin***

Another barrier that suppliers encountered was the buying organization in itself. Most organizations that had been around for a while had structures and processes that were built around old technology and a traditional way of working[9]. Traditionally, anything remotely close to IT-infrastructure was purchased either by the CIO or by an IT department[10]. According to some interviewees, this was a major problem when they tried to sell cloud since the IT people had built up rigid and complex IT systems that were difficult to alter[11]. And to add insult to injury, IT departments were also to a large extent measured on buying IT at the lowest cost

5 Jonas
6 Internal document 1
7 Mentioned by 9 interviewees
8 Henrik
9 Mats, Maria
10 Daniel, Lars
11 Kim, Robin, Henrik, Maria

possible per volume unit, resulting in the internal organizations of customers being poorly prepared for any kind of technology shift, particularly one that includes a new pricing model:

> *"One of the main challenges for an IT department, and this is something they are very good at, is that they build technical debt. It leads to extreme complexities every time you want to make a change. […] It is favorable for a CIO to buy in volume since that will get you a better price. But if you look at the cloud model, it doesn't fit in the traditional purchasing model"* ***Kim***

In addition to poorly suited internal organizations, interviewees also described that suppliers were lacking competence in regard to cloud[12]. Customers were not really sure what they were looking for and how the technology could be beneficial for them:

> *"I think customers had very different ideas of what problems cloud could solve. It was a bit of a conceptual confusion, what is cloud actually?"* ***Mats***

It was also evident that the responsible buyers in the customers' organizations were not competent enough to understand how cloud could be applied in their business and they were stuck in their traditional purchasing mindset. One interviewee even mentioned that some people in a customer's buying function thought cloud was *"useless"* while people outside the buying function thought cloud was great[13]. This was bound to lead to some frustration for the suppliers who wanted a close relationship with the buying organization in order to educate the customers. However, because of the lack of competence and understanding on the customer side, they were rather "*unsure and uncomfortable"* in the process, resulting in the relationship being more distant than the suppliers desired[14].

Another problem for the supplier at this time was their own internal organization. Interviewees mention that they were used to sell things in a certain way that was not really suited for cloud[15]. Moreover, they also expressed that in the beginning of selling cloud they were rather technically focused, treating cloud as a complex solution that could solve many technical issues. According

12 Mentioned by 13 interviewees

13 Jonas

14 Marcus, Jonas

15 Jonas, Bengt

to the interviewees, they also had to figure out how to best meet the customers' needs with the new technology[16].

4.3 Stage 2

4.3.1 Market setting

After a couple years, cloud started to become adopted by more and more companies. At this point, the market started to become a lot more competitive, resulting in large shifts in the market. At one point, research firm Gartner predicted that one in four cloud vendors would disappear from the market by year 2015, either because of acquisitions or bankruptcy (Thibodeau, 2013). As a result of the market consolidation, a few dominating players started to appear (Darrow, 2015).

4.3.2 Empirical evidence

These dominating market players committed themselves to the technology and were investing large amounts into driving it forward:

> *"Big players have gone in with all of their strength in this* [cloud]. *They have been driving this forward. Since these big players have grown and been successful, the have been in the spotlight and people see that it has worked for them. […] Since these players have entered the market with their big muscles and shown commitment, cloud has grown as a technology"* ***Oscar***

Another interviewee mentioned that some cloud suppliers had really gone all in on cloud by setting a cloud-first strategy where they sacrificed old business in order to move new business to the cloud[17]. This kind of commitment signal also showed customers that cloud was here to stay; this technology was not a fad.

Around this time, interviewees mentioned that incumbent firms started to see new competition on the market. Businesses that were *"born on the cloud"* started competing directly with incumbents and doing it very successfully[18]. Without legacy technology and this *"technological*

16 Filip, Sara, Robin

17 Carl-Henry

18 Mentioned by 9 interviewees

debt" mentioned earlier, these young firms built their whole business around cloud and started competing in completely new ways:

> *"What has been driving cloud from the beginning are companies like Spotify and Netflix. They are building different components that the end customer can use. It has an extremely high operational security. […] It is really a technological shift and you see all these examples of startups being successful. So, then you start thinking… why can't we do this in the private industry or the public sector? You start to get a better understanding of what cloud can do."* ***Alex***

So now there were large suppliers committed to develop cloud and there were also a number of successful examples of cloud implementation, or best practice as we can call it. This sparked a hype around cloud and all of a sudden everyone wanted to be there[19]. However, customers were to a large extent still lacking the competence to fully understand cloud and its possible benefits:

> *"One thing that has been driving cloud forward is the 'technology trend'. Everyone feel like they have to take that route, but the reasoning is rather emotional than fact based. 'Everyone goes to cloud, so we have to do it too'. It's like Rosé wine, all of a sudden everyone started drinking Rosé during the summers, it was and is a trend. It is the exact same thing."* ***Erik***

With plenty examples of how startups were using cloud to do business in a new way, companies started understanding that the technology could do more than just reduce costs. As suppliers could see the customer's perception of cloud changing, they started to communicate other values than just cost reduction. One of the key things here was that suppliers started selling cloud as a perfect tool for business development. Cloud would enable customers to test and develop applications in a very *simple*[20] and *flexible*[21] way:

> *"Flexibility and simplicity were key values used to explain the benefits of cloud, especially concerning test and development. If you wanted to test something it was flexible and simple. Earlier, you either had to buy or go find a free server in order to test something. And if you wanted*

19 Mentioned by 6 interviewees

20 Mentioned by 7 interviewees

21 Mentioned by 8 interviewees

to do something on a bigger scale, then it didn't work. But now, with cloud, that is really simple."
Bengt

The flexible delivery model of cloud, where you can purchase instantly according to your demand, greatly reduced the risks associated with developing new applications since there were no upfront investments or commitment in buying hardware and software[22]. Another benefit was that the computational needs could be scaled up and down almost instantly, making development processes much quicker[23]. One of the interviewees compared buying cloud with buying traditional hardware:

"To order a new server you had to go through 70 decision points and many of these were manual where you needed someone to approve the purchase. And then you look at cloud where it takes fifteen minutes. This is what makes the development processes much quicker." ***Björn***

Around this point in time, according to internal documents, the case company started communicating the *"transformational power"* of cloud, arguing that it would improve the agility of business and that it would speed up innovation of products and services[24]. And this communication had effect on the customers who were now looking to the cloud in order to become agile organizations[25]. They wanted to implement cloud, so they could be quicker at developing new products, at a lower cost and with lower risk[26]. They were starting to grasp that cloud could bring more business value.

However, customers now started facing new challenges in their journey to the cloud. Customers that had earlier been reluctant to put anything in the cloud were now keen to try the technology, but with which supplier? In a market that shifted very fast, and with multiple tech giants investing heavily in the technology, it seemed like customers were unsure of which provider would be the most suitable at that point in time and for the future[27]. Many interviewees expressed that customers were very concerned about getting locked in to a specific technology with a

22 Sara, Bengt, Mats, Maria
23 Mentioned by 14 interviewees
24 Internal document 2
25 Mats, Daniel, Alex
26 Mentioned by 14 interviewees
27 Monica, Oscar

specific supplier[28]. They were afraid of choosing the wrong supplier and not being able to switch later.

