Master's thesis

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Value Co-Creation in B2B Software Startups

A case study on customer involvement in the development of new scalable digital services

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This master's thesis was written by a master student studying at NTNU School of Entrepreneurship, a master-program at the Norwegian University of Science and Technology. The aim of this thesis is to investigate value-co creation in the context of B2B entrepreneurial firms developing new digital services. The master student prepared for this thesis in the by completing the following courses during the fall of 2019; TIØ4530 and TIØ4535.

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Abstract

In 2018, the number one reason for startup failure was delivering a product or service that did not serve a need in the market. Hence, the lack of both robust commercial capabilities and a deep understanding of customers are significant contributors to startup failure. However, the research on value -co-creation highlights that deep understanding of customer needs and processes can be acquired through extensive customer interaction and involvement in the service development process. Despite the importance of this subject in the entrepreneurial context, few studies have investigated how value co-creation is happening inside startups.

The aim of these thesis is to investigate value-co creation in the context of B2B entrepreneurial firms developing new digital services. To reach the aim of the thesis the following research questions have been formulated:
RQ1: *How do startups learn about customers when co-creating new digital services?*
RQ2: *How do startups interact with customers when developing new digital services?*

To fulfill the aim of the study, the researcher has chosen a multiple case study research design, with a qualitative approach. Managers of six Norwegian B2B startups, currently developing digital services, were interviewed. Summarized the interviews captured mangers perspective and reflections regarding both customer interaction and involvement in new service development. Subsequently the researcher pursued a systematic inductive data analysis method for the development of new theoretical concept development. The analysis resulted in concepts reinforcing the findings of previous literature, as well as new undiscussed concept native to the entrepreneurial context of value co-creation.

The insight gained from this thesis highlight that value co-creation in the entrepreneurial context is driven by customer learning processes. Customer learning includes customer knowledge transfer, creating common understanding and value verification efforts inside and across organizations. Further, findings have revealed various customer management practices, such as management of customer motivation and expectations and formalization of the collaborative relationship. Additionally, the thesis has expanded the understanding of how startup engage customers in joint value-creating activities and utilize various interaction modes to gather customer ideas, get feedback, and learn. Ultimately the thesis has expanded the research of value co-creation into the entrepreneurial context.

Sammendrag

I 2018 var den viktigste grunnen til at oppstartsbedrifter feilet at de leverte et produkt eller en tjeneste som ikke tilfredsstilte et behov i markedet. Manglende forståelse av kundene sine og svake kommersielle evner er derfor viktige grunner til at oppstartsbedrifter feiler. Imidlertid fremhever forskningen om verdiskaping at dyp forståelse av kundenes behov og prosesser kan opparbeides igjennom omfattende kundeinteraksjon og involvering av kunden i tjenesteutviklingsprosessen. Til tross for viktigheten av dette i kontekst av entreprenørskap, er det få studier som har undersøkt hvordan verdisamskaping i skjer innen startups.

Målet med denne oppgaven er å undersøke hvordan verdiskapingsskapning skjer i kontekst av B2B-startups som utvikler nye digitale tjenester. For å nå målet med oppgaven har følgende forskningsspørsmål blitt formulert:
RQ1: *Hvordan lærer startups om kunder når de samskaper nye digitale tjenester?*
RQ2: *Hvordan samhandler startups med kunder når de sammen utvikler nye digitale tjenester?*

For å oppfylle målet med studien, har forskeren valgt et multiple casestudieforskningsdesign, med en kvalitativ tilnærming. Ledere fra seks norske B2B-startups som for tiden utvikler digitale tjenester, ble intervjuet. Oppsummert fanget intervjuene lederens perspektiv og refleksjoner angående både kundeinteraksjon og kundeinvolvering i ny tjenesteutvikling. Forskeren gjennomførte en systematisk induktiv dataanalysemetode for å utvikle nye teoretiske konsepter. Analysen resulterte i funn som forsterket funnene fra tidligere studier, så vel som nye konsepter tilknyttet verdisamskaping i entreprenørskapskonteksten.

Innsikten samlet av denne studien fremhever at verdiskaping i entreprenørskaps sammenheng i hovedsak er drevet av kundelæringsprosesser, inkludert kunnskapsoverføring, bygging av felles forståelse og av verdiverifiserings-aktiviteter på tvers av organisasjoner. Videre har funn avdekket ulike kundeledelsespraksiser, som styring av kundens motivasjon og forventninger og formalisering av samarbeidsforholdet. I tillegg har oppgaven utvidet forståelsen for hvordan oppstartsbedrifter engasjerer kunder i felles verdiskapnings-aktiviteter og bruker forskjellige interaksjonsmoduser for å samle kundeideer, få tilbakemeldinger og lære. Til syvende og sist har oppgaven utvidet forskningen om verdisamskaping i entreprenørskontekst.

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1 INTRODUCTION

In 2018, the number one reason for startup failure was delivering a product or service that did not serve a need in the market (Insights, 2020). Meaning startups are not delivering products or services that provides substantial tangible value to their target markets. Another significant study similarly cited non-viable business models as the most prominent reason (Fractl, 2020). The lack of both robust commercial capabilities and a deep understanding of customers are significant contributors to startup failure.

However, a relatively new line of research highlights that deep understanding of customer needs and processes can be acquired through extensive customer interaction and involvement in the service development process (Gruner & Homburg, 2000; Salomo, Steinhoff, & Trommsdorff, 2003). Value co-creation and customer involvement in service development have been empirically proven to positively affect the market performance of new offerings (Carbonell, Rodríguez-Escudero, & Pujari, 2009; Claude & Horne David, 1993; A. Gustafsson, Kristensson, & Witell, 2012). The literature on the value co-creation focuses on the theoretical development of practically applicable frameworks (Grönroos, 2008; Payne, Storbacka, & Frow, 2007; C. K. Prahalad & Ramaswamy, 2004) and investigates how collaborative processes, tools, and activities are utilized for understanding customers and crafting superior value.

Established companies are doing value co-creation with customers in a multitude of different ways. For instance, Lego has created Lego Ideas, a digital platform where customers submit and vote on new product ideas. Dewalt has created the Dewalt Insights Community, where tens of thousands of end-users continuously provide feedback on products (Fournier, 2019). These endeavors lead to incremental innovations and completely new offerings. In the context of Large established B2C companies, co-creation is typically a tool for engaging customers in innovation-related tasks (von Hippel, 2005). B2B companies generally have more stakeholders, consequently making the value co-creation process more complex. (Swink, 2006) defines co-creation in the B2B context as a way of cross-fertilizing and stimulating ideation through shared knowledge and experience".

Value co-creation is based on the Service-Dominant(S-D) Logic, which notes that goods do not possess inherent value outside the context of usage, and customers both determine and enable value creation through consumption of services (Vargo & Lusch, 2006). Consequently, innovation shouldn't happen isolated inside R&D departments; it should transpire through collaboration between users, suppliers, partners, and customers. In the entrepreneurial B2B context, value-co creation is usually done within pilot relationships, where customers commit to contributing to development. However, the research on how value co-creation is done in the entrepreneurial context is very limited.

1.1 Gaps in the Literature

Despite the importance of acquiring in-depth knowledge of customer needs and processes, research on value co-creation in the entrepreneurial context is lacking. The small number of articles written on the subject of value co-creation in the entrepreneurial context has studied micro-level processes of the social dimensions of entrepreneurial partnerships (Ferguson, Schattke, & Paulin, 2016) how the use of external actors for value creation in entrepreneurial firms (Ngongoni & Grobbelaar, 2017), how entrepreneurs could enhance relationships with stakeholders to reinforce entrepreneurial co-creation (Shams & Kaufmann Hans, 2016). However, no studies have been conducted to gain an in-depth understanding of how startups interact and co-create with customers when developing new services.

Ngongoni and Grobbelaar (2017) emphasizes the fact that few studies look at how entrepreneurs create value through intermediary involvement. Similarly, Ferguson et al. (2016) calls for investigation platform-based business models to facilitate collaboration between startups and established companies. Shams and Kaufmann Hans (2016) argues that future research should concentrate on developing a systematic approach to structure knowledge management in value co-creation in the entrepreneurial context. Additionally, the majority of the studies done on co-creation in established companies is conducted with quantitative methods (Carbonell et al., 2009; A. Gustafsson et al., 2012; Matthing, Sandén, & Edvardsson, 2004; Taghizadeh, Rahman, & Marimuthu, 2019). Therefore this study will broaden the underlying data by utilizing qualitative interviews, allowing founders to reflect upon opportunities and challenges, and share hard-earned knowledge.

1.2 Aim of the Study & Research Questions

Due to the identified literature gap regarding value co-creation in the entrepreneurial context, the researcher has articulated the following aim of the thesis:

"To investigate value-co creation in the context of B2B entrepreneurial firms developing new digital services."

In order to reach the aim of the thesis, a qualitative case study of six collaborative relationships between startup and customer will be conducted. The study will capture the startup's perspective of the joint development of new digital services, and explore how the parties interact, collaborate, and co-create value. It will be beneficial to study how these relationships have changed over time and capture drivers and challenges related to involving customers in service development. Further, it is of great interest to investigate what co-creation practices are perceived by startups founders and representatives as the most valuable and essential. This point of interest is directly related to the research questions of the study:

RQ1: How do startups learn about customers when co-creating new digital services? The first research question seeks to discover managerial practices utilized by the startups to involve customers in service development. Specifically, we are searching for techniques, methods, and processes that nourish customer learning in the co-creation process. There is considerable amounts of knowledge transfer and learning happening in collaborative relationships, and it is of great interest to uncover how these processes work.

RQ2: How do startups interact with customers when developing new digital services?
Answering RQ2 will provide insight into the different interaction models utilized in the relationships. Accurately it will reveal how the two parties communicate with each other throughout the development process. Preferably it will increase our understanding of what interaction modes contribute to effective communication in collaborative development.

1.4 Contribution

This study has expanded the field of value co-creation into the entrepreneurial context. It has provided an in-depth understanding of how startups interact and co-creates new services in collaboration with customers. The evidence of this study has reinforced the findings of previous studies on customer involvement in new service development in established B2B companies. Furthermore, this study has shed light on issues and concepts previously not discussed. For instance, the importance of customer learning and inter-organizational knowledge transfer, as well as the extensive use of value verification efforts in value co-creation in the entrepreneurial context.

2 Theoretical foundation

The following section will present the theoretical foundation and background of the thesis. Firstly, the researcher will elaborate on the underlying theory of the Service-Dominant Logic and Value Co-Creation. Further, empirical studies on customer involvement and the adjacent literature on customer interaction, learning, and innovation will be presented.

2.1 Service dominant logic

Service-Dominant(S-D) Logic is a logic that moves past products and services and argues that everything is a service. Vargo and Lusch (2006) defines service as "the application of specialized competences (knowledge and skills) through deeds, processes, and performances for the benefit of another entity or the entity itself." Further, the S-D logic notes that goods do not possess inherent value outside the context of usage, and customers only buy goods because of the service it enables. A consequence of this notion is that firms cannot provide value, they can only propose it, as the value creation is happening in the action of consumption and is judged and verified by the customer. Similarly, Frow and Payne (2007) argues that "value resides not from the object of consumption, but in the action and experience of consumption."

To understand this new dominant logic and the consequences it has for marketing, it is useful to compare it to its predecessor, Goods dominant logic. In the traditional economic logic, value is realized through the trade of tangible goods regulated by supply and demand. According to this logic, services are a mere add-on to enhance the value of goods. Consequently, companies set all decision variables to maximize from the output sale, by maximizing production efficiency and inventorying as demand fluctuates. Contrastingly the S-D logic has value-in-use at its core, which describes an economy where value creation is based on service-exchange. This service centered-logic solidifies tangible goods as enablers for service delivery, effectively means to an end, but not the end itself. From this perspective, even traditional hardware suppliers are viewed as service-providers as the S-D Logic shifts the focus away from the tangible assets onto the integration of value into customer companies(Vargo & Lusch, 2006).

	Goods dominant logic	**Service dominant logic**
Value concepts	Value in exchange	Value in use
Market conceptualizations	Supply and demand	Service transfer
Lexicon	Goods, consumers, actor, profit	Service, actors, resource integrator, value
Economic science	Neoclassical economics	Socio-economics

Table 1: Goods dominant logic vs. Service dominant logic (Vargo & Lusch, 2006)

The S-D Logic defines all market offerings as services, even consumer appliances, industry software, or raw materials. This new definition of service is also inherently customer-centric as it shifts the core of the economy away from the moment of exchange onto the moment of customer value creation. The fundament of value creation in the S-D Logic is called value co-creation. Terblanche (2014) explained that the co-creation of value essentially means that the customer and the supplier jointly create value during the consumption of services. Consequently, value is no longer considered to be created by the supplier and transferred to the customer through transactions. This way, the customer is always the co-producer of value.