This became even more problematic since many customers were still not competent enough to understand what consequences certain decisions could bring further down the road[29]. According to a couple of the interviewees, some cloud vendors capitalized on this by almost trying to lure customers into trying their specific cloud by making the service very cheap at first and not talking loudly about the lock in effects[30]. One interviewee said it was like giving a customer *"free heroin"*, as soon as they started using it, it was very hard to get out[31]. This was further aided by the new way of purchasing technology. Since it was possible to start small and at a low cost with cloud, customers could bypass traditional buying processes, something that was very frustrating for suppliers that never got a chance in presenting their offering for big customers:

> *"A really important observation. In all previous technology trends that I've seen, and I have worked with this for 20 years, whether it's hardware, software, or whatever is new at the time, companies have bought technology through a traditional and structured purchasing process. All suppliers have been invited and one wins the tender. But with cloud, all Swedish companies have just chosen one or two suppliers […] so some suppliers have become dominant without going through a structured purchasing process […] All large companies have a process for buying expensive things. But with cloud you can start really small, and all of a sudden you have an invoice at 100 million. I've never seen this before"* ***Erik***

Despite the potential pitfalls when buying cloud, interviewees mentioned that the customers started to get more confident at this stage, thinking that they had a better idea of what they wanted and what problems cloud could solve[32]. They were increasingly expressing requirements to the suppliers and one of the interviewees expressed that the market was rather *"demand driven"*

28 Mentioned by 8 interviewees

29 Monica, Björn,

30 Carl-Henry, Lars

31 Erik

32 Lars, Carl-Henry, Oscar

at this stage, resulting in more distant and mechanical relationships[33]. The suppliers were just suppliers and customers could simply *"go to the mall"* and buy cloud solutions with a credit card[34].

However, there were exceptions to this customer behavior. Some progressive customers started to see cloud as a part of something bigger, it could be an enabler in creating a competitive advantage[35]. In contrast to the vast majority of cloud buyers, these customers were looking for a tight relationship with the supplier in order to draw on each other's expertise to create new business value[36]. Something we will see more of in stage 3.

> *"The working relationships started to get more intense when working towards holistic solutions. We don't always work towards the IT department, but rather towards the business side. You have to work with decision makers that are engaged, and you have to dare to have fun!"* ***Sara***

4.4 Stage 3

4.4.1 Market setting

As we get closer to where we are today, cloud has become widely adopted and a majority of larger companies are now using cloud to some extent (Columbus, 2018). However, most companies are still hesitant to fully adopt the technology and only a small part of organizations' data is lifted to the cloud (Gu & Krishnakanthan, 2018).

4.4.2 Empirical evidence

One potential reason for the increased adoption is a thing that many interviewees mentioned; they have seen a shift in who is buying cloud[37]. Since cloud is very easy to buy, and no technical expertise is needed to purchase it, the buyers are increasingly coming from the line of business instead of from the IT side. As IT budgets have gradually moved out from the CIO's office and into different departments, buying decisions can be taken quickly in the line of business[38]:

33 Lars
34 Daniel, Jonas
35 Oscar, Sara
36 Sara
37 Mentioned by 6 interviewees
38 Robin, Erik

> *"What is happening in the market is that more and more decisions are taken in the line of business. Today, different departments can take these decisions, earlier everything had to go through the IT department"* ***Robin***

As described in the previous stage, a number of large suppliers committed to driving the technology forward, and the technological development had a large impact on the value cloud could bring. As a complement to cloud, a large number of powerful API:s have been developed. These have made it possible for organizations to access powerful tools and applications over the cloud and use them in their own business[39]:

> *"When we argue for cloud today it is about time-to-market and accessibility to certain functions. That's what we call API and the API economy. […] For a customer it would be impossible to develop these applications by themselves since they are often extremely complex. Even if a large Swedish company were to do it, developing only one of these applications would drain their whole annual IT budget"* ***Björn***

With myriad new functions that could be accessed over the cloud, it was possible for organizations to create radically different products and services. As stated by the company itself in an internal document, the majority of customers are using cloud to drive business innovation[40]. This is also confirmed by the interviewees as they mention that customers at this stage were stressing that they had to stay competitive in a changing and fast-moving market[41]. The importance of data and data analysis was also becoming more evident as companies such as Netflix could use data to create content and provide personalized services that the users loved[42]. When end customers were getting used to superior user experiences, they started to have higher expectations on the services they bought, and they started to put pressure on both traditional companies and public authorities to change and create better services. As a result, *innovation* and creating value for the *end customer* were two major things that customers wanted from cloud[43]. This focus on creating end customer value and competitive advantage resulted in suppliers

39 Mentioned by 10 interviewees

40 Internal document 3

41 Oscar, Erik, Jonas

42 Henrik

43Mentioned by 8 interviewees

becoming more solution oriented, focusing on solving problems rather than selling a technology[44]:

> *"You have to look at the customer's customer. You have to look from the outside and in. How can we help our customer to in turn help their customers be successful? "* ***Daniel***

Many interviewees also mentioned that cloud started to become part of something bigger, they were now selling cloud as an *enabler*, rather than as a standalone technology[45]. If implemented correctly, cloud could help the customers to become more agile and to create business value much faster than they had done traditionally[46].

> *"I have experiences in both selling and implementing cloud. Cloud is one technology, out of a couple, that enables innovation and fast value. It takes us just a few months to create business value for the customer […] it is a tool used to create innovation."* ***Sara***

As customers started to *"put one and one together"*, they were beginning to understand the potential value of cloud[47]. However, in order to realize this value, they faced the challenge of connecting everything together, a task that became increasingly difficult since many larger companies at this stage were using multiple clouds in order to pick and mix the best solutions from different vendors, while at the same time having a large amount of data left on servers in their own data centers[48]. This complexity is further confirmed in the company's internal documents where they claim that 71 percent of the customers use three or more cloud providers[49]and that difficulties in connecting and managing data across different clouds have been restricting adoption[50]. So, all of a sudden there was a need for new competence in the companies in order to get everything together. They wanted *simplicity* and they started coming back to the suppliers to look for help[51]:

44 Daniel, Sara, Kim
45 Sara, Robin, Henrik, Carl-Henry
46 Alex, Sara
47 Oscar
48 Monica, Mats, Lars, Carl-Henry
49 Internal document 3
50 Internal document 4
51 Monica, Lars

> *"Now we see organizations having multiple cloud suppliers, and how are they supposed to handle that? We're talking hybrid clouds. This is a new type of challenge, so it could be that customers end up coming back to the suppliers in the market. […] So, the world is about to explode in different components and interfaces. All customers want to have it simple and there could be a renaissance for the suppliers that can solve this and put it all together"* ***Lars***

With multiple clouds and applications, the complexity increased a lot for customers. According to some interviewees, customers felt that they started to lose some control[52]. At the same time, legislators were implementing laws restricting how businesses could use and handle customer data, resulting in many customers expressing security concerns to the supplier[53]. The customers lacked competence and were not sure how to interpret new regulations, could they put data in the cloud or not[54]? No one wanted to be the first one to do it and get into trouble. Furthermore, there had been a number of recent incidents in the media where sensitive data had been exposed, and no business leader wanted to be the next person making headlines for the wrong reason[55]. To make it even more difficult for buyers, it is very difficult to evaluate security and integrity claims from vendors, you simply do not know if the claims are true or not until everything either works perfectly fine, or something bad happens[56]. This is further reflected on in internal material where the supplier brings up compliance and security as two major factors that have prevented cloud adoption[57]. As a response to these uncertainties, suppliers worked hard to sell a long-term *partnership*, building trust between the supplier and customer over time[58]:

> *"Today the partnership is also very important. You have to trust your supplier, since it is almost impossible to control security and integrity claims"* ***Daniel***

This has been a major change for the suppliers. They have to work closer to the customers in long-term partnerships and they are taking an *"end to end"* approach to take customers through

52 Henrik, Monica
53 Daniel, Lars
54 Monica, Alex
55 Lars, Alex
56 Daniel
57 Internal document 4
58 Daniel, Jenny, Maria

the journey of going to cloud[59]. The new projects no longer have a clear end but evolve into longer relationships[60]. This is also affecting the suppliers who have had to change how they sell things, becoming more relational[61].

> *"Cloud is a longer relationship process today. It is not like hardware or software, when you only sold something and then said 'goodbye'."* ***Monica***

59 Internal document 4

60 Kim

61 Robin

5 Analysis

The following section presents the analysis, using the theoretical framework, the practical translation, and the empirical data. Stage 1 (5.1) will be analyzed first, followed by stage 2 (5.2) and stage 3 (5.3).

5.1 Stage 1

5.1.1 Perceived and communicated values

According to the interviewees, when cloud was introduced as a service, the possibility to reduce costs was without doubt the number one selling argument from the supplier. Alongside costs, there were also other values communicated, such as increased effectiveness and easier access to information. However, the value proposition was primarily focusing on lowering the cost base for the customer. Hence, there was a clear emphasis on *quantitative* values in the communicated value proposition.

Reflecting on the customers, the sellers explained that this was perceived by them as well, since the majority of customers adopted cloud as a way to reduce overall costs. Therefore, cloud had an effect on the *value-capture* component. The customer was able to do business as usual, but with a lower cost structure, resulting in increased margins. Hence, according to the participants, in the early stage, cloud computing did not significantly impact the value components and most companies continued to do business in the same way as before.

Based on the supplier's value proposition and the supplier's perception of what value cloud would contribute to the customer, the following conclusion is made:

> **In stage 1, the supplier perceived that cloud could contribute to an increased *value capture* for customers, therefore, the supplier communicated value propositions emphasizing *quantitative values*.**

5.1.2 Perceived customer uncertainties and supplier abilities

Since cloud computing was a new technology for many of the potential buyers, there was generally a lack of understanding of how the technology could be applied and how it could benefit organizations. Furthermore, from the empirical results one can argue that established

organizations were structured in a way that supported processes and a way of working based on established technology. As a result, buying organizations faced a high degree of *need uncertainty*. In addition, organizations also experienced *transaction uncertainty*, mainly linked to questions regarding security. The sellers felt that potential customers were afraid of putting important data and/or applications in the cloud since they did not trust the technology to be safe from external threats and they had concerns about the uptime of the technology.

To reduce the uncertainties and increase adoption of cloud, the supplier tried to communicate values that were easy to understand and put into a business context for the buyer. Since the competence was lacking at the customer side, the suppliers felt that they were the ones pushing for a close relationship in order to build trust between the two parties. Using this kind of *problem-solving approach* was arguably appropriate since the need uncertainty was high at this point. However, the supplier experienced a large deal of skepticism and resistance from the buyer side and the relationships were in most cases more distant than the suppliers desired. Therefore, in order to be more successful in convincing the customers, one can argue that the sellers should have emphasized the complexity of the market more, or that they should have tried an approach emphasizing *transfer abilities*, since the buyers wanted a more distant relationship. As things were now, reducing the uncertainty on the buyer side would have required the buyer to invest heavily in the relationship with the supplier and many buyers saw these investments costing more than the perceived benefits, hence they were reluctant to adopt the technology.

Another reason for the reluctant attitude towards cloud computing was the buying organization in itself. Most purchases had to go through the IT department at the buying firm, an IT department that was used to working and purchasing in a particular way. They could not, or maybe did not want to, understand how cloud would impact their organization or the IT department they worked at, further resulting in *need uncertainty*.

Based on the supplier's perception of barriers restricting customers from adopting cloud and the supplier's communicated abilities, the following conclusion is made:

> **In stage 1, the supplier identified several barriers in the interaction with the customer, translated to *need* and *transaction uncertainties*. These were unsuccessfully met with an approach based on *problem-solving abilities*.**

5.2 Stage 2

5.2.1 Perceived and communicated values

As the technology became more common and mature, suppliers started communicating other benefits of cloud computing. Cost was still on the table but now values such as simplicity and flexibility started becoming more important. There was an increasing understanding that cloud could be beneficial in the development process of new products since computing power cloud be scaled up and down almost instantly, making development cheaper, but also resulting in a shorter development process. As a result, the value proposition in stage 2 became a mix of both *quantitative* and *qualitative* values.

With the increasing adoption of cloud, the participants mentioned that the users also began to understand that there was a possibility to extract more value from the technology. At this stage, it started having a more significant impact on the customers' business models. First, cloud had a large impact in how companies could test and develop new products since it was easy and quick to access computing power according to the needs at that exact moment. This made the development process cheaper, resulting in a lower cost structure and a change in the *value capture*. Furthermore, since cloud made the development process much quicker it had an effect on the *value proposition* that could be enhanced and updated more frequently than before. At this point, cloud accelerated the development process, but it did not radically alter it, resulting in only a limited effect on the *value-creation* component. As cloud at this point mostly had an intrinsic impact on organizations, the *value-delivery* component did not change much either as the relationships to end customers were not affected to a large extent.

Based on the supplier's value proposition and the supplier's perception of what value cloud would contribute to the customer, the following conclusion is made:

> **In stage 2, the supplier perceived that cloud could contribute to an increased *value capture* and a development of the customer's *value proposition*, therefore, the supplier communicated a value proposition emphasizing both *quantitative* and *qualitative values*.**

5.2.2 Perceived customer uncertainties and supplier abilities

When cloud started becoming increasingly common, the interest exploded from the buyer side. New companies that leveraged cloud technology, such as Spotify and Netflix, emerged and became extremely successful in a short time. This showed examples of best practice and resulted in a reduced *need uncertainty* since organizations could better understand how the technology could be applied. Furthermore, a major reason for adoption was the hype factor. Everyone wanted to go to the cloud and the previous concerns regarding the *transaction uncertainty* were dramatically decreased. Since everyone else was lifting data to the cloud, the perceived risks were reduced in many cases.

Another factor that played a part was the rapid changes in the market where a number of big and trusted players committed to cloud, resulting in a consolidation of the market. They were committed to driving the technology forward and they did it successfully. Since these companies were trusted and financially stable, this had an impact in reducing *need* and *transaction uncertainty*. However, *market uncertainty* grew within the buyers. With many committed suppliers, buyers were afraid of betting on the wrong horse, something the interviewees expressed as a fear of being locked in to one supplier.

As a result of the increased *market uncertainty*, some interviewees mentioned that the market became more demand driven and the buyers were increasingly holding the suppliers at an arm's length with increased requirements. However, at the same time, some progressive buyers were beginning to implement more complex cloud solutions that in turn increased their *need uncertainty*, resulting in a more intense relationship with one selected supplier.

Based on the supplier's perception of barriers restricting customers from adopting cloud and the supplier's communicated abilities, the following conclusion is made:

> **In stage 2, the supplier identified several barriers in the interaction with the customer, translated to *market uncertainty* being dominant. By using an approach based on *problem-solving abilities*, the uncertainties were appropriately met.**

5.3 Stage 3

5.3.1 Perceived and communicated values

With the widespread adoption of cloud, the communicated benefits changed a lot and there has been an evident shift from quantitative values to *qualitative* values. The focus is no longer on how much organizations can cut costs by moving to cloud, but rather how the technology can provide a competitive advantage for customers. Suppliers have previously emphasized speed and flexibility as important selling arguments, but these are now closely linked to creating value for the end customer, i.e. the customer's customer. Furthermore, a large number of advanced applications and functions have been developed for the cloud platforms. This has given developers access to new applications they could only have dreamt off developing themselves. Today, applications like advanced AI, geographical maps, and weather information etc. is readily available over the cloud. This has made it possible to quickly create offers with a high value for the end consumers.

According to the sellers, the increased focus on the end customers started to have a larger overall effect on all the customer's business model components. Similar to stage 2, cloud has had an impact on the *value proposition* since the technology is facilitating the development of new product and service offerings. However, it has had an even larger impact on the *value-creation* component. Interviewees mentioned that data analysis is becoming more important for businesses and since cloud can facilitate rapid information exchanges between businesses and their users, it is possible to create customized offers that radically increases the perceived use value from end customers.

The *value-delivery* component has also been affected at this stage. Since it is cheaper and easier to develop products and services, businesses have been able to target more customer segments with different offers. Furthermore, in some cases, cloud has supported new delivery channels with many services today being offered online on a subscription basis.