Service dominant logic is viewed as transformative in the context of innovation and entrepreneurship. In the present day, innovation is no longer only occurring inside organizations by internal R&D departments; it is happening in the context of collaboration between users, suppliers, partners, and customers. With the increasing focus on the moment of value creation, the customer perspective is viewed as invaluable resources in the process of understanding market needs, creating new superior value propositions, and development of new market offerings.

2.2 Value in business markets

This next section will provide a theoretical background to value and value co-creation in business markets. Value has traditionally been considered a concept related to the exchange of goods, which is evident in Porter and Millar (1985) definition: "what customers are willing to pay". Further, J. C. Anderson and Narus (1998) define value in business markets with the following equation:

$$(Value_s - Price_s) > (Value_a - Price_a)$$

Figure 1: Value equation (J. C. Anderson & Narus, 1998)

The equation says that all products or services always have a next-best-alternative market offering. Offering S has the highest value in the market while offering A has the next best value. In business markets, value is used to express the performance or functionality of a market offering in monetary terms (J. C. Anderson & Narus, 1998). The value equation shows that the incentive to purchase a supplier's offering must exceed the incentive to pursue the next best alternative. A more scientific definition of value says that a pattern of matter, energy, and information has economic value if the following three conditions are jointly met: irreversibility, entropy, fitness (Beinhocker, 2006). In short, value is created through an irreversible process that provides the resource's 'order' greater usefulness to other humans.

Newer research on value in business markets has shown that the subject is exceedingly more complex and multifaceted than traditionally presumed. Almquist (2018) conducted a survey of 2,300 corporate decision-makers in two industries: IT infrastructure and commercial insurance. The survey revealed 40 value elements that take the full range of both rational and emotional factors behind business purchases into account. The findings were structured into the Maslow's pyramid of need and ranked by importance. Interestingly the emotional, interpersonal, and individual value elements are much more prominent than previously assumed. This fundamentally changes the concept of value in business markets, and highlights the importance of a customer-centric approach to value creation.

Companies articulate and present the core value of their service or product with value propositions. For instance, the Canadian software company Unbounce states: "Create custom landing pages with Unbounce—no coding required." The Oxford dictionary definition of a B2C value proposition defines it as an innovation, service, or feature intended to make a company or product attractive to customers. The B2B definition of a value proposition is, according to (Grönroos, 2011), a promise about future potential value. According to J. Anderson, Narus, and Rossum (2006) value propositions are promises of benefit, derived by co-creation, offered by companies to its customers.

2.3 Value co-creation

By accepting the S-D Logic paradigm and expanded view of value in business markets, the customer is acknowledged as the actor that both derives and determines value. This inherently makes customer participation a precursor for successful services. Additionally, customers do not want to be passive recipients of experiences; they want to take part in creating them (C. K. Prahalad & Ramaswamy, 2004). Grönroos (2011) defines value co-creation as joint value creation between a firm and its customers. It can assist companies in highlighting customer's point of view and improve the understanding of customer's needs and wants. Ultimately it can provide great insight into what the customer is trying to achieve (Vargo & Lusch, 2006). Early on, C. Prahalad and Ramaswamy (2000) describe the entry of value-co creation as the transformation of customers going from a passive audience to active players. Further, Payne et al. (2007) define value co-creation as understanding the "processes, resources, and practices which customers use to manage their activities."

Co-creation has multiple concepts related, such as Co-Production, Product Co-development, and Co-design that is used interchangeably. The "co" prefix indicates some sort of collaborative effort, including the customer in the value creation process (Kohtamäki & Rajala, 2016). To pursue the aim of the study, this thesis focus will be on co-creation in new service development, specifically the development of B2B technological platforms and software.

C. K. Prahalad and Ramaswamy (2004) defines Co-creation as a multistakeholder engagement model for mutual value creation, setting the human experience at the center of the enterprise business processes. Since then, the concept of collaborative relationships between customer and supplier in value creations has been researched in a multitude of different perspectives, including service science, innovation and technology management and marketing and consumer research. The studies on value co-creation from the innovation perspective confirm that customer and supplier interaction leads to more innovation, superior customer participation, and better services (Galvagno & Dalli, 2014). Grönroos (2011) states that value co-creation cannot occur without interaction between customer and company, and that inter-organizational interaction is the foundation of joint value creation.

The literature highlights that customers can inhabit multiple different roles in the value co-creation process. Customers obtain knowledge about needs, problems, and business-friction that is useful in the process of service design. It is therefore well-suited to take the role either as an ideator, designer, or intermediate (Lusch & Nambisan, 2015). The ideator integrates domain-specific knowledge about customer needs into new service ideas. The designer role also uses knowledge about resources or technology to take the value creation process a step further and works with service-configuration. The intermediate shares information and knowledge to the other actors in the service ecosystems. Heiratia (2019) argues that sharing complex problems and new knowledge during service development, in turn, creates a need for employees to share interpretations of information shared by customers to create a shared understanding of what the new knowledge means. These roles allow both knowledge- and resource integration into the service ecosystem. Schreieck and Wiesche (2017) argues that value co-creation opportunities are optimized when all parties in the service ecosystem are aware of who knows who and who knows what.

2.3.1 Value co-creation frameworks

To deal with the complexity of value co-creation with customers, several scholars have developed conceptual frameworks. Grönroos (2008) developed the Value fulfillment model, to describe the consequences to marketing of the adoption of the SD-Logic. With the DART model, C. K. Prahalad and Ramaswamy (2004) describe the building blocks of co-creation and how they can be utilized for valuable interactions. Payne et al. (2007) describes the interlinked processes that make up the co-creation loop. The following part of the thesis will elaborate on the content of these frameworks.

C. K. Prahalad and Ramaswamy (2004) argue that companies have much to gain from co-creation, from gathering input and new ideas to learning more about customer's needs, wants, motivations, and behaviors. With the DART model proposes a framework consisting of what is denoted as the building blocks of co-creation. By combining the building blocks, a firm can create effective ways of engaging customers as collaborators.

DART Elements	Definition and example
dialogue (D)	The ability to interact, engage, and act on both parties. The capability of creating shared learning experiences with customers and create the foundation for equal communication between parties. Cisco created a digital service online that gave customers information and resources, access to Cisco's systems, and community to engage in knowledge-sharing and problem solving with other customers (Ramaswamy, 2004).
access (A)	Providing access to the right information and tools. Ramaswamy (2004) elaborates with the example of a sizeable Tawainese Semiconductor company giving their customers access to its manufacturing and quality processes, designs, and fabrication and other operation related resources. The knowledge base reduced the investments needed to create value in the industry for smaller software vendors.
risk assessment (R)	Informing customers about the risks and responsibility of participating in co-creating.
transparency (T)	Create new levels of transparency, remove information asymmetry between the customer and the company. For instance, in the Security trading industry, agencies have traditionally only quote the cost of services after trading cycles. Instinet, a large agency broker provided traders with real-time data on the cost of their trading.

Table 2: DART framework (C. K. Prahalad & Ramaswamy, 2004).

The DART model is built on the premise that value is created in with the customer and the firm. The framework emphasizes that the quality of co-creation is dependent on the infrastructure for interaction between companies and their customers (C. K. Prahalad & Ramaswamy, 2004). It is the firm's responsibility to facilitate interaction through "experience networks", where the company and customer's roles converge into a unique co-creation experience. C. K. Prahalad and Ramaswamy (2004) argue that the combination of the DART elements will provide better collaboration and engagement of customers. It is further highlighted that the combination of risk assessment and transparency is crucial to develop trust in the customer relationship, which is crucial for open communication. Combining access and dialogue can create active communities. While coupling transparency with access allows customers to make educated choices.

Grönroos (2008) argues the SD-Logic changes company's and customer's roles and proposes the value fulfillment model to deal with this. The model creates opportunities to co-create value with customers as well as engage in customer value fulfillment. Grönroos (2008) highlights the premise that customers aren't inherently interested in goods and services but how they can be used to create value, and therefore companies should focus on providing solutions to support the customer's value creation process. Fundamentally, Grönroos (2008) argues that the customer should be recognized as a value creator and that the company's value facilitation accordingly should be focusing on interaction and exchange with the customer. The value fulfillment model is presented below.

Recognize value roles	Recognize customer's role as 'value creator' and company role as both 'value facilitator' and 'value co-creator'.
Facilitate value generation	Facilitate customer value creation, by providing customers with the necessary resources for their value-generating processes.
Involvement in consumption	Engage in interactions that enable involvement in the consumption process/value-generating processes and thereby directly and actively influence these processes are carried out.

Table 3: Value Fulfilment Model (Grönroos, 2008)

Payne et al. (2007) describes the recursive nature of co-creation with a conceptual model containing a set of interlinked processes: customer processes, the encounter processes, and the supplier or provider processes. Customer value-creating processes are processes, resources, and practices the customer uses to manage its business and relationships with suppliers. During the business relation, the customer engages in learning processes based on the experience of the relationship. Encounter processes are the processes and practices that happen in customer-supplier relationships, which are at the core of new value co-creation opportunities. Supplier value-creating processes are resources and practices that the supplier uses to manage its business and relationships with customers. The table below shows the mapping of customers, suppliers, and encounter the processes of a travel agency.

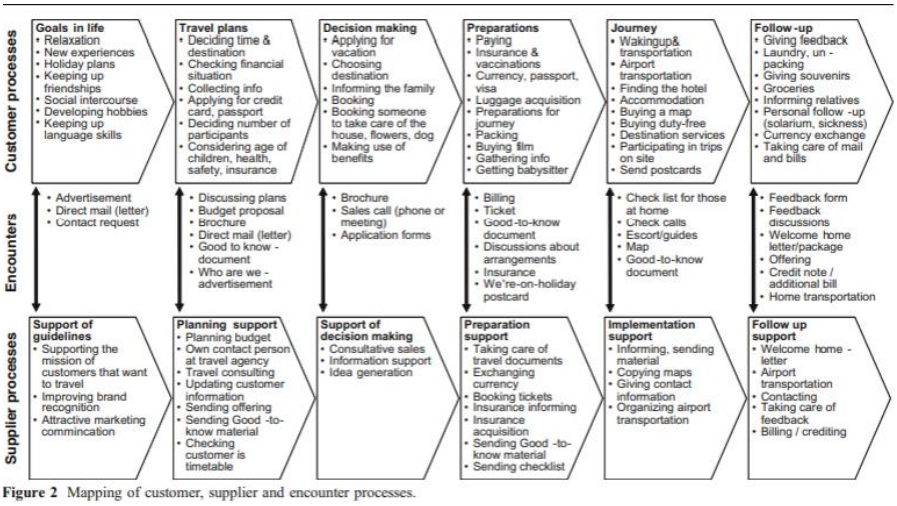

Figure 2 Mapping of customer, supplier and encounter processes.

Figure 2: Customer, supplier, and encounter processes (Payne et al., 2007)

Payne et al. (2007) argues that being aware of the processes of both customer and company, and how they intertwine and influence each other, grants opportunities for value co-creation. Highlighted methods for processes mapping is; customer activity cycles, service-blueprinting, activity mapping, and customer–firm touchpoint analysis (Sawhney, Balasubramanian, & Krishnan, 2004). Payne et al. (2007) highlights that the purpose of the methods is to identify opportunities and failure points, re-engineer processes, and support differentiation.

2.4 Customer involvement in new service development

The next section will present findings and learnings from previous studies on value co-creation and customer involvement in new service development. Studies have investigated the drivers and challenges behind value co-creation, its effect on the market success of new services, and a range of other subjects.

2.4.1 Empirical studies on value co-creation

A. Gustafsson et al. (2012) hypothesized that high frequency, direction, modality, and content of communication in co-creation development relationships ultimately affects market success. To investigate this hypothesis, 207 incremental and radical innovation development projects in businesses across multiple industries were surveyed. For the radical innovation development process, results showed that the frequency of customer involvement has a positive correlation. However, the content (defined in the study as a focus on articulating needs) was negatively correlated to the market success of the new offering, while remaining dimensions appear insignificant. A. Gustafsson et al. (2012) argues that the co-creation strategies utilized are dependent on the degree of innovation of the project, as there is a significant difference in effective customer communication in the development of incremental and radical innovations.

Taghizadeh et al. (2019) studied idea generation in co-creation processes towards the development of new services in the telecommunication industry in developing countries. Findings show that the dimensions of the DART-model (dialogue, access, risk, and transparency), have a positive effect on idea generation. Taghizadeh et al. (2019) found

that there is a weak link between external ideas and new service development performance. However, external ideation influences companies' internal ideation greatly, this might mean there is a positive synergy between customer perspective infused with information about needs and company problem-solving competence.