There is no doubt that businesses have been able to c*reate* more value for the end customers with the aid of cloud technology. However, it can be disputed if they have actually been able to *capture* more value. Some interviewees mentioned that cloud is highly flexible, but flexibility usually comes at a cost. And as the whole cloud ecosystem becomes more complex it is questionable if the overall costs are any lower than for traditional solutions. However, if the value for the end

customers can be increased, it could be possible for companies to raise their prices accordingly in order to capture more value. Since cloud makes it easier to leverage data and customize solutions for end consumers, it could make it possible to find new revenue streams from customer segments that would have been unprofitable before the adoption of cloud.

Based on the supplier's value proposition and the supplier's perception of what value cloud would contribute to the customer, the following conclusion is made:

> **In stage 3, the supplier perceived that cloud could contribute to an increased *value capture* and *value creation*, and a potential change in *value proposition* and *value delivery*, therefore, the supplier communicated a value proposition emphasizing *qualitative values*.**

5.3.2 Perceived customer uncertainties and supplier abilities

In the late stage of cloud technology, the respondents mention that the customer's perception of cloud varies more than before. One reason that more organizations have adopted cloud is that the buyers have changed. Previously, the CIO office or people in the IT departments decided what technology to buy. Today, however, technology is more frequently bought by people on the business side of organizations since the technological expertise needed for those decisions is greatly reduced. Furthermore, as the buyers are closer to the business, they can better understand how cloud can be applied and benefit the organization, leading to a reduced *need uncertainty*, resulting in an increased adoption. However, almost paradoxically, as more and more different business divisions have adopted cloud, the overall complexity in organizations has in turn increased dramatically. The increased complexity has resulted in an increased *need uncertainty*, as decision makers in organizations are unsure of how everything links together.

At this point, regulators have also had their mind on cloud technology. As more regulations regarding data storage and control of data have emerged, buyers have become more uncertain whether suppliers can deliver everything needed in order to keep all data secure and compliant to regulations, once again resulting in increased *transaction uncertainty*.

Additionally, organizations are still facing *market uncertainty* since the technology is continuing to advance at a rapid pace. To mitigate this, it is common for a buyer to purchase solutions from

multiple vendors, reducing the risk of being stuck with the wrong technological supplier, but at the same time increasing the overall complexity.

The supplier express that the increased complexity has resulted in a tighter relationship with the buyers, something that could be expected due to the high level of *need uncertainty*. Moreover, many interviewees mention that they are increasingly focusing on finding solutions for the customers today, rather than selling technology. They also express that the relationship today is more of a partnership than the transactional relationship that it was earlier. This *problem-solving approach* of the supplier can further explain the tighter relationships, since *problem-solving abilities* are more valuable when need and market uncertainties are high. The tight relationships have also been vital in reducing the *transaction uncertainty*, since it is building trust between the supplier and the buyer. The increased trust is in turn resulting in the buyer being more confident in that the supplier can deliver what it has promised, hence, the perceived *transfer ability* of the supplier is increased.

Based on the supplier's perception of barriers restricting customers from adopting cloud and the supplier's communicated abilities, the following conclusion is made:

> **In stage 3, the supplier identified several barriers in the interaction with the customer, translated to a combination of *need, market,* and *transaction uncertainties.* By using an approach dominated by *problem-solving abilities*, but also including better *transfer abilities*, the uncertainties were appropriately met.**

6 Discussion

In the following section the empirical findings and analysis are discussed in relation to the literature review and theoretical framework. The discussion starts with an elaboration of the findings (6.1), where values, uncertainties and abilities are compared with previous research. This will be followed by a synthesis of the theoretical framework (6.2), based on the discussion and findings.

6.1 Elaboration of findings

The findings from this study both confirms previous research and adds additional value to the research field. In this section, expected and unexpected empirical results are discussed in relation to the literature review. These are discussed in terms of value (6.1.1) and uncertainties and abilities (6.1.2). In addition, external drivers (6.1.3), mentioned throughout the empirical results, which influenced the development and offering of cloud, will be discussed.

6.1.1 The value perspective

Throughout the three stages in this thesis, the values that the supplier communicates in their value proposition shifts from being mostly quantitative to being rather qualitative.

In previous literature, there has not been a clear distinction of at which point in time different values have been perceived as important and therefore been communicated by suppliers. As a result, it is difficult to get a holistic perspective of how the cloud offering has changed over time. Previous research has treated cloud benefits as static and ever present, hence they have not taken time and organizational maturity into consideration when researching what value cloud can actually bring.

In the literature, the cost benefit of cloud is a realized value for organizations adopting cloud (Durao et al., 2014). From the findings in this thesis, one can argue that cost benefits from cloud is the dominant value proposition used in stage 1, and this communicated value was realized for the customers in terms of increased value capture. However, as time passes, other values are highlighted and become more important in the following stages.

Venters and Whitley (2012) and Hardy (2018) argue that cloud leads to improved speed, innovation, and flexibility as testing becomes easier and quicker because there is no need to take infrastructure into consideration. These values can be found in the empirical results, and most significantly in stage 2 when the supplier communicates flexibility and simplicity benefits in terms of product and service development as a response to customers' desire to become more agile.

In the empirical results from stage 3, it was clear that creating value for the end customer was an important value communicated in the supplier's value proposition. In the existing literature, this is yet to be expressed as an important benefit of cloud. This can potentially be explained by the fact that this specific topic may not have been researched yet, or that it has previously been overlooked due to previous research being rather technically focused.

In the literature review, sustainable IT is a central area for cloud and it is arguably a key value expressed in previous research (Winston, 2011). From the empirical results there is no evidence of this specific value being communicated by the supplier at all, or that the supplier perceives this as an important benefit for their customers. A potential reason for why sustainable IT is never mentioned could be that there was no targeted question towards sustainable IT. However, since the questions asked were open questions about important arguments used in the process of selling cloud, it is reasonable to believe that sustainable IT was never a main selling point. Another possible reason for why it was never mentioned could be due to the fact that the case take place in a Swedish context where most energy is already coming from renewable sources, hence switching to cloud would not have the same environmental impact as it would in other countries. Moreover, sustainable IT could potentially be an important value that will appear in a later stage, when the market has reached increased maturity.

Based on how the supplier's value proposition has changed over time, it is evident that there has been an interesting interplay between the technology development and innovation in different value components in customers' business models. In line with Baden-Fuller and Haefliger (2013), previous literature has had a tendency to overlook this aspect of cloud in favor of a technological focus. When asked about what factors interviewees perceived as driving the adoption of cloud,

almost as many interviewees mentioned new competitors as they did technological development, showing that innovation in these business-model components should not be neglected.

Chesbrough and Rosenbloom (2002) argue that it is crucial for organizations to find a new business model in order to realize the full potential of new technologies, something the empirical results can confirm. In the early stage, cloud was mostly sold and applied with the goal of reducing costs, similar to traditional outsourcing, and hence it did only marginally impact the different value components in the customers' business models. On the contrary, in the late stage, the value proposition for cloud became very different, addressing a larger number of different value components. As a result, according to the empirical results, the perception of cloud has shifted from a cost-cutting initiative to a technology that could bring a competitive advantage. According to interviewees, this shift has been spurred by new competitors such as Netflix and Spotify, companies that have achieved great success by building their business around cloud technology.

6.1.2 Customer uncertainties and supplier abilities

The types of uncertainties and abilities mentioned by Håkansson et al (1976) played very different roles throughout different times in the researched time period. According to the interviews, it seems like the customers' perceived complexity of the technology had a large effect on how levels of uncertainty varied. In addition, the supplier both struggled and was able to match its abilities to the uncertainties.