Carbonell et al. (2009) studied the performance effect of customer involvement regarding the development of new services, specifically how it affects operational and market outcomes. Interestingly no direct relationship between customer involvement and the eventual market performance of new services was uncovered. However, there was significant evidence that customer involvement has a positive effect on both innovation speed and technical quality of new services, which can be viewed as an indirect positive contributor to operational performance in the service development. The study's results also highlighted that companies developing innovative services seek customer feedback and want to engage customers throughout the development process (Carbonell et al., 2009).

Saunila, Ukko, and Rantala (2019) studied the human factors that organizations emphasize when co-creating through digital service capabilities. The digital service capabilities were categorized into: Customer orientation, market orientation, service orientation, and the human factors embedded was analyzed and extracted from interviews with digital service companies. Customer orientation was defined as a collection of soft skills, including face-to-face communication, the ability to keep the customer informed, the ability to synthesize information from multiple sources, the ability to build trust and openness. Market orientation was defined as the ability to have an opportunistic view market and identify partners whose competence can be exploited. While service orientation is the ability to listen and empathize with customer needs, monitor, and understand customer behavior. The results of the study highlights that human-, behavioral- and competence factors greatly affect how value is co-created. Further the findings argued that digital service providers should focus on the learning opportunities that customers can contribute with.

Matthing et al. (2004) studied different approaches for learning from and with the customer in new service development. In the study, 86 customers of a telecom company were monetarily incentivized to contribute with new service ideas. The ideas generated were evaluated with higher innovativeness by the telecom company. However, the company did not continue with the method due to the development team's negative attitude, and management viewed ideas as simple and less valuable than those produced inside the company. As a reaction to this Matthing et al. (2004) argues customer contributions should not be dismissed regardless of simplicity or infeasibility, as there might be information about unfulfilled customer needs behind the solutions. Finally, Matthing et al. (2004) argues that innovation is a cross-functional discipline as it requires different skills and knowledge to identify latent needs.

Alam (2013) studied customer interaction processes in new service development in 24 firms in emerging markets in India. The most commonly utilized co-creation methods were: including customers into the development team, observing how the customer receives service, and visiting the customer on-site. Alam (2013) showed that companies interacted throughout all stages of service design the most during the initial stage (fuzzy front-end) to uncover and validate unarticulated needs. Maenpaa (2011) studied the co-creation of new services in financial conglomerates, which showed that customer

contributions were provided in the initial and final stages (ideation and testing). The study also showed that companies often use sales and business development representatives as substitutes for customers as they inhabit extensive knowledge about the customers. Maenpaa (2011) exemplifies an insurance company's powerful co-creation initiative; the company installed black boxes in transportation companies vehicles to learn about customers' needs to be able to tailor services in the study. The data gathering both benefited both service tailoring and the collaborating customer company's existing operations.

2.4.2 Challenges of co-creation

The empirical studies on co-creation and customer involvement in new service development have highlighted several challenges to the process, which will be presented below.

Alam (2013) highlights scholars conflicting views on the value of customer interaction in NSD, where one side argues it is fundamental for successful innovation (Im & Workman, 2004; Wind, 1997) while the other side argues that listening to customers leads to insignificant innovations. A. Gustafsson et al. (2012) study that found a negative correlation of customer taking the role as an ideator in NSD and the ultimate market offerings success. A. Gustafsson et al. (2012) attributes the negative correlation to customers frequently documented the difficulty of expressing needs (Hippel, 1994; Morrison, Roberts, & Hippel, 2000; A. Ulwick, 2002). However, in the context of radical innovations A. Gustafsson et al. (2012) points out that companies must spend time with customers to validate that there is a latent customer need connected to their solution. A challenge with co-creation is that customers are often more concerned with urgent needs, while the service developer is pushing for future needs, which can create a conflict (Maenpaa, 2011). A. Gustafsson et al. (2012) further argues that customer interaction might not beneficial in all stages of the innovation process or all industries and points out the lack of customer engagement in hugely successful companies like Apple.

Alam (2013) highlights several challenges to co-creation: over-customization, confidentiality, identification of suitable customers, lack of customer motivation and cooperation, information overload, unfeasible ideas. Maenpaa (2011) study highlights the challenge of motivating customers to contribute and the issue of customer confidentiality as customers might get access to proprietary information, tech, and skills. Matthing et al. (2004) argues that the organizational challenges with co-creation of services can be attributed to increased time consumption and efforts, low organizational fit, and increased uncertainty. Lacking competence regarding customer involvement in the development of new services might attribute the remaining widespread use of traditional market research. Matthing et al. (2004) also highlights the co-creation issue that customers can lack knowledge on how to utilize new offerings, making them overly rejective.

2.5 Learning from and with customers

The following chapter will provide insight into relevant literature on learning about and innovating with customers in the context of new service development. Firstly, literature on the practice-based view will be presented, then literature on innovation management and co-creation communities will be elaborated.

2.5.1 Understanding customer practices

The value-in-use perspective in value co-creation makes it inherently customer-centric. As companies can propose value, but only customers realize it, the subject of deeply understanding customers is instrumental to this particular mode of innovation. An exciting way into the field of understanding customers is the practice-based approach. Practices are defined "more or less routinized actions, which are orchestrated by tools, know-how, images, physical space and a subject who is carrying out the practice" (Korkman, Storbacka, & Harald, 2010), or "a routinized type of behavior" consisting of activities, things and their use, understanding, and knowledge (Reckwitz, 2002). In the practice-based approach, a company consists of a large set of practices carried out by the employees (Schatzki, 2006). Understanding these practices is inherently valuable as they are embedded with information about how resources are used, how companies do things etc (Payne, Storbacka, & Frow, 2008). Heiratia (2019) argues that employees should explicate organizational practices and processes and communicate them in a simple, non-technical manner. (Korkman et al., 2010) argues that the increase in value is determined by how much the service improves the practice of the customer. In the case study, Korkman et al. (2010) created a detailed account of the practices of E-invoicing in the US, using multiple techniques, including self-reflection and recollection, as well as guided discussion with experts and studying industry analysis reports on the subject.

C. M. Christensen, Hall, Dillon, and Duncan (2016) argues that traditional marketing focus on finding patterns, and correlations in quantitative psychographic and demographic data can be misleading when creating new services. The Jobs-to-be-done theory is similar to the practice-based approach in the focus on identifying the 'job' or practice is the customers are trying to resolve. C. Christensen, Anthony, Berstell, and Nitterhouse (2007) argues that the path of successful innovation is shortened by understanding exactly what the customer is trying to achieve. Klement (2016) defines the Job-to-be-done theory as "a collection of principles that helps professionals discover and understand the interactions between customers, their motivations, and the products they use". Further, Klement (2018) argues that customers' preferences and desired outcomes cannot be derived from quantitative methods, consequently that reliable evidence of customer preference is revealed, preferably through qualitative analysis of behavior.

The literature highlights several qualitative techniques to gather information about customer jobs. Observation is highlighted as a great tool to uncover instances where customers "make-do" with insufficient solutions (C. Christensen et al., 2007). "Switch interviews" allows investigation of the emotional journey behind "hiring" or "firing" a service or product. The goal of these interviews is to increase understanding behind the purchase drivers and the commitment made to go through with a change (Klement, 2016). The data gathered in interviews are analyzed, and practitioners then proceed to

formulate a Job that describes the core reason for hiring a product. A 'Job story' of three parts is then crafted to contextualize the job even further. Usually, a job story contains three parts: (1) A problematic situation that triggers an event. (2) The motivation and goal that describes how a change can be made. (3) The solution or the desired outcome the customer wants to achieve by making a change. By scoring each 'Job-story' regarding customer satisfaction and viewed importance, practitioners can identify underserved jobs, and there is room for innovation and commercial success (A. W. Ulwick & Osterwalder, 2016).

Further, "Coevolution" is an appropriate method when companies have new powerful technologies at hand, but customers cannot articulate what they want the tech to do. Similar to Lean and Agile methodologies, "Coevolution" revolves around quickly releasing a flexible service to learn how and why it provides value-in-use. Further, "Empathic observation" allows the professionals to participate in the context of the compensating behavior of the customer to acquire an in-depth understanding of needs (C. Christensen et al., 2007).

Customer journey mapping (CJM) is a method that is utilized across various disciplines and industries and is valuable for understanding user experience when designing a service. CMJs are graphical representations of users or customers' experience with a product, company, or practice (Howard, 2014). In practice, customer journeys are maps conveying the major phases of user experience with the progression of time on the horizontal axis and additional categories like customer needs, customer questions, customer feelings, business metrics, touchpoints etc. Companies around the world are using CJM to identify problems or opportunities in existing services or to discover room for new, improved services (Holmlid & Evenson, 2008). (Richardson, 2015) argues CJMs have four parts (1) actions, (2) motivations (3) questions, and (4) barriers. Similar to the practice-based view, data collection methods are collection methods such as Ethnographic in-depth interviews with customers, Context observations of customers, Design workshop, User diary method Survey of verbs.

2.5.2 Innovation with customers

The idea of value-oriented customer involvement and collaboration is adopted by an increasing number of scholars and organizations. One of the most applied methodologies for software development is Lean software development, which focuses on the continuous rapid release of working software. Charette (2003) described the first version of LSD, where he promotes active customer involvement throughout the development process. In LSD, the interaction between customer and company is based on feedback on finished software and adding features to the backlog- respond and order.

Based on the elements LSD and similar frameworks, Ries (2011) developed the Lean Startup Methodology: A model based on data-driven development revolving around testing tangible prototypes with real customers. A staple in software development is the Agile Manifesto, which describes a set core of values and principles. One of the four values of the manifesto is “Customer collaboration over contract negotiation.” Similarly, Swink (2006) describe Process Thinking, where the first value of the framework is to “Establish customer-defined value to separate value-added from waste.”

2.5.3 Connecting with customers

A way to co-create value with customers at scale is building communities or customer-networks. Such communities can engage customers in ideation, feedback, learning, or other value-generating activities. The use of communities prevails in the B2B context, but the most interesting examples are in the context of large consumer companies with a well-established customer base.

These companies create online communities where they manage to engage customers in ideation through social media or stand-alone platforms. Romero and Molina (2011) describes the use of open community ideation as a way of engaging and encouraging customers to contribute with ideas in open networks for the design and development of new products. Such open and non-judging communities enable the collection of data for a broad and rich database of information. Lego has famously created Lego Ideas, a digital brand community where customers submit and vote on new product ideas. With over a hundred thousand users, the community has realized the successful commercialization of around 30 customer ideas. Romero and Molina (2011) highlights the importance of openness in these communities, as it is critical to enable customers to share outlying ideas, observations, and insights.

Communities are also utilized as a service design tool as a reactive mechanism to pick up and respond to customer feedback. Romero and Molina (2011) argues that companies must create a short life cycle to interact with customers for feedback on specific requirements. Following this logic, service design is fundamentally based on customer consumption feedback and the company's production (Thomke & Hippel, 2002). Dewalt has shown that Communities are effective ways to collect customer feedback at scale. Dewalt created the Insight Community, which enables the company to continuously obtain fresh feedback from 20 000 customers. This is an effective way of exploiting the inventive perspective of lead users. Lead users are highly motivated users that push boundaries regarding the currently available solutions in the marketplace to satisfy their needs (von Hippel, 2005).

Communities are also utilized as a tool for expanding the service experience. Nike created the Nike+ community, which is embedded with technical functionality and provided customers with running data tools and platforms for sharing and learning with other customers. Ramaswamy (2008) argues that communities or engagement platforms can be a valuable part of the service experience while simultaneously being a great way of building brand partnerships while learning about the customer. Ramaswamy (2008) exemplifies that the Nike + platform expanded the Nike ecosystem as it created enabled partnerships companies Apple and Marathon Clubs around the world.

2.6 Customer interaction

This chapter will encompass literature on the various interaction modes, co-creation techniques ways to involve users, get feedback and input in new service development.

Face-to-face interaction

Face-to-face interactions are noted as the most used in the context of developing alongside customers. Yaman et al. (2016) note that face-to-face interactions entail everything from meetings, discussions, reviews, and walkthroughs. These interaction modes are carried out with representatives from both parties present with the opportunity to gather data manually. As innovations often are dealing with new unsatisfied needs, tacit knowledge is crucial for the innovation process. Busch (2008) argues that tacit information is easily and favorably transmitted via face-to-face interactions. Related to these findings of Heiratia (2019), argues that companies should facilitate the conversion of tacit knowledge into explicit knowledge to boost the ability to collaborate. Further, the popularity of these interaction types is accredited to the high degree of customer interaction, making the customer feel more involved in the process. However, studies point out that the preparation, execution, and processing of these interactions are time-consuming and challenging to carry out in a fast-paced, innovative process (Kabbedijk, Brinkkemper, Jansen, & Veldt, 2009; Yang & Chen, 2008).