At first, when the technology was new and relatively unknown, the customers were unsure of how to apply cloud into their specific business context. In theory, a high degree of this *need uncertainty* should have resulted in the supplier communicating their *problem-solving ability* and that buying firms should be seeking a close relationship with suppliers in order to learn how to apply the new technology (Ford, 2002). However, according to our empirical findings, the relationship between seller and buyer was in fact rather distant at the time. In the empirical results, it was also expressed that the customers experienced *transaction uncertainty*, mainly in relation to security concerns. A potential reason for the distant relationships in this stage could be that the *transaction uncertainty* was dominant at the time. According to Ford (2002), the

supplier should in this case have communicated a *transfer ability* in order to decrease the *transaction uncertainty* and convince the customer to adopt cloud.

Since the supplier perceived both *need* and *transaction uncertainties* to be in play at this stage, we believe that the supplier either should have communicated the complexity of the market, i.e. increasing customer's *need uncertainty*, or should have emphasized their *transfer ability*, matching the perceived *transaction uncertainty*, in order to increase customer adoption.

When suppliers could see that there was money to be made on cloud, some big and trusted suppliers committed themselves to be part of the market and developing the technology. The increasing adoption from businesses and the emergence of best practice applications resulted in a lower perceived complexity and therefore, a decreased *need* and *transaction uncertainty*. However, in accordance with Håkansson et al (1976), massive investments in technology development resulted in myriad different offers on the market, leading to increased *market uncertainty* since buyers had difficulties in evaluating which supplier would have the best long-term offer. One interviewee referred to this stage as more *"demand driven"*, meaning that buyers started to compare different offers and set their own requirements.

In the empirical data it is suggested that a large number of cloud customers are using several different cloud vendors today. This could be an attempt to mitigate the *market uncertainty* for a rapidly developing technology. However, this has resulted in a new type of complexity for organizations since different clouds need to be integrated with each other and with resources off the cloud. Quite interestingly, this has once again increased the *need uncertainty* for organizations. However, in contrast to the early stages of technology, buyers are now seeking a closer relationship to the suppliers. Interviewees still perceive *transaction uncertainties* as a restraining force, especially uncertainties regarding security, but this time it is reasonable to believe that the combination of *need* and *market uncertainty* will dominate the *transaction uncertainty*, resulting in a better fit with the supplier's emphasis on *problem-solving abilities*. Furthermore, as a consequence of the closer relationship with customers, increased trust is improving the supplier's possibility to communicate its *transfer ability*.

6.1.3 External drivers

In addition to already mentioned factors that played a role in the development of cloud and the cloud offering, we found additional aspects that had an impact on the evolution of the cloud offering when analyzing the empirical results. However, these factors were not directly related to cloud technology per se and were not explained by the theoretical framework used in the analysis of the data. We decided to call these factors "external drivers" since they to a large extent were outside the control of the supplier, but still had an important impact on how cloud could be sold to potential customers. All these drivers have been evident throughout the stages, although they have been increasing in significance during stage 2 and stage 3. In the empirical data, three main drivers were identified.

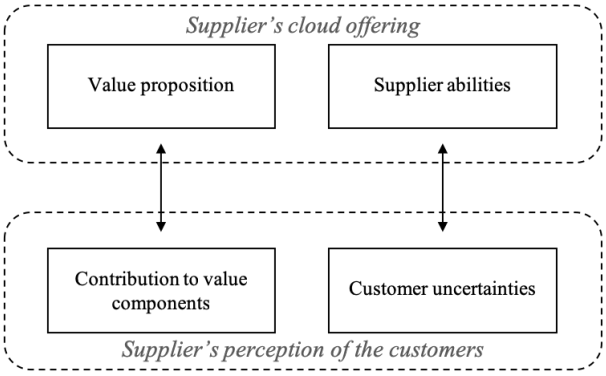
Firstly, some interviewees mentioned that changes in the customers' organizations were beneficial for the supplier when selling cloud. Traditionally, IT services were always purchased by a CIO or an IT department and according to the interviewees, these people had their reasons to be skeptic to cloud. However, IT budgets started to gradually shift over to the business side of customers' organizations and these people were much more positive to cloud, hence increasing adoption rates. Secondly, the technological development of applications and tools (API:s) was also favorable for the adoption of cloud. Since these could easily be accessed over cloud they played a big part in convincing potential customers to adopt cloud. Thirdly, as regular people became more and more digitally oriented, their expectations of what constituted a good product or service changed. Interviewees mentioned that this change in end-customer behavior put pressure on organizations to change and become more digitally focused, and adopting cloud was a logical step in that direction.

6.2 Synthesis of the theoretical framework

In addition to the original theoretical framework, on which the analysis was based, additional refinements were made based on the empirical data, analysis, and discussion above. First, figure 7 presents the way the different theoretical components relate to each other. The *supplier's cloud offering* includes both the *value proposition* that communicates benefits of cloud, and also the *supplier's abilities* in solving the customers perceived problem and delivering a solution. Also analyzed and discussed, the supplier's value proposition is impacted by the supplier's potential *contribution to the customers' value components*, which is also based on the supplier's interpretation

of the interaction between the supplier and customers. In the interaction, the communicated supplier abilities are influenced by the supplier's perception of their customers' uncertainties, and vice versa, which Håkansson et al. (1976) also present in their original view on supplier abilities and customer uncertainties. Therefore, the *contribution to value components* and *customer uncertainties* is a part of the *supplier's perception of the customers.*

Figure 7 Synthesis of the theoretical framework



Based on the different components in figure 7, the conclusions drawn within each stage are presented in table 2, 3 and 4, including a section of an assessment based on figure 7. Finally, table 5 present other external drivers mentioned above.

Table 2 Assessment of stage 1

	Value proposition and contributions	**Uncertainties and abilities**	**Final assessment based on figure 7**
Stage 1	The supplier perceived that cloud could contribute to an increased ***value capture*** for customers, therefore, the supplier communicated ***value propositions*** emphasizing ***quantitative values***.	The supplier identified several barriers in the interaction with the customer, translated to ***need*** and ***transaction uncertainties***. These were unsuccessfully met with an approach based on ***problem-solving abilities***.	The supplier's cloud offering in this stage includes quantitative values and problem-solving abilities. The offering has addressed the perceived value capture contribution, however, not the perceived uncertainties from the customer, where transaction uncertainties should have been met with transfer abilities. A potential reason for this could be that the supplier might see future complexities and has a more insightful understanding of the technology which leads them to not meet the uncertainties in a successful way. Moreover, we see a vague pattern in that quantitative values are more seemingly related to a rather standardized offering, which should also be met with transfer abilities.

Table 3 Assessment of stage 2

	Value proposition and contributions	Uncertainties and abilities	Final assessment based on figure 7
Stage 2	The supplier perceived that cloud could contribute to an increased ***value capture*** and a development of the customer's ***value proposition***, therefore, the supplier communicated a ***value proposition*** emphasizing both ***quantitative*** and ***qualitative values***.	The supplier identified several barriers in the interaction with the customer, translated to ***market uncertainty*** being dominant. By using an approach based on ***problem-solving abilities***, the uncertainties were appropriately met.	The supplier's offering now develops towards more qualitative values, but still includes quantitative values and problem-solving abilities. The supplier's perceived contribution to the customer value capture and value proposition has resulted in a combination of quantitative and qualitative values being communicated. Moreover, the market uncertainties has been favorably met with the supplier's problem solving abilities.