The main form of face-to-face interactions is in-depth interviews. A. Ulwick (2002) proposes that companies should gather customer inputs through in-depth interviews focused on capturing customer desired outcomes. The interviews should question what the customer is trying to achieve, the friction of the existing solution, and highlight areas for improvement. Outcomes should then be organized and rated by customers on current satisfaction and importance. Companies can then apply unsatisfied outcomes in the innovation process as a goal of what a product or service should provide for the customer.

Co-designing/Co-development

In the co-design/development approach, customer representatives are integrated as equal members of the development team, actively contributing and partaking in decision making. The customer is given more responsibility and is encouraged to use its knowledge about resources and technology to partake in service-configuration (Lusch & Nambisan, 2015). Usually, the co-design process is centered around developing ideas though the joint creation of mockups, prototypes, or through the use of generative design tools. The use of a fixed set of generative tools creates a common design language to develop ideas regardless of reference points. The focus on visual development techniques co-design is highlighted to aid communication across disciples and organizations (Sanders, 2000). A. Gustafsson et al. (2012) found that offerings that are co-developed are more profitable than ones built with reactive market research techniques where the customer is passive.

Prototyping

The use of prototypes is a great way to test hypotheses objectively, understand customers, and, most importantly, verify the new service's value-in-use. Prototypes vary in degree of fidelity and tangibility and can be wireframes, visual annotations, and screenshots, mockups, or full-scale pilots (Yaman et al., 2016). Prototypes are used to

create the basis for feedback and discussion with the customer, to communicate the service's different attributes, or to thoroughly test the service (Kohavi, Longbotham, Sommerfield, & Henne, 2009; Sampson, 1996). Prototypes can be viewed as boundary objects that contribute to learning in communities where people have diverse viewpoints and ways of working (Hawkins, Pye, & Correia, 2016). Boundary objects are defined as "a sort of arrangement that allows different groups to work together without consensus" (Star, 2010), which is especially useful when sharing tacit knowledge between people (Battarbee & Koskinen, 2005). Feedback on the user interface, service ease of use, and the value of functionality derived from prototypes serve as guidelines for further development. A challenge related to prototypes is that they often are incomplete versions of the service, which may lead to customer misinterpreting and believing service isn't being developed as planned.

Ries (2011) argues that testing prototypes should facilitate observation of real human behavior, create the opportunity to learn about real human needs and allow for new surprising information. Ries (2011) exemplifies the build-measure-learn feedback loop with Zappos.com's first test, where founder Nick Swimrun built and launched a shoe website with pictures from local stores inventory. The experiment was a reliable test of the underlying assumptions because it garnered feedback from real customers on the core function of the service. Similarly, Tran and Park (2015) suggest an iterative prototyping framework where the customer is openly involved in six steps: (1) Demonstration (company reveals all aspect of new service to customer either with a working prototype or low-resolution simulation. (2) Participation (Customer actively provides feedback, suggestions, and improvements). (3) Refinement/ Analysis (Company refines prototype based on feedback) (3B) Analysis (company identifies other configurations to prototype) 4. Visualization (company visualizes new prototypes internally) 5. Evaluation (company evaluates new prototypes internally 6. Optimization (Company optimizes winning prototype). As the steps results in incremental improvements the process should be repeated as many times as possible.

Lead user approach

Lead users are defined as a sample of the user population that experiencing emerging needs in the marketplace and are actively looking for and anticipating great value from obtaining a solution (Hippel, 1986). Lead users are highly motivated users that push boundaries regarding the currently available solutions in the marketplace to satisfy their needs (von Hippel, 2005). It is beneficial to involve such users in innovation processes, as they are better equipped to understand emerging needs. Studies have compared the output of idea generation from lead users and traditional customer studies and found that offerings developed alongside lead users have substantially greater commercial attraction (Lilien, Morrison, Searls, Sonnack, & Hippel, 2002; Urban & Hippel, 1986).

Further, findings suggest that management must make conscious choices of what type of users they involve in the service development process, as they affect performance differently (Carbonell, Rodriguez-Escudero Ana, & Pujari, 2012). Lilien et al. (2002) found that the performance market offerings co-created with lead users contribute more to profit than offerings crafted in with traditional methods. Identification of lead users has been studied in consumer industries, and online communities or niche services are valuable sources for lead users (Spann, Ernst, Skiera, & Soll, 2009). However, regarding the identification of lead users inside a company von Hippel (2005) highlights the use of

a pyramiding technique that utilizes the network of customer employees, relying on the assumption that individuals with a strong interest in a subject tend to know people that are more expert than themselves.

2.7 Theoretical summary

To summarize the content of the theoretical foundation chapters, the main findings and sources of each subchapter will be presented in a table below.

Subject	**Main findings and sources**
Service dominant logic	S-D logic shifts the core of the economy away from the moment of exchange onto the moment of customer value creation. Innovation should happen in the context of collaboration between users, suppliers, partners, and customers. (Vargo & Lusch, 2006), (Frow & Payne, 2007).
Value in business markets	Value in business markets has traditionally been considered a concept related to the exchange of goods and the performance or functionality of a market offerings. New findings emphasize the emotional, interpersonal, and individual aspects of value. (Porter & Millar, 1985), (J. C. Anderson & Narus, 1998), (Beinhocker, 2006), (Almquist, 2018), (Grönroos, 2011), (J. Anderson et al., 2006)
Value co-creation	Value co-creation is joint value creation between a firm and its customers. Customers can inhabit multiple different roles in the value co-creation process: ideator, designer, or intermediate. Several scholars have developed conceptual frameworks to deal with the complexity of value co-creation. (C. K. Prahalad & Ramaswamy, 2004), (Grönroos, 2011), (Vargo & Lusch, 2006), (C. Prahalad & Ramaswamy, 2000), (Payne et al., 2007), (Kohtamäki & Rajala, 2016), (C. K. Prahalad & Ramaswamy, 2004), (Galvagno & Dalli, 2014), (Lusch & Nambisan, 2015), (Heiratia, 2019), (Schreieck & Wiesche, 2017), (Sawhney et al., 2004).
Customer involvement in new service development	Studies on value co-creation have investigated the drivers and challenges behind value co-creation, its effect on the market success of new services, and a range of other subjects. (A. Gustafsson et al., 2012), (Taghizadeh et al., 2019), (Carbonell et al., 2009), (Saunila et al., 2019), (Matthing et al., 2004), (Alam, 2013), (Maenpaa, 2011).
Learning from and with customers	Several processes, activities and methodologies to learn, innovate and collaborate with customers were identified. Including: Practice-based view, Jobs-To-Be-Done Theory, Lean Software development, The Lean Startup, Customer journey mapping and Customer Communities. (Korkman et al., 2010), (Reckwitz, 2002), (Schatzki, 2006), (Payne et al., 2008), (Heiratia, 2019), (C. M. Christensen et al., 2016), (C. Christensen et al., 2007), Klement (2016), (C. Christensen et al., 2007), (A. W. Ulwick & Osterwalder, 2016), (Howard, 2014), (Richardson, 2015), (Charette, 2003), (Ries, 2011), (Swink, 2006), (Romero & Molina, 2011), (Thomke & Hippel, 2002), (von Hippel, 2005), (Ramaswamy, 2008).
Customer interaction	To expand theoretical background on customer interaction the researcher identified literature on various interaction modes, co-creation techniques, ways to involve users, get feedback and input in new service development. Including: Face-to-face interaction, Co-designing/Co-development, Prototyping and Lead user approach. Yaman et al. (2016), Busch (2008), Heiratia (2019), A. Ulwick (2002), (Lusch & Nambisan, 2015), (Sanders, 2000), A. Gustafsson et al. (2012), (Hawkins et al., 2016), (Star, 2010), (Battarbee & Koskinen, 2005), Ries (2011), Tran and Park (2015), (Hippel, 1986)¸ (von Hippel, 2005), (Carbonell et al., 2012), Lilien et al. (2002), (Spann et al., 2009)

Table 4: Theoretical foundation summary

3 Method

3.1 Research design

As the aim of the thesis is to acquire an in-depth understanding of how startups and customers interact during the co-creation of new digital services, the researcher preferred a research design that would provide broad and generalizable data. Therefore, the researcher has chosen a qualitative multiple case research design for this study. A qualitative study allows the researcher to study the subject at hand in-depth and ultimately develop new theory to contribute to the body of literature (Eisenhardt, 1989). The evidence created by studying multiple co-creation cases will be reliable and robust (Baxter & Jack, 2010). Multiple case studies also provide the foundation for the development of a more convincing theory, as findings are grounded in a multitude of empirical evidence (J. T. Gustafsson, 2017).

According to Yin (2003), case studies are useful when the study aims to find the answer to "Why" or "How" questions. Case studies are also suitable when the behavior of the people participating in the study cannot be manipulated (Yin, 2003). By studying several cases, the researcher will also be able to highlight the heterogeneousness between the different startups. Yin (2003) argues that multiple case studies enable exploration of the differences and similarities within and across cases.

3.1.1 Selection criteria

To answer the research questions and meet the aim of the study, it was essential to choose the right selection criteria for the case companies. Based on the study's aim, the case companies had to currently be developing a B2B digital service collaboration with a customer. Selection criteria was defined to be able to reliably compare data from different cases while still picking up a variety of methods across cases.

As a result of the defined boundaries, the following selection criteria were applied in this thesis:

1. The venture is developing a digital service
2. The venture is targeting a business market
3. The venture is currently developing a service together with a customer company
4. The venture was founded and operated in Norway
5. The venture is a startup company and was founded less than five years ago

To elaborate on selection criteria 1), the sample contains companies that are currently developing a service that is enabled by software. Selection criteria 2) means that the sample contains business-to-business companies where the customers are other companies or organizations, not consumers. To further define selection criteria 3), the case companies must currently actively involve a customer in the development of a new service. Meaning the customer has a somewhat equal partnership role with duties and responsibilities and is not just passively testing software. The collaboration can either be formalized through a pilot project, funding scheme, or an informal relationship, but customers must have an active role in the development of the service.

The researcher primarily utilized his network connected to NTNUs (Norwegian University of Science and Technology) School of Entrepreneurship to find relevant case companies. The researcher also used the database of companies that have received funding through Innovation Norway's 'Innovation contract' scheme. The scheme supports demand-driven innovation projects by matching the financial contributions of both startup and customer. The 'Innovation contract' scheme also formalize the collaborative development of startups offering, where both parts must engage in development as an equal party.

3.1.2 Presentation of case firms

By researching relevant companies, the researcher found 12 highly relevant cases. The researcher contacted all 12 companies, and 6 of them agreed to participate in the study. Although all the chosen case companies share several common attributes, the researcher included companies in different industries, as studying polar types and extreme samples will help highlight the nuances of co-creation in B2B software startups (Eisenhardt, 1989). As all the chosen case companies operate in different industries, they all have different types of customer organizations in both the private and public sectors. Half of the companies have involved the customer in the development process through the mentioned scheme "Innovation contract", where customers contributed with funding and a set number of staff-hours. Two of the companies had involved the customer through formalized pilot relationships without funding. The last case company involved the customer through a customer-funded development project. A common denominator for all case companies is that they are digitizing customer processes that were previously done with manual methods. More details regarding the case companies are provided in the table below.

Case company and industry	**Interview object role/position**	**Number of employees**	**Founded (Year)**	**Type of customer involvement**	**Type of customers**
1:Medical technology	Business Developer & Co-Founder	15	2016	Innovation contract	Hospitals and municipals
2: Educational technology	CMO	8	2018	Customer funded development	Primary and upper primary schools
3: Construction industry	CEO & Co-Founder	3	2019	Cooperative development without customer funding	Construction companies
4: Health technology	CEO & Co-Founder	24	2017	Innovation contract	Healthcare staffing companies
5: Educational technology	CEO & Co-Founder	8	2017	Innovation contract	Aquaculture companies, retail companies and primary schools
6: Human resources technology	CTO & Co-Founder	4	2019	Cooperative development without customer funding	Humanitarian organizations

Table 5: Case firm presentation

3.1.3 Data acquisition

The primary source of empirical data for this study was gathered through semi-structured interviews. According to Yin (2003), interviews are one of the central ways of collecting information for a case study. An interview guide was carefully constructed to manage the inherent weaknesses of interviews as a data collection method. The interview guide is a list of predetermined questions that enables the interviewer to reproduce focused interviews providing comparable empirical data. The interview guide (see appendix) was developed by formulating questions with both the body of literature and the aim of the thesis in mind.