Table 4 Assessment of stage 3

	Value proposition and contributions	Uncertainties and abilities	Final assessment based on figure 7
Stage 3	The supplier perceived that cloud could contribute to an increased ***value capture*** and ***value creation***, and a potential changes in ***value proposition*** and ***value delivery***, therefore, the supplier communicated a ***value proposition*** emphasizing mostly ***qualitative values***.	The supplier identified several barriers in the interaction with the customer, translated to a combination of ***need, market*** and ***transaction uncertainties***. By using an approach dominated by ***problem-solving abilities,*** but also including better ***transfer abilities***, the uncertainties were appropriately met.	The supplier´s offering now includes mostly qualitative values, problem-solving abilities and additionally improved transfer abilities. The combination of the two abilities can now meet all three uncertainties being relevant at this stage, and the qualitative values in the communicated value proposition address all the customer's different value components. Interestingly, as the complexity increases, the uncertainties also increase within more areas (need, market and transaction). In addition, the qualitative values lead to more opportunities in impacting all the customer's value components. As a result, as the perceived complexity increases, customers' uncertainties also increase. However, so does the possibility to influence the customer's value components.

Table 5 External factors influencing the development of cloud

External factors impacting the development of cloud throughout the stages
➢ *Shift in customer buying processes, from IT department to the business side.* ➢ *Development and cloud integration of API:s.* ➢ *Change in end customer behavior, going towards a digital focus.*

7 Conclusions

In the following section the conclusions are presented. First, the research question will be addressed (7.1). This will be followed by the limitations (7.2) of this study. Theoretical contributions (7.3) and managerial implication (7.4) will then be presented. Lastly, future research (7.5) will be suggested.

7.1 Addressing the research question

The purpose of this thesis was to take the perspective of a supplier in order to investigate and explain how and why the concept of cloud computing has evolved over time. Although the cloud computing market has grown rapidly, and is expected to radically affect existing businesses, surprisingly little has been written about how cloud has changed over time from a business point of view, and literature explaining the dynamics of how a supplier updates its offering in the context of cloud is virtually absent. In order to address this identified research gap, the following research question was stated:

How and why has the cloud offering changed over time?

To answer the question above and to address the research gap, the scope of the study was set to:

i) the supplier's perspective,

ii) the supplier's value proposition and perceived value contribution for customers.

iii) the supplier's abilities and perceived customer uncertainties.

Furthermore, we built on a mix of business model and business-marketing theory, together with 21 semi-structured interviews from one leading supplier of the technology. Our findings in this study can be summarized into four main points:

i) The offering has changed from emphasizing quantitative values, to emphasizing qualitative values *and* problem-solving ability, thus answering *how* the offering has changed over time.

ii) The offering has been influenced by a mix of the supplier's perception of how cloud can contribute value for the customer and the supplier's perception of what kind of

uncertainties the customer is facing at a certain time, thus answering *why* the offering has changed over time.

iii) As the perceived complexity increases, customers' uncertainties also increase along with the possibility to influence the customer's value components, resulting in the supplier's offering containing qualitative values and problem-solving abilities, further explaining *why* the offering has changed.

iiii) External drivers, outside the control of the supplier, have had a large influence in increasing customer adoption of cloud, further changing the supplier's perception of how cloud can contribute value for the customer and the perception of customers' uncertainties. Hence, also influencing *why* the supplier's cloud offering has changed over time.

7.2 Limitations

Although this study included an extensive literature review, interviews, and collection of secondary data, the study has several limitations. In this study only one organization in Sweden, supplying and selling cloud, is investigated. Therefore, the generalizations and conclusions drawn on the selling process and development of cloud might impact the external validity. A more nuanced conclusion might have been possible if other suppliers, customers, geographical markets, or technological developments were investigated. However, in order to have an in-depth study, it was impossible to include all possible perspectives within the limited time and resources available, from January to May 2019. Hence, these could be further explored in section 7.5, future research.

In keeping the case company and interviewees anonymous, key information that would identify or harm them had to be excluded, which can also impact this study by not including the full picture given by the participants. However, we believe that the data used answered the research question, without having to include information that would disclose the identities of the interviewees and case company. Moreover, the limited research in this area also made it difficult to make any comparisons, which could impact the transferability of this study.

The qualitative data collected could potentially be impacted by the formulation of questions and translations. For instance, the participants could misunderstand certain questions or wordings,

which is why some questions were asked several times throughout an interview in different ways. Moreover, since the interviews were held in Swedish, the translations from Swedish to English could also have been misinterpreted by us, which is why the recordings were used to take the respondent's tone into consideration, unclear answers were brought up with the participant in question, and the translations were reviewed by a peer.

7.3 Theoretical contribution

By using a new combination of literature in the cloud context, it is reasonable to argue that a foundation for cloud's future development, as well as other technologies, is formed. The development of cloud has been moving very fast, and therefore, literature has had a hard time catching up. Thus, this study helps to fill the knowledge gap of cloud from a supplier's perspective. From the completed theoretical framework there are several aspects that impact this study's theoretical contribution. Viewing technologies as changing and impacting businesses throughout time gives a new perspective in the literature of cloud, where cloud has been treated rather static before. As the values communicated from the supplier shifts from quantitative to qualitative, the expected value contribution for customers increase, while at the same time increasing the perceived complexity of the technology. Furthermore, as predicted from the business model literature, the study shows that when more of the customer's value components are addressed, the supplier perceives the customer to have a higher valuation of the technology.

This study further contributes with a foundation for analysis of the future of cloud, but also for other technologies. Although the results and conclusions from this study are specific to this case's particular context and cannot be claimed to be generalizable for other technologies, the general conclusions in 7.1 can be used as a guideline and starting point going forward. In addition, this also paves the way for future researchers and other potential areas that would be interesting to study further. These are presented in section 7.5; future research.

7.4 Managerial implications

In this thesis we aimed to discover how the cloud offering has changed over time and why this change has happened. Based on the discussions and conclusions of this study, the following managerial implications were identified. Firstly, sellers and suppliers of a newly introduced

technology should focus on more quantitative values early in their selling process, especially if they perceive customers to experience a high level of transaction uncertainty. As the technology and customers mature, suppliers should gradually shift towards communicating more qualitative values. Secondly, in order to be successful in the market, suppliers must include both value contribution and supplier abilities in their offering. The offering should be designed in order to match what value they perceive the customers to expect from the technology, but also to meet the perceived customer uncertainties. Finally, a supplier should be aware of their surroundings in order to identify and leverage external factors that could influence the customers' perception of a technology. If the supplier can understand how these external drivers affect their customers, they will be better at designing an offering that can convince potential customers.

7.5 Future research

Throughout this thesis, four intriguing perspectives for future research were brought to attention. Firstly, since this thesis only takes the supplier's point of view, it would be interesting to study the customer's perspective in order to get a more complete understanding of the studied area. In relation to this, other theories and aspects to evaluate the relationship between the seller and customer could also be used to address the selling process and development. Secondly, other suppliers and technologies cloud be investigated to provide more data and research within the field of technology development in businesses, since this study is limited to data collected from only one supplier and one technology. Thirdly, since this study focuses on the Swedish market, further research investigating the perspective from other geographical markets and cultures could help in providing a better general understanding of the development of cloud and cloud's selling process. Finally, this study is limited to a specific time frame and since implementation of cloud is only at around 10% today, but expected to grow significantly in the coming years, a future study taking a long-term perspective on cloud could provide more insights on the development process (Gu & Krishnakanthan, 2018).

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Secondary data – Internal documents

Internal document 1, 2010 - A paper from the company's technical resource center, intended for developers.

Internal document 2, 2013 - An overview of the company's cloud offerings and cloud strategy.

Internal document 3, 2018 - A presentation from an internal training course in cloud.

Internal document 4, 2019 - An overview of the current state and predicted future of cloud.

9 Appendix

Appendix 1 Interview Guide

BASIC INFORMATION

- Name
- Age
- Role
- Tenure at the company

INTRODUCTION

An introduction was made by us, of ourselves, the scope of the master thesis and the different areas that would be discussed during the interview. In addition, we asked if the interviewees were okay with being recorded, only for the purpose of transcribing.

BACKGROUND AND EXPERIENCE

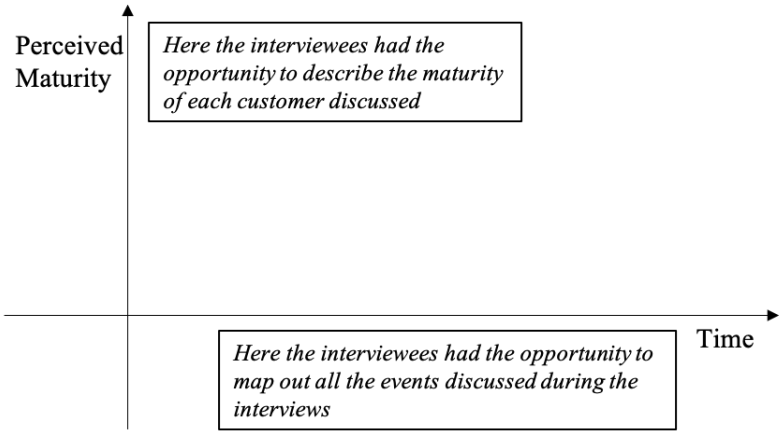
1. Could you briefly present your professional background?
    a. Where, duration, and what was your role?
2. What is your experience and what has been your exposure to cloud?
    a. Could you elaborate further on what type of exposure? *(sales/technical?)*

CLOUD CUSTOMER CASES

1. Have you ever been involved in selling or trying to sell the cloud-computing technology?
    a. Could you elaborate further on this process?/how would you explain the development of cloud and how has the offering changed? *(sales/technical)*
    b. What happened, which customer, how did it go and why?
    c. Which arguments were used, how did the customer respond and what did you do in return?
    d. Was there any resistance from the customer in any way and why?
        i. How did you respond?
    e. What could have gone differently, why did it/did it not work out?
    f. *(If it worked out)* how was this implemented?
2. Do you remember any other process?
    a. Could you elaborate further on this process? (similar to Q1 above)

MATURITY AND TIMELINE EXERCISE

Example of the timeline:



1. How would you define the cloud development throughout time?
    a. Are there any clear stages?
2. Could you please map out the insights from the mentioned customer cases, based on time and maturity of the customer at the time?
    a. When did it happen?
    b. How willing/mature was the customer at the time to adopt cloud?
    c. Which value propositions used were/became most important and why?
3. How would you fill the gaps on the timeline? *(if there was any missing customer case on the timeline based on the defined stage)*
    a. What value propositions were most important throughout time and why?
4. Do you still agree with your initial stages or would you like to change anything?

TRENDS AND MARKET UNCERTAINTIES

1. Did anything else impact the development and why?
    a. When did this happen?
2. How did customers think about cloud in general in the defined stages?
    a. Which were the most important value propositions used?
    b. How did the customers perceive these propositions and what value did it bring to the customer?
    c. Anything that held them back and why?
    d. How did sellers respond?

CONCLUDING AND OTHER QUESTIONS

1. How would you summarize the development of cloud?
2. How has the offering changed in your view?
3. Is there anything else that you would like to mention?
4. Who do you think that we should interview further?

Appendix 2 Participant sampling

Participant	Name	Area of expertise	Date(s)
1	*Henrik*	Sales	13/03/2019; 25/04/2019
2	*Filip*	Technology	16/03/2019; 20/03/2019
3	*Lars*	Sales	20/03/2019
4	*Carl Henry*	Sales	20/03/2019
5	*Maria*	Sales	20/03/2019
6	*Sara*	Sales	27/03/2019
7	*Robin*	Technology	27/03/2019
8	*Bengt*	Technology	27/03/2019
9	*Oscar*	Sales	27/03/2019
10	*Erik*	Sales	29/03/2019
11	*Kim*	Technology	29/03/2019
12	*Marcus*	Sales	29/03/2019
13	*Jonas*	Sales	02/04/2019
14	*Björn*	Technology	02/04/2019
15	*Monica*	Sales	03/04/2019; 25/04/2019
16	Mats	Sales	03/04/2019
17	Daniel	Sales	10/04/2019
18	Alex	Sales	10/04/2019

Appendix 3 Analysis of empirical results – frequency

Analysis of empirical results

Themes	Code	# of participants	Henrik	Lars	Filip	Carl Henry	Maria	Sara	Robin	Bengt	Oscar	Erik	Kim	Marcus	Jonas	Björn	Monica	Mats	Daniel	Alex
Values	Costs	16	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	
	Efficiency	4	x	x										x			x			
	Back-up	2	x			x														
	Flexibility	8	x				x		x	x					x	x	x		x	
	Simplicity	7	x				x	x		x	x						x		x	
	Speed/Time to market	14	x	x			x	x	x		x	x	x		x	x	x	x	x	x
	End customer value/functional	8		x		x			x		x					x	x		x	x
	Green IT	0																		
Barriers	Security	9	x	x					x		x				x		x	x	x	x
	Organizational barriers/competence	13				x	x	x	x	x	x	x	x	x	x	x	x	x		
	Lock-in	8		x		x			x		x	x	x				x	x		
	Complexity/control	9	x	x		x	x					x	x		x		x		x	
	Legislation	8		x					x			x			x	x	x	x	x	
	Bad publicity	3		x													x			x
Drivers	Trend/hype	6			x							x		x		x	x		x	
	Big suppliers	10		x		x				x	x	x	x	x	x	x				x
	New competition	9	x					x	x		x	x	x	x	x					x
	End customer behavior	3		x		x												x		
	New buyers in organization	6		x				x	x			x			x				x	
	More competent buyers	6		x			x	x				x		x				x		
	Technology and complements	10	x	x		x			x	x	x		x			x	x		x	
Relationship	Close	9		x		x	x	x			x			x			x	x	x	
	Distant	5		x							x			x	x			x		

Appendix 4 Illustration of quotes

STAGE 1

"When we talked about the cloud back then it was all financial arguments. You could shift CapEx to OpEx and you didn't need any CapEx budget for IT-infrastructure. I also heard that there existed some kind of technical accounting trick, giving companies additional benefits from cloud. They actually contemplated updating the accounting regulations so organizations had to declare it as CapEx anyways. I mean, what they did was basically buying IT-infrastructure with a payment plan" ***Björn*** *"It wasn't just our company, but most suppliers saw this as a cost play."* ***Daniel*** *"It was talked about that you wanted to go to cloud in order to decrease costs"* ***Kim***	*Cost*	Quantitattive values	**Values**
"They were looking to remove human labor, to automize" ***Bengt*** *"There will be a pressure from stakeholders to cut costs, and few things as as effective in cutting costs as outsourcing"* ***Jonas*** *"It is easier to outsource than to change people. And that is one reason why organizations go to cloud, you are removing this people problem"* ***Kim***	*Workforce*		
"In the beginning it was all about cost savings, effectiveness, and efficiency. It became more efficient since more people could have access to information." ***Marcus***	*Effectiveness*		

"We worked pretty far from the customer in the cloud world" ***Jonas*** *"In the beginning stages of selling cloud, the sellers wanted to have a close relationship, but it was rather distant. They were a bit unsure and uncomfortable in the process."* ***Marcus***	*Distant relationship*	Transaction uncertainty	**Uncertainties**
"Back in the days, customers were very skeptical of putting anything at all in the cloud due to security concerns. Some are still a bit skeptical today." ***Robin*** *"After cost savings benefits, a form of security mindset became relevant."* ***Henrik***	*Security*		
"I think customers had very different ideas of what problems cloud could solve. It was a bit of a conceptual confusion, what is cloud actually?" ***Mats*** *"There was not much competence in the market. At the time, it was more supply driven and customers listened more to the suppliers."* ***Lars*** *"They were a bit unsure and uncomfortable in the process."* ***Marcus***	*Low competence*	Need uncertainty	
"If you do not use cloud to its full potential then it would bring around the same value as if the customer had all their data left in their server hall." ***Kim*** *"One of the main challenges for an IT department, and this is something they are very good at, is that they build technical debt. It leads to extreme complexities every time you want to make a change. […] It is favorable for a CIO to buy in volume since that will get you a better price. But if you look at the cloud model, it doesn't fit in the traditional purchasing model"* ***Kim***	*Buying organization*		