Yin (2003) argues that interviews may produce bias due to poorly formulated questions. Further, the interviewee might give incorrect answers due to wrong recollection and give answers the interviewer wants to hear. It was, therefore, crucial to formulate open-ended questions that did not lead the interviewee in any given direction. As the study is retrospective, meaning the interviewees describe and reflect on past events, the questions also had to be focused and descriptive.

3.1.4 Conducting the interviews

By recommendation of Yin (2003), interviews were held as guided conversations, where the interviewer focused on asking questions in a friendly way to ensure that the interviewee was comfortable with being open and sharing as much as possible. As an introduction to each interview, the interviewees were informed about the aim and background of the thesis, as well as the overarching themes of the interview. The interviewees were also informed about their right to recall the information provided through the interview and how to do it.

During the interview, the researcher was flexible and allowed the interviewees to talk freely, using the predetermined questions to guide the conversation. When needed, the interviewer asked follow-up questions for elaboration and to go deeper into subject matters of interest. According to Kvale (2009), the interviewee will give valuable information after the interview is officially over, as the atmosphere will be more relaxed. Therefore, the interviewer kept the conversation alive after the interview was over to ensure that the interviewee got to share whatever the person had on his/her mind.

Due to the limited conditions caused by the pandemic Covid-19, the interviews could, unfortunately, not be held in person. As a solution, the interviews were held digitally over a secure video conferencing service. All interviews were recorded and stored locally, aligning with the data processing agreement compiled according to the requirements of NSD- The Norwegian Centre for Research Data. The researcher executed all six interviews without assistance. The duration of the interviews varied from 44 to 65 minutes, depending on the interviewee's talkativeness. Below the duration of each interview is presented in a table below.

Case company	**1:Medical technology**	**2: Educational technology**	**3:Construction industry**	**4: Health technology**	**5: Educational technology**	**6: Human resources technology**
Interview duration	64 min	63 min	45 min	44 min	65 min	62 min

Table 6: Interview duration

3.1.4 Data analysis

After conducting the interviews, the audio files were used to transcribe the interviews, resulting in more than 50 pages of text. Subsequently, the researcher searched for a visual, step by step framework to analyze the vast amount of unstructured data. The researcher pursued the Gioia method, a systematic inductive approach to concept development (D. Gioia, Corley, & Hamilton, 2013) based on structural coding (Strauss, 1987). D. A. Gioia, Corley, and Hamilton (2012) argues that we are limited in what we can know if advances in knowledge are too firmly rooted in what we already know. Therefore, the method moves away from the traditional focus of organizational study, construct elaboration and onwards to new concept development. Constructs are defined as abstract theoretical formulations about phenomena of interest (Edwards & Bagozzi, 2000), while concepts are defined as less well-specified notions capturing qualities that describe or explain a phenomenon of theoretical interest (D. A. Gioia et al., 2012). The Gioia method takes into account that concepts are precursors to new well-defined constructs and that concepts should be used to validate existing constructs or to develop new ones.

In practice, the Gioia method is a four-step process, turning transcribed interviews into a new theoretical framework. The steps include (1) 1. order concept analysis, (2) 2. order theme analysis (3) Aggregate dimension analysis. The process is visually presented in the figure below.

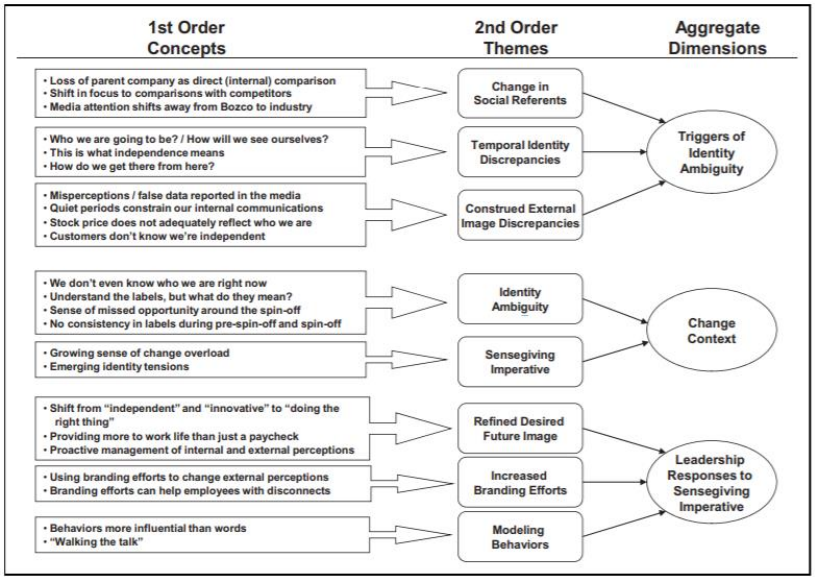

Figure 3: Gioia Method (D. Gioia et al., 2013)

As a first step to the analysis, the researcher labeled codes from the interviews as 1. order concepts using terms originating from informants (D. Gioia et al., 2013). For instance, the quote "*There is a certain limitation in the customer's imagination, where they often have difficulties envisioning usage-scenarios, and how things will be in production*" is labeled the 1. order concept "*Limitation in the customer's imagination*". The researcher kept the aim of the thesis and the research questions in mind during this stage of the analysis, to ensure that only relevant data was included. As the purpose of the data analysis is to develop new concepts, the researcher restrained from coupling interview codes with constructs defined in the previous literature at the first stage of the

analysis. This resulted in an abundance of 50 unique 1st-order categories from each of the six interviews.

In the second stage of the analysis, the large amount of 1. order concepts were grouped in 2. order themes. It was an iterative process to craft a group of somewhat equally proportionate 2. order themes. The researcher re-read and re-coded the data multiple times before finally reducing the number of themes to around 25-30. At this point, the researcher considered the informant's concepts and experiences and considered the related theoretical, abstract constructs: essentially thinking in multiple levels simultaneously. For instance, the two quotes "*Mapping customer processes through in-depth interviews*" and "*Ask the customer for a detailed description of daily activitie*s" are grouped under the theme "*Customer Process Understanding*". Throughout the second-order analysis, the researcher focused on identifying concepts that can help explain and provide an understanding of emerging themes in the data. By simultaneously focusing on identifying concepts that lack theoretical referents in the existing literature, the researcher is essentially able to 'identity ambiguity' (D. A. Gioia et al., 2012).

The final stage of the analysis was to craft a small number of aggregate dimensions and anchor the 2.order themes to them. By conducting all the steps in the inductive data analysis method, the researcher had a structured and detailed overview of the ways startups and customers co-create value. They were structured in codes, 1.order concepts, 2.order themes, and aggregate dimensions.

3.2 Reflection of method

Credibility

This refers to the degree of believability in the study if recipients trust the study's findings. The researcher utilized a multiple case study, which created the foundation for the development of a more convincing theory, as findings are grounded in several empirical evidence (J. T. Gustafsson, 2017). By studying multiple cases of co-creation, the researcher gathered evidence that will be reliable and robust (Baxter & Jack, 2010). The researcher's pre-understanding of literature and the researcher's previous professional experience with co-creation between customer and startup may have created bias during data collection. Nevertheless, this might have provided the ability to recognize and capture themes and concepts that novices might look past. Aware of a possible bias, the researcher formulated open-ended descriptive questions, avoiding leading questions.

Transferability

This refers to the representativeness of the case companies and interviewees, and if the results of the study can be generalized or transferred to a different setting (Lincoln, 1985). The researcher chose companies across industries, geographical situation, size, and stage to ensure that case companies could be viewed as a representative selection. By thoroughly describing the context of the research, the transferability of the study was increased as it will allow other researchers to judge if applying the results to a different context is sensible.

Confirmability

Refers to the neutrality of the study, and whether or not the researcher has let predispositions affect study (Guba, 1981). The researcher might have transferred bias by informing the interviewees about the background and thematic of the thesis. However, as mentioned, to avoid transferring further bias to the interviewees, the researcher formulated unbiased descriptive questions. The researcher applied an audit strategy to increase confirmability. (Guba, 1981). In practice, the strategy was to provide the rationale behind decisions made during data analysis; for example, why codes were placed in different themes or why codes were merged. To further increase confirmability, the researcher made sure to provide documentation from at least two sources for each claim or significant finding (Krefting, 1991).

Dependability

This refers to the consistency of the findings and if it is obtainable to produce and re-record the same findings (Krefting, 1991). The consistent use of an interview guide, which is mentioned as a strategy for increasing credibility, can also be argued to increase dependability as it allows further studies to verify the results by utilizing the same guide. Advantageously, the interviews were conducted, transcribed, and recorded by the same researcher, meaning fewer changing variables were affecting the research context. By thoroughly describing the context of the study, the dependability is increased, as it will allow other researchers to reproduce the research context and verify the results of the study.

4 Empirical Findings

This chapter will present the data and findings derived from the method described in chapter 3. To introduce the chapter, the structural data overview is presented (figure xx below). The overview visualizes how comparable concepts discussed by the informants are coupled together in theoretical categories, which are ultimately gathered into four main categories or aggregate dimensions.

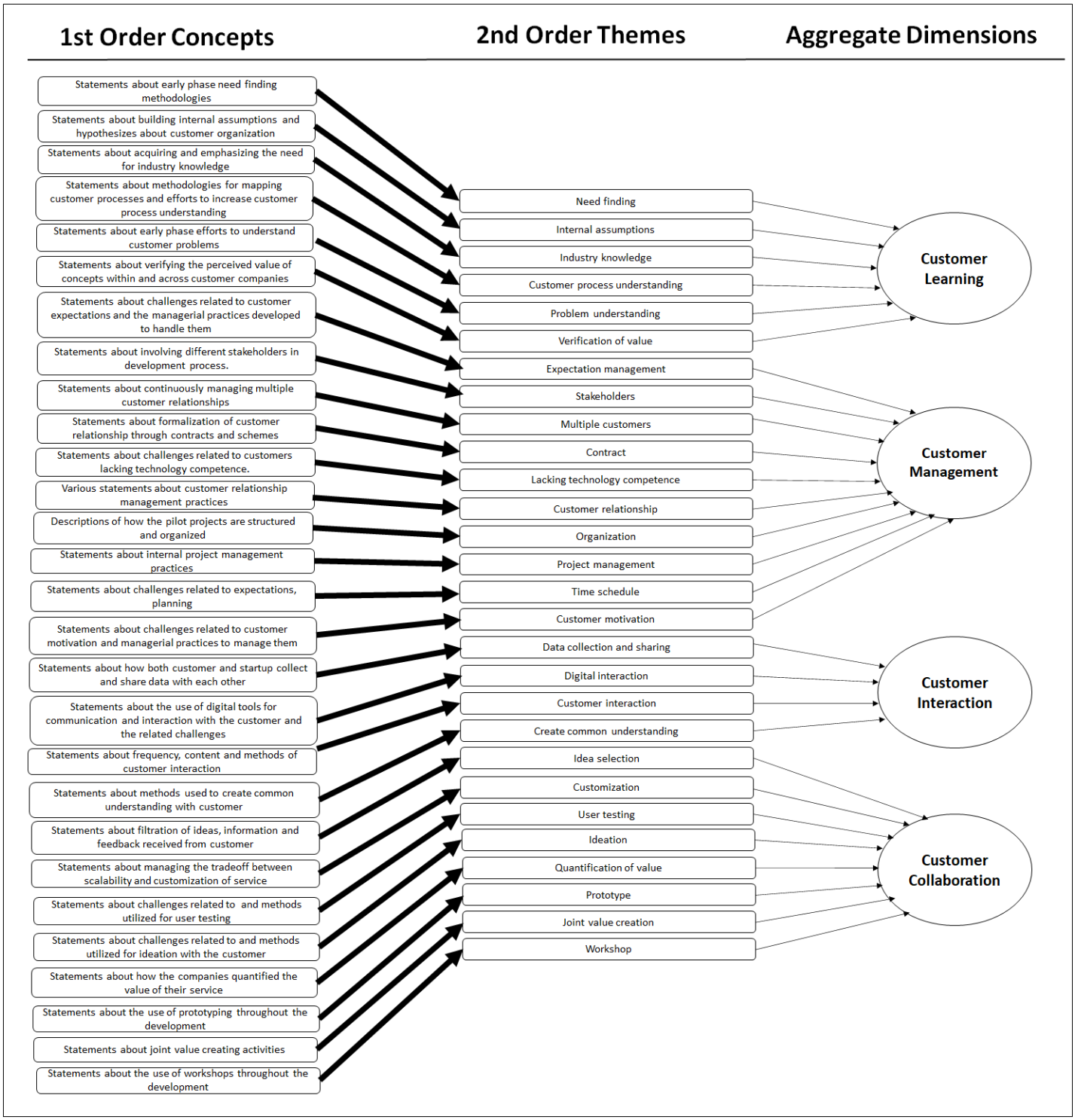

Figure 4: Structural data overview

The following subchapters will address the findings of each aggregate dimensions; Customer Learning, Customer Management, Customer Interaction, and Customer Collaboration. To gain greater insight into the differences and similarities across the case companies, each subchapter will be summarized with a cross-case analysis table. The tables will provide a clear overview and a practical approach to compare findings across cases.

4.1 Customer learning

The empirical findings of the study show that customer learning is one of the critical subjects of collaborative development between startups and customers. According to CEO, CMOs, and Product Owners of Norwegian software startups, the motivating factor behind collaborative development with customers is to learn and gain an in-depth understanding of their customers. Frequently mentioned subjects are mapping out customer needs, understanding customer processes, and understanding problems at hand.

There seems to be a consensus that early-stage learning about customer needs lay the basis for the eventual final solution. Several informants (Informant 1,3,5 and 6) specify the use of workshops with the participation of different stakeholders focused on uncovering needs in early-stage development. The workshops often have an informal and open structure, where customers are sharing challenges and discussing current problems. Previously developed product concepts and hypotheses about customer needs are often tested in early-stage workshops, essentially aligning product competes with customer needs. For instance, one informant (Informant 1) elaborated that a product concept they had developed over many months was challenged and completely changed through a series of early-stage customer workshops. "*We started with a product concept, but through 3-4 workshops with health personnel working here in Trondheim, we landed a completely different concept that would suit our customers much better for several reasons*".

Case companies also elaborate that they learn about their customer needs by utilizing existing solutions. One of the informants (Informant 2) stated that their startup set up extensive user testing of existing solutions to understand how users responded and used them, and also to map out the inherent weaknesses and shortcomings of the current market offerings. Another informant (Informant 6), explained that their startup thoroughly investigated how their pilot customer utilized the existing solutions. The motivation behind it was to understand what functionality in the existing solutions provided actual value to the customer, making it clear what core functionality to include and how to integrate it into the landscape of solutions currently used by the customer.

The case companies utilized several other need finding methods. In-depth 1-on-1 interviews were mentioned by several informants (Informant 2 and 3). One informant highlights the value of more extended conversations with users and customers about their lives as it is a truly effective way of getting people to open up and be honest about their needs. Further, several informants (1, 2, and 4) address the process of gathering requirements based on customer needs to develop a technical specification of their

solution. Additionally, some of the case companies would verify and cross-reference the different specifications with other customers.

Furthermore, understanding customer processes was discussed as a central part to the involving customer in development. Informant (5) elaborate that there was a focus on gaining an in-depth understanding of how their service would fit into the already-established practices and routines of the customer. "*By understanding how internal processes work, what pathways are chosen on a daily basis, we in a way, understand the user journey, and how our platform fits into their daily operations.*" The case companies highlight a variety of different approaches to learning about customer processes. Both informants (1 and 4) inform that they frequently shadowed or observed the customers' employees as a method to understand their day-to-day job. Informants (3 and 5) explained that they mapped out customer processes by conducting in-depth interviews with customer representatives. Informant (6) disclosed the highly unorthodox method of starting to work as a volunteer in customer organization to acquire insight into customer processes: "*By taking the role as volunteer-manager, we have acquired 100% insight into all the steps in the customer process and what is truly important to them.*" Informant (6) further emphasized several times that the value of developing a solution together with a customer lies in gaining an understanding of their practices, arguing it lowers risk and uncertainty of actual market need for a solution.

Case companies discuss the challenges of understanding multiple customer's processes and identifying universal market needs. The majority of the informants (1,2, 4, and 5) explained that they utilized outbound sales as a process to verify their value proposition. After an initial phase, where companies develop a minimum viable product together with the pilot customer, they immediately went into the marketplace to demo and sell the solution to other actors. Informants argue that this further removes risk and uncertainty. Two informants (1,4) discussed customer funding and customer investment of staff-hours as a robust verification of a market need.

To summarize subchapter 4.1 and create a basis for discussion, all findings regarding the aggregate dimension; Customer Learning are presented in a cross-case table that addresses the corresponding themes. The table below showcases the case companies' practices and how they have solved challenges related to co-creation.

Case company	**Need Finding**	**Problem understanding**	**Customer process understanding**	**Industry knowledge**	**Verification of value**	**Internal assumptions**
1: Medical technology	-Gathering technical requirements -Involving different stakeholders in early-stage need-finding workshops	-Held early stage workshop with focus on gaining in depth understanding of customer problems	-Shadowed/observed the customers employees	-Early focus on understanding industry landscape -Read industry journals to increase in industry knowledge	-Outbound sale as a method to verify value proposition and solution -Customer investments as verification of market need	
2: Educational technology	-In-depth 1 on 1 interviews -User testing of existing solutions -Gathering	-Focus on solid user testing and communication, to ensure problem is	-Gained insight into internal customer processes through cooperation	-Received advice and guidance from successful founder with experience and	-Outbound sale as a method to verify value proposition and solution	

	technical requirements	solved in the right way		industry knowledge		
3: Construction industry	-In-depth 1 on 1 interviews -Early-stage need-finding workshops	-Renewed perception of customer problem after first round of user testing	-In-depth 1 on 1 interviews - Shadowed/observed the customers employees	-Team member with previous industry experience and knowledge		-Constructed hypotheses, workflows and brainstormed how to solve customer problem internally.
4: Health technology	-Gathering technical requirements	- Extensive design process to ensure solutions solve customer problem	- Shadowed/observed the customers employees -Transform knowledge of customer processes into user stories.		-Outbound sale as a method to verify value proposition and solution	
5: Educational technology	-Early-stage need-finding workshops	-Conducted extensive research on customer problem areas pre-pilot project.	-In-depth 1 on 1 interviews -Ask about description of work week and daily activities.	-Gathered multiple customers in a pilot project, to capture a broader sense of the needs in the industry	-Outbound sale as a method to verify value proposition and solution -Customer investments as verification of market need	-Did not involve customer in design process, relied completely on internal assumptions
6- Human resources technology	-Research customers -Early-stage need-finding workshops		-Working as a volunteer in customer organization	-Industry knowledge as prime motivator for customer collaboration		-Conduct internal design workshops

Table 7: Customer learning cross-case

4.2 Customer management

The empirical findings of the study show that co-creation brings a diverse set of customer management related issues and activities. The informants from the case companies discuss the challenges of working with a customer, the customer relationship, and the legal and organizational configuration of the collaboration.

The majority of the case companies mentioned expectations and schedule management as a challenge when co-creating with a customer. For instance, Informant (1) elaborated that their company continuously overestimated its ability to deliver, which resulted in multiple last-minute postponements of delivery. This ended up with a total stagnation of the project as the customer completely lost patience and trust. The case companies have developed different strategies to manage the customer's expectations. Informants (1,2 and 5) manages customers expectation with clear and regular communication and highlights the importance of transparency when unforeseen situations occur. Further Informant (4) explained the use of a joint roadmap containing a timeline of deadlines and responsibilities of both customer and startup, both for continuous expectation and project management: "*If the customer wants changes, we are very clear that if we are doing that, we must push this other thing forward. It's very valuable to have a joint roadmap to agree upon.*". Informant (5) highlighted that they formalized the expectations before the project begun by thoroughly defining what would be achieved within the given timeframe.

Findings show that managing the customer's motivation and engagement is essential to secure a continuous contribution to development. Case companies inform that collaborative relationships are often considered outside of the customer's daily operations and, therefore, are not prioritized by employees. Case companies have developed different strategies to motivate the customer and create engagement throughout the collaboration. Informant (1,5 and 3) discuss the importance of regularly informing the customer of progress. All significant contributions to progress on the development side are shared either through email or status meetings. Informant (1) also highlights the value of showing tangible prototypes: *"We have noticed that tangible things have affected motivation. When we come by with physical prototypes, it creates a glow".* Similarly, another informant (5) highlights the importance of continuously selling a vision of the future, often describing the benefits the pilot project will bring to the customer.

More than half of the case companies (2,3,5 and 6) report challenges related to lacking technical competence by the customer. It results in unrealistic wishes for functionality, poor understanding of development timeline, and inability to utilize digital tools. As a reaction to this, two informants (1,2) report using the time to recruit super users that possess the necessary competencies for effective collaboration.

Findings show that a few of the case companies (1,2 and 5) are managing several customer relationships parallel to the customer they are developing with. Informant (1) highlights that they have gathered stakeholders from multiple customer companies in need-oriented workshops to access different perspectives. Informant (2) disclosed that they are collaborating with multiple customers simultaneously: "*We have a rather large publicly funded development project with one school, but in total, we have almost 20 schools we are collaborating with on different scales*." Concerning this, there are

contrasting differences between the cases. Informant (3 and 6) note that they have had limited contact with other customers. As a result, they lack an overview of differences in both needs and processes across different customer companies.

There are differences across cases in terms of the organizational structure of the collaborations. Case companies (1, 4, and 5) run their projects according to the requirements of IN's Innovation Contract, where there is a steering committee consisting of leaders from both organizations as well as relevant personnel. However, there are significant differences in the number of people the different case companies involve. While the case company (6) primarily involved one person from customer organization, the case company (4) involved about 80 people to some extent.
After several collaborative projects with customers, case company (1) deemed it unnecessary to involve an abundance of stakeholders and think the best solution is to engage a handful of competent super users. Case company (5) uniquely gathered multiple customers in a pilot project, intending to capture a broader sense of the needs in the industry. The multi-customer project demanded a lot of follow up work per customer and created challenges as the participating organizations had different needs.

Case companies note that their customer relationships changed over time. Informant (4) elaborate that the customer relationship got more professional and streamlined over time, as the parties found routines and practices that worked. Informant (2 and 3) highlight that the trust in the customer relationship gradually grew over time. Informant (2) explains that the customer initially exhibited skepticism of developing with a startup: "*There is a lot more trust and assurance, especially after we managed to deliver on our word. They are risking a bit by involving so many new people in something so new*". Similarly, Informant (5) highlighted that more personal relationships were developed to the people in customer organizations over time. The Informant further noted that customer's openness and willingness to share information grew as they got personally acquainted and that informal social after-work activities boosted this dimension of the customer relationship.

An unexpected challenge to a few of the case companies was described as the customer's expected benefit derived from participating in the development. Informant (4) explain the situation where the pilot customer wanted to preserve the competitive advantage of being the only one in the marketplace with their solution. The customer essentially demanded that they didn't sell to any organization in the markets they operated in. As a result, they negotiated an agreement where they excluded the customer's 6 main competitors from early sales. Aware of this challenge informant (5) focused on early selling the idea that they were scaling the solution beyond both their organization. The reduced price was reported as the most common benefit customers were given for participating in development.

To summarize subchapter 4.2 and to create a basis for discussion, all findings regarding dimension Customer Management is presented in a cross-case table below, that addresses the similar themes. The table below showcases the case company's practices and how they have solved challenges related to co-creation.

Case company	Expectation management	Customer Motivation	Lacking technology competence	Multiple customers	Customer relationship
1: Medical technology	-Clear and regular communication -Transparency about obstacles and	-Regularly informing the customer of progress - Showing tangible prototypes	-Recruit super users that possess the necessary competencies	-Gathered stakeholders from multiple customer companies to access different perspectives	
2: Educational technology	-Clear and regular communication -Transparency about obstacles and challenges	-Distributes to-does with deadlines to customer representatives, to ensure progress. -Regular reminders of to-do's and deadlines	-Recruit super users that possess the necessary competencies -Build understanding of which ideas are feasible and which ones are not	-Collaboration and user testing with 20 customer companies	-Trust in the customer relationship gradually grew over time
3: Construction industry	-Frequent status update s -Increase customers awareness of development complexity	-Regularly informing the customer of progress related to development -Communicate unique value proposition to each stakeholder	-Conducted physical workshops due to low technological competence of the customer		-Trust in the customer relationship gradually grew over time
4: Health technology	-Continuously updating a joint roadmap, containing a timeline of deadlines and responsibilities	-C-level champion in customer company engages and motivates customer representatives when needed.		-Should have involved multiple customer to the first pilot project, for verification of value across companies	-Customer relationship got more professional and streamlined over time
5: Educational technology	-Formalisation of expectations before the project start -Clear and regular communication -Transparency about obstacles	-Regularly informing the customer of progress -Selling a vision and benefits the final solution	-Visits the customer to observe users and conduct training	-Gathered multiple customers from one industry in pilot project, to capture border sense of needs	-Customer relationship got personal and social over time
6- Human resources technology	-Formalized expectation clarification, with responsibilities expected contribution of both parties		-Continuous delivery and feedback on working software		-Closer relationship to the customer as they volunteered and the customer started using their service.

Table 8: Customer management cross-case

4.3 Customer interaction

Interaction is at the core of value co-creation and customer involvement in new service development. The findings of the study have highlighted several issues and concepts related to customer interaction. The case companies have discussed the different interaction modes utilized, creating common understanding, sharing of data, and resources, etc.

The empirical findings show that the attributes of customer interactions are different across cases. The informant depictions show different frequencies of interaction with the customer, ranging from once every other week (2 and 5) to multiple times a day (1 and 4). As mentioned in section 4.2, several case companies elaborate that they try to have a continuous dialog with the customers, with regular meetings and status updates. Contrastingly, one of the informants elaborates on an approach where customers only are contacted when there is a need to clarify issues. Nonetheless, a common denominator is that the frequency of interaction increases, as the release of new software is approaching. Interestingly, different case companies also had very different ratios of face to face and digital interactions. One of the case companies (6) did the majority of all communication over email, while other companies frequently utilized and emphasized the importance of face to face interactions such as meetings, workshops, observations, and interviews.

Interestingly the main subjects occurring regarding customer interaction is the act of creating a common understanding. Informants (4 and 6) express the challenge of knowing if they are talking about the same thing as the customer in conversations about needs and functionality. Informants (6 and 4) reports misunderstanding description of functionality, ending up developing something completely different: "*Quite a few times it has happened that we have spent a lot of time developing something, only to find out through feedback that it wasn't quite what the customer wanted*." Case company (2) utilizes the strategy of developing boundary objects, such as mockups and low-end prototypes, to confirm that parties are talking about the same thing.
Customers and companies are, to a large extent sharing data and resources in co-creation relationships. All the case companies report that they have obtained data from their customer. Informants (5 and 6) elaborate that they were surprised by their pilot customer's willingness to share data, as they shared data before a data processing agreement was formalized. The customers shared transaction data, employee registries, and one of the companies got access to all data in possession of the customer. The case companies also report gathering data, were informant (2,4) explain how they collected usage data directly from their service, while informant (1) elaborated on surveying all customers employees. Some of the case companies are depending on gaining access to customer data, to be able to develop their service. The researcher argues that it is one of the main motivating factors behind establishing a development collaboration.

A majority of the case companies (1,3,4,5 and 6) report on sharing the results of research and other resources back to the customer, essentially creating shared learning experiences. Informant (5) elaborate on the reasoning behind sharing data with the customer: *"We want to inform the customer but most importantly convince them of the value that our service provides."* Case companies report that they shared in-depth interviews, usage data, research results, service documentation, and tutorials for training both to inform and engage the customer.

To summarize subchapter 4.1 and to create a basis for discussion, all findings regarding dimension Customer Interaction are presented in a cross-case table that addresses the corresponding themes. The table below showcases the case companies' practices and how they have solved challenges related to co-creation.

Case company	Customer interaction	Data collection and sharing	Digital interaction	Create common understanding
1: Medical technology	-Interaction frequency: Multiple times a day	-Surveying all customer employees -Obtained data from customer - Shared the results of research and other resources with customer	-Frequent use of email	-Use of prototypes and mockups as a boundary object
2: Educational technology	-Interaction frequency: Once a week/once every other week	-Collected usage data from service -Obtained data from customer	-Frequent use of email	-Use of prototypes and mockups as a boundary object
3: Construction industry	-Frequent and clear communication to avoid misunderstandings and conflicts	-Obtained data from customer - Shared the results of research and other resources with customer	-Avoided use of digital services for interaction due to lacking tech competence	-Use of prototypes and mockups as a boundary object
4: Health technology	-Interaction frequency: multiple times a day -Follow-up of individual users	-Collected usage data from service -Obtained data from customer - Shared the results of research and other resources with customer	-Digital service for registering functionality and have an overview of roadmap. -Joint slack channel with the customer -Frequent use of email	-Use of joint roadmap to create common understanding -Use of prototypes and mockups as a boundary object
5: Educational technology	-Interaction frequency: Once a week/once every other week -Follow-up of individual project partners over the phone	-Obtained data from customer - Shared the results of research and other resources with customer	-Majority of interactions happened via email -Integrated feedback mechanism in service	
6- Human resources technology	-Interaction frequency: very varying depending on phase -One customer contact point	-Obtained data from customer - Shared the results of research and other resources with customer	-Majority of interactions with email -Integrated feedback mechanism in service -Avoided use of other digital services for interaction due to lacking tech competence	

Table 9: Customer interaction cross-case

4.4 Customer collaboration

Customer collaboration is one of the critical elements of value co-creation and customer involvement in new service development. The case companies have highlighted several different strategies, activities, and issues related to joint value creation. This next sub-chapter will present these findings.

Empirical findings show that customer ideation is a challenging but valuable aspect of collaborative development. Case companies note that customer ideation happens either organically or organized throughout the development process. Informants (1 and 5) elaborate that the customer was engaged in structured ideation sessions in the early stages of development to concretize service concept. Further several informants (2 and 4) note that the majority of customer ideation happens when the customer is presented with new releases of the software and prototypes and mockups, essentially stating that materialization of the solution stimulates customer ideation. Several informants also note the importance of having a welcoming attitude towards customer ideas and contributions. This is done by nurturing customer contributions by being exclusively positive and supportive and not challenge or criticize.

Informants report of various challenges related to customer ideation. Case company (2) states that the customers lacking technology competence make them unaware of technological limitations and possibilities, which often affects their contributions negatively. Further informant (1) elaborates that the customer's imagination is often limited, resulting in insignificant ideas: "*The customer's imagination is limited. It might be our facilitation, but it is probably because they are given a lot of new information at the same time*". Similarly, the informant from case company (2) points out that customers are well aware of problems and needs, but are unable to see possible solutions. Informant (1,2 and 4) identified the solution of engaging a handful of super-users who has good knowledge of the problem at hand, the solution, and possess the required technical competence.

As the pilot projects lead to a large amount of customer feedback and ideas, the case companies also discussed the process of idea selection. Informant (2) explain how their CMO worked as a filter between the customer and the internal development team: "*We try to shield our developers from the abundance of customer ideas. I am like a filter between the customer and our team, where I only inform them of specific things they must solve*". Contrastingly case company (4) informs about a filtering process engaging both internal development team and customer representatives to determine if functionality ideas should be implemented. The process begins with turning ideas into user stories and verifying the importance across super-users and the steering committee, followed by a design process with feedback on several mockups and prototypes.

The case companies utilize iterative prototyping with the customer feedback loop as a development strategy. Informant (2 and 3) explain how they used paper mockups and low-end digital prototypes to concretize the concept in the early stages of development. Case company (1) utilized mockups to make sure parties are talking about the same thing and clickable prototypes to ensure the intuitiveness of service design. An adjacent theme discussed by the case companies were user testing, where the different startups had different approaches. Informants (2 and 3) note the use of "assisted user testing"

where users are given a task and observed by a startup representative. Informants (5 and 6) mainly did remote user testing of released versions of software, relying on feedback through digital channels. Informant (6) elaborates that it was challenging to be geographically disconnected from customers as they were unable to understand user errors and observe users.

Findings further show that the overarching goal of a collaborative development project is to finalize a minimum viable product (MVP), to be able to initiate early phase sales. Informant (3) explained that MVP is completely necessary to be considered a viable option in the marketplace: "*We have been in contact with a lot of organizations, but typically they don't even want to consider us before seeing a demo of working software*". Similarity informant (4) explained that developing an MVP in collaboration with a customer is the first step in their commercialization strategy: "*We split our commercialization plan into 3 phases: The first phase was to get the platform up and running at the pilot customer, the second phase was to go out into the marketplace and sell it, and the third phase is to finalize extra functionality".*

As expected, the informants are predominantly discussing issues related to the co-development of software. However, a few of the case companies are utilizing co-creation strategies where the customers are actively increasing the value of the service. Informant (2) discusses how they utilize super users' engagement to provide expanding value to the other users of the platform. By making user-created content shareable and reusable, the startup is essentially facilitating value co-creation. Similarity, informant (5) elaborates how the company is using customers' existing resources to create content in their platform: "*When we get high-quality material from the customer, it can be reused for other customers, that way we are both tailoring to specific customers while creating scalable value for multiple customers*."
Case companies are essentially exploiting the labor and resources of the customers to increase embedded value in the platform.

Scalability was also discussed by the case companies, a theme closely related to co-creation. Interestingly the case companies viewed the subject of scalability to be about finding the overlapping needs across customer companies, essentially reducing the need to modify the platform to acquire new customers. Interestingly there is a varying focus and effort towards ensuring scalability of solution. As mentioned, a few of the case companies manage multiple customer relationships to verify value across customer companies, while others solely rely on the pilot customer.

To summarize subchapter 4.1 and to create a basis for discussion, all findings regarding dimension customer collaboration is presented in a cross-case table that addresses the corresponding themes. The table below showcases the case companies' practices and how they have solved challenges related to co-creation.

Case company	**Ideation**	**Idea selection**	**Customization VS Scalability**	**User testing**	**Prototype**	**Joint value creation**	**Workshop**
1: Medical technology	-Structured early stage ideation sessions with	-Involving the customer in idea	-Ensuring service is functioning regardless of	-Assisted user testing, with representatives observing	-Frequently utilized mockups to make sure	-Co-created product concept with multiple	-Frequently used workshops in early phase

	the customer -Engages super users for higher quality ideas	selection workshop	customer current systems. -Cross checked needs of multiple customers	and helping users -User testing with dummy version	parties were talking about the same thing	customers in a series of workshops	-Engaged external consultancy to facilitate workshops.
2: Educational technology	-Positive attitude towards customer ideas -Stimulated ideation with prototypes and mockups -Engages super users for higher quality ideas	-CMO functioning as a filter between the customer and internal development team	-Tailor solution to fit one customers needs, before talking to other customers	-Assisted user testing with representatives observing and helping users	-Used paper mockups and low-end digital prototypes to concretize the concept in early stage	-Making user-created content shareable and reusable	
3: Construction industry	-Customer ideation and feedback centered around usertesting	-Utilize IT development methodology for organisation and filtration of customer feedback and ideas	-Refrained from specific integrations because it was unscalable.	-Asked for varied age and digital expertise in users with intention to capture needs of broader user group	-Used paper mockups and low-end digital prototypes to concretize the concept in early stage		-Frequently engaged customer in workshops centered around paper prototypes
4: Health technology	-Stimulated ideation with prototypes and mockups -Engages super users for higher quality ideas	-Structured filtering process to verify the value of customer ideas and get feedback on the design.	-Unique customer needs native to pilot customer is solved in quick and simple ways	-Involved small group of customer employees to conduct user testing	-Mockups and prototypes are integral part of predevelopment design process to verify value of functionality		-Frequently used workshops to get input on specific issues or learn more about the customer
5: Educational technology	-Positive and supportive attitude towards customer ideas -Structured early stage ideation sessions with the customer		-Ensures customer buy-in on scale mindset from the first meeting	-Remote user testing of releases, relying on feedback through digital channels		-Exploit customers' existing resources to create content in their platform	-Conducted workshops where they discussed the value for the various players
6- Human resources technology	-Customer orders functionality throughout the development		-Makes local changes to platform possible	-Remote user testing of releases, relying on feedback through digital channels			

Table 10: Customer collaboration cross-case

5 Discussion & Analysis

The aim of this thesis is ***"To investigate value-co creation in the context of B2B entrepreneurial firms developing new digital services".***
In the following chapter the findings related to the aim of the thesis will be discussed, and the researcher will try to answer the two research questions. To reiterate, the research questions are as follows: *RQ1: How do startups learn about customers when co-creating new digital services? RQ2: How do startups interact with customers when developing new digital services?* This chapter will conclude with a model presenting the main elements in co creation and interaction between startups and customer.

5.1 Co-creation in new service development

How do startups learn about customers when co-creating new digital services?
This thesis is concerned with the collaborative development of new digital services between startups and customers. Thus, the focus of the thesis is directed towards collaborative development projects or pilot projects, where customers have an active role throughout the development.

Customer knowledge transfer

The empirical findings highlight that mapping out and understanding customer processes is an integral part of collaborative development. As highlighted by one of the CEOs of the study, understanding the context and pathways in which the service will be consumed is crucial for developing a service that delivers real value. According to the value-in-use perspective of the S-D Logic, products and services do not possess value outside the context of usage (Vargo & Lusch, 2006).The literature highlights the customer's role in co-creation to be linked to ideation, design, or intermediating knowledge about surrounding ecosystems (Lusch & Nambisan, 2015). However, the findings of this thesis argue that the customer's role in the value co-creation process should be expanded. The customer's knowledge about needs, problems, and business practices is exceedingly valuable for the startups development team. However, as highlighted across cases in this study, that knowledge is tacit and seldomly structured or documented, essentially making it inaccessible. As discussed by C. K. Prahalad and Ramaswamy (2004), companies should engage the customer in knowledge sharing activities to ensure that information is transferred across organizational borders. This aspect was highlighted as the motivational factor and core value of engaging in a pilot relationship. The author, therefore, argues that the customer actively should take the role of knowledge transferrer, enlightening the company about internal business processes, problems, and needs.

The selection of startups investigated in this thesis are all developing digital services, which implies automating and replacing manual processes. As elaborated in findings, the majority of the companies relied on traditional methods such as in-depth interviews and workshops to learn about customer processes. Through informal and unstructured conversations, customer representatives explain and enlighten the startup of internal processes.

Further observation is noted as a powerful method to understand processes (C. Christensen et al., 2007; Richardson, 2015) and identify latent needs (Claude & Horne David, 1993 {Leonard, 1997 #290; C. Prahalad & Ramaswamy, 2000; Thomke & Hippel, 2002). However, the study uncovered unorthodox methods and beliefs regarding building competence about customer processes. One of the co-founders took a job as a volunteer in the customer organization to gain insight into customer processes. By doing so, the co-founder is not just passively immersing him/herself in the customer environment but is also actively involved in customer value creation activities. On that note the researcher argues that startups should consider utilizing a similar participatory approach to mapping customer processes. By being involved in the customer's daily operations, startups can create a unique opportunity to experience the customer's challenges firsthand and gain an in-depth understanding of their processes.

Another major challenge of the co-creation relationships is that of identifying latent needs that are native to all companies in the marketplace and developing a standardized and scalable solution to that need. The findings show that all the case companies are aware of the tradeoff between customization and scalability. However, the strategies employed to manage the tradeoff differed. The most common approach to verify value and solution across customer companies was outbound sales. Either the startup did continuous outbound sales throughout development or initiated a sales process after the completion of a MVP. There were also other tactics to capture a broader sense of needs in the industry, gathering stakeholders from several companies in workshops or assembling multiple customers in pilot projects. Interestingly the two youngest and smallest companies did not engage in sales to verify value or follow-up of multiple actors, as these are time-consuming and resource-heavy activities.

The findings show that it is quite rare to actively involve customers in the development of a solution from scratch. However, several cases show that startups often develop a service concept on their own, which is then drastically changed after involving customers. It can be argued that early customer feedback and ideation dramatically affects the outcome and final design of the service. Moreover, we see that such feedback is accessible either through ideation and need finding workshops, sales meetings, or user testing of early versions. Regardless of the interaction mode, the researcher argues startups should involve the customer as early as possible, as internal assumptions tend to be false.

Further, it is notable that customer collaboration is valuable beyond knowledge sharing and feedback. This study sheds light on the opportunity to benefit from resources and competences that customers possess, e.g., internal documents, transactions, and employee data, etc. As previously discussed, one of the case companies actively exploited customers' existing resources to create content in their platform. Similarly, the companies also employed co-creation strategies to exploit customer labor to increase embedded value in the platform. A prime example is one startup that utilized super user's engagement to provide value by making user-created content shareable and reusable.

Creating common understanding

Case companies experience communication barriers between themselves and the customer company. As previously discussed, these barriers can be lacking technological competence, noncorresponding vocabulary, limitations of digital interaction forms, separate reference points, etc. Nonetheless, the barriers regularly create misunderstandings through the development process. Customer descriptions of need, functionalities, or processes are frequently misinterpreted by startups. Which resulted in time-consuming and costly development of functionality that mismatch customers' actual needs.

These costly errors emphasized the importance of thoroughly creating common understanding before moving on to the next phase. The startups found that it was effective to use boundary objects helping to remove the ambiguity of ideas. Boundary objects contribute to learning in communities where people have diverse viewpoints and ways of working (Hawkins et al., 2016). In co-creation, boundary objects can be visual representations of ideas and concepts such as user stories, mockups, and low-end prototypes. Descriptions of high complexity ideas can lead to multiple distinct interpretations of confusion. However, making ideas tangible creates an object that can be discussed, pointed to, and changed, which is a great tool to reach common understandings.

Value verification

Co-creation relationships lead to substantial amounts of input, ideas, and feedback. The empirical study has uncovered several cases where the startup has implemented customer ideas that showed to be were found utterly useless during testing. Therefore, a significant challenge related to co-creation is the idea selection and filtering of customer input; What input should the startup listen to? What ideas should be implemented? How valuable are customer requirements in practice? The consequence of blindly implementing functionality based on customer input can be costly and time-consuming.

As a countermeasure, some of the startups have developed processes to verify the value of ideas before implementation. By taking the focus away from the specific customer contributed ideas and focusing on reduce uncertainty regarding customer processes and desired outcomes. There might be embedded information about unfulfilled customer needs behind customer contributed solutions (Matthing et al., 2004), and managers should strive to uncover those needs. In practice, it is done by transforming processes into user stories and have discussions with customer representatives and users about what they actually are trying to accomplish. It also means going multiple rounds inside the company to cross-check and discuss with different parties, to answer how valuable ideas would be if implemented. This approach is comparable to A. Ulwick (2002) process of identifying customer desired outcomes, and C. Christensen et al. (2007) focus on finding the solidifying understanding of the job the customer is "hiring" the product or service to complete.

Interestingly the case companies that reported low value verification efforts conjointly had more development failures and consequently more often had to redevelop functionality. Arguably the findings of this study reinforce the concept that customer

involvement leads to shorter cycle times provided that the startup has a screening and validation process of customer input. According to Alam (2013), increased customer involvement can mean shorter development cycle times. The researcher, therefore, argues value verification efforts is a pre-requisite to effective development and that it should be regarded as an integral part of co-creation.

The study also highlights value verification efforts with other actors in the marketplace. Startups report that outbound sales processes are initiated after the MVP version of the solution to verify value across organizations. Intending to scale the company and achieve broad market adoption, one of the more significant worries of the smaller startups is if their solution applies to general market needs. Interestingly the findings of this study show that the companies that do extensive value verification are able to separate the unique needs from the general ones. Further, they build an understanding of the existing technology ecosystem in the marketplace and get better equipped to decide when to build integrations and when to bootstrap simple solutions. Integrations are often time-consuming but mean a lot for sales and adoption as they exceedingly can reduce friction and exceptionally increase ease of use.

To summarize the main findings and answer RQ1: **How do startups learn about customers when co-creating new digital services?** Co-creation in the entrepreneurial context is driven and centered around customer learning. The model depicted below shows the parallel continuous customer learning processes occurring in co-creation relationships to a greater or lesser extent.

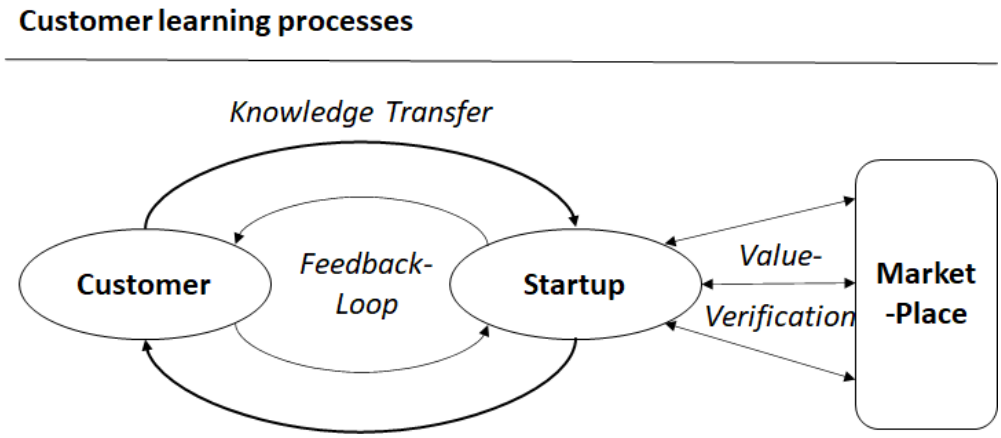

Figure 5: Customer learning processes

Firstly, there is a continuous knowledge transfer process between customer and startup, where the customer shares internal knowledge about problems, needs, and processes. It is an open and unstructured process where customer representatives reflect and explicates knowledge about the company's internal situation through various interaction modes. Secondly, the feedback loop to the iterative process of developing working software, user testing it, and getting feedback from the customer. Lastly, startups want to ensure that the built-up knowledge about customers can be applied to the totality of the market and create a standardized and scalable solution. Therefore, effort is made to cross-check, verify, and validate the value of customer co-creation solutions with other actors in the marketplace as well as inside the customer company.

Customer management

The subsequent sub-chapter will elaborate the findings on customer management. Thematically these findings are outside of the formulated research questions and has not been broadly investigated by previous studies. However, it is crucial to include these findings as the subject was frequently discussed and emphasized as important by the case companies. The findings of the study reinforce previously discovered challenges related to customer involvement in new service design, such as lack of customer motivation (Alam, 2013; Maenpaa, 2011), the customer having difficulty expressing needs (Hippel, 1994; Morrison et al., 2000; A. Ulwick, 2002), limitation of customer imagination (Leonard & Rayport, 1997; Ulwick, 2002; Veryzer, 1998) difficulties managing expectations.

The co-creation relationships are dependent on customer's continuous engagement and contributions; therefore, management of customer's motivation is crucial. As participation in pilot projects are considered to be outside of the customer's daily operations, it is not always prioritized by customer representatives. The study has revealed several strategies employed to maintain motivation and secure progress in co-creation relationships. Most notably, the case companies ensure to share all substantial points of progress and milestones when they are achieved, as this boosts the motivation of all actors involved. In addition, management maintains a continuous dialog with the customer, providing regular status updates and encouragement. One of the case companies highlight to-does and deadlines to ensure progress and emphasize the importance of both parties delivering within deadlines.

Another frequently discussed customer management challenge was tuning customer expectations. The study exposed a case where unmet customer expectations abruptly ended a collaborative relationship, which emphasizes the importance of managing expectations. The findings have displayed multiple strategies employed to manage customer expectations. Several founders highlight the concept of "*under promise, over deliver*", always setting achievable goals and delivering more than expected. One of the case companies promoted the use of a joint roadmap, making an overview of the expected progress. Finally, several companies emphasized transparent communication, making sure to inform the customer of changes and unforeseen challenges.

A frequently discussed challenge that affects several parts of the co-creation process is lacking customer technical competence. As highlighted in Bennett and Cooper (1981), lacking technical competence negatively affects customer's ability to participate in idea generation as they are unaware of technical limitations, which in turn makes customer ideas unfeasible. Further discovered in this thesis lacking technical competence also affects customers' ability to utilize digital tools in the innovation process. The increased use of digital tools, such as shared development environments and prototyping services in the co-creation process, requires educated customer representatives. The managerial implication is that in the preparation of a co-creation project, resources must be used to identify a suitable customer company with representatives with sufficient technical competence and domain expertise in the relevant areas.

Additionally, the study identified several new previously undiscussed challenges related to co-creation. Interestingly customer's expectation of the derived benefit for participation in the collaborative relationship created challenges for several of the case

companies. As customers invest both money and staff-hours into development projects, the expectation of a reciprocating benefit is created. As customers often view innovation as a strategic tool to increase competitiveness and value, it creates a natural demand to prevent competition of gaining the same advantages. As a result, customer companies want to prevent startups from selling to competitors. This is in direct opposition of the interest of the startups that rely on early sales to what is often narrow niche markets. Although relationships are thoroughly formalized through schemes such as IN's Innovation contract, findings show that conflicts like this can occur. Consequently, startup managers should discuss this issue in the preliminary phase with customers, preferably contractually formalizing the derived benefit in advance and create a goal allegiance that benefits both parties.

As highlighted in the findings, a few of the case companies discussed managing multiple customer relationships parallel to the pilot customer. For instance, one of the startups gathered multiple customer companies in need-oriented workshops, and another was collaborating simultaneously with 20 customers on different scales. This allowed startups to access multiple customer perspectives and conduct value verification activities across customer companies. However, managing multiple customer relationships is highly resource-intensive, and as a consequence, some of the smaller startups lacked the human resources to follow up several customers during development. These companies uttered their concerns of ending up in what is noted as a "*Consultancy trap*", meaning the service is over-customized and not generally useful for other actors in the marketplace. Over-customization was identified by Alam (2013) as one of the main pitfalls when co-creating new services. Cross validating findings with several customers, can, therefore, be viewed as utterly crucial to avoid this potentially catastrophic trap.

As for the organization of collaborative relationships, the findings show that the different approaches reap different benefits and challenges. By formalizing the relationship through an innovation contract, the startup receives funding from both the customer and the support scheme