"Back in the days, we did more big customized projects" ***Jonas*** *"We understood that this was the future but we measured people the wrong way internally"* ***Bengt*** *"It was a completely different business model. It didn't fit"* ***Kim***	*Old work practice*	Problem-solving ability	**Abilities**

STAGE 2

"Flexibility and simplicity were key values used to explain the benefits of cloud, especially concerning test and development. If you wanted to test something it was flexible and simple. Earlier, you either had to buy or go find a free server in order to test something. And if you wanted to do something on a bigger scale, then it didn't work. But now, with cloud, that is really simple." ***Bengt*** *"To order a new server you had to go through 70 decision points and many of these were manual where you needed someone to approve the purchase. And then you look at cloud where it takes fifteen minutes. This is what makes the development processes much quicker."* ***Björn***	*Simplicity*	Quantitative values	**Values**
"The customer (X) got requirements from their suppliers that they had to work more agile. The tools that customer X had did not support this. (...) Time to market was the big thing" ***Robin*** *"Cloud is not necessarily cheaper, something that customers had a hard time understanding. A cloud proposal is usually flexible, and flexibility generally cost money. The per unit cost is often higher."* ***Jonas***	*Flexibility*	Qualitative values	

"With time, it has become more demand driven, where people understand that you can do something more. (..) The requirements have started to appear in the market" ***Lars***	*Distant relationship*	Market uncertainty Need uncertainty Transaction uncertainty	**Uncertainties**
"A really important observation. In all previous technology trends that I've seen, and I have worked with this for 20 years, whether it's hardware, software, or whatever is new at the time, companies have bought technology through a traditional and structured purchasing process. All suppliers have been invited and one wins the tender. But with cloud, all Swedish companies have just chosen one or two suppliers […] so some suppliers have become dominant without going through a structured purchasing process […] All large companies have a process for buying expensive things. But with cloud you can start really small, and all of a sudden you have an invoice at 100 million. I've never seen this before" ***Erik*** *"Customers were afraid of getting locked-in."* ***Carl-Henry*** *"There was many that were afraid of getting locked-in to one provider. But, they are not actually locked-in. However, it absolutely was and is a concern."* ***Mats*** *"Customers were also worried to get locked-in to one supplier. It was absolutely one of the top concerns."* ***Robin*** *"Some customers were afraid to get locked-in"* ***Monica***	*Lock in*		
"Big players have gone in with all of their strength in this [cloud]. They have been driving this forward. Since these big players have grown and been successful, the have been in the spotlight and people see that it has worked for them. […] Since these players have entered the market with their big muscles and shown commitment, cloud has grown as a technology" ***Oscar*** *"What has been driving cloud from the beginning are companies like Spotify and Netflix. They are building different components that the end customer can use. It has an extremely high operational security. […] It is really a technological shift and you see all these examples of startups being successful. So then you start thinking… why can't we do this in the private industry or the public sector? You start to get a better understanding of what cloud can do."* ***Alex*** *"One thing that has been driving cloud forward is the 'technology trend'. Everyone feel like they have to take that route, but the reasoning is rather emotional than fact based. 'Everyone goes to cloud so we have to do it too'. It's like Rosé wine, all of a sudden everyone started drinking Rosé during the summers, it was and is a trend. It is the exact same thing."* ***Erik***	*Market driver*		
"The customer has been a bit afraid of not knowing where the information is. "Is it safe?" They want the control over their own things." ***Henrik*** *"Many customers are very careful. It is about mitigating risk. So, they want to experiment on safe ground before they make a decision and move on."* ***Monica***	*Security*		

"The working relationships started to get more intense when working towards holistic solutions. We don't always work towards the IT department, but rather towards the business side. You have to work with decision makers that are engaged, and you have to dare to have fun!" ***Sara***	*Partnership*	Problem-solving ability	**Abilites**

STAGE 3

"When we argue for cloud today it is about time-to-market and accessibility to certain functions. That's what we call API and the API economy. […] For a customer it would be impossible to develop these applications by themselves since they are often extremely complex. Even if a large Swedish company were to do it, developing only one of these applications would drain their whole annual IT-budget" ***Björn*** *"You have to look at the customer's customer. You have to look from the outside and in. How can we help our customer to in turn help their customers be successful? "* ***Daniel*** *"I think that customers have a feeling that the flexibility and speed with cloud leads to a competitive advantage."* ***Monica***	*End-customer value*	Qualitative values	**Values**
"I have experiences in both selling and implementing cloud. Cloud is one technology, out of a couple, that enables innovation and fast value. It takes us just a few months to create business value for the customer […] it is a tool used to create innovation." ***Sara*** *"Customers are setting up their own innovation unit, you have to get to the business value a lot faster. The technology that you get from cloud, together with API:s and microservices, is faster and more flexible."* ***Alex***	*Innovation*		

"Most risks from the customers are perceived risks. There is a lack of competencies and it is a super hard discussion to have." ***Erik*** *"Today it is becoming more complex which leads to that the control is disappearing a bit. There is a need of new competency in the company."* ***Monica***	*Control*	Transaction uncertainty	**Uncertainties**
"There is an insecurity if whether you are compliant with all regulations" ***Mats*** *"Laws, rules, and integrity questions have put a break on the development."* ***Daniel***	*Regulatons*		
"There is a variation in competency with customers. Some have a hard time understanding that it is moving fast and some understand that cloud has the biggest impact on new things." ***Kim*** *"If you buy 17 different cloud solutions from various vednors, how do these fit together? Because the data is in 17 differen data centers"* ***Jonas*** *"There is a complete stack of functions today which makes it more complex"* ***Maria*** *"Now we see organizations having multiple cloud suppliers, and how are they supposed to handle that? We're talking hybrid clouds. This is a new type of challenge so it could be that customers end up coming back to the suppliers in the market. […] So the world is about to explode in different components and interfaces. All customers want to have it simple and there could be a renaissance for the suppliers that can solve this and put it all together"* ***Lars*** *"We're talking multi-cloud and hybrid-cloud, where you have different cloud suppliers. We think that will go without saying in the future."* ***Mats***	*Complexity*	Need uncertainty Market uncertainty	

"We work a lot closer to the customers today. […] We have agreed upon many things which has made it into a more strategic relationship in a way." ***Maria*** *"Today the partnership is also very important. You have to trust your supplier, since it is almost impossible to control security and integrity claims"* ***Daniel*** *"Cloud is a longer relationship process today. It is not like hardware or software, when you only sold something and then said 'goodbye'."* ***Monica***	*Partnership*	Problem-solving ability	**Abilities**

EXTERNAL DRIVERS

"The technical development has been accelerating, due to that there are no big barriers to start a company and bring value to the end customer in a different and new way. It has put pressure on traditional companies and authorities more and more." ***Lars*** *"Through API:s you can get access to advanced application which you cannot do yourself."* ***Filip*** *"The technical development through internet bandwidth has made this possible. Back in the days it was not possible for computers, since the bandwidth was not there"* ***Oscar***	*API and technology*	External drivers
"Back in the days, a seller always sold cloud to the CIO, today that has started to shift towards the business side." ***Daniel*** *"What is happening in the market is that more and more decisions are taken in the line of business. Today, different departments can take these decisions, earlier everything had to go through the IT department"* ***Robin***	*New buyers*	
"What has changed radically is the end-customer behavior. When we're in the digital and it's possible to create better customer experiences, the requirements from our customers change. They want their services in a particular way" ***Mats*** *"Data analysis has become more and more important. Uber and Netflix for instance work a lot with data analysis to create better services"* ***Henrik***	*End-customer behavior*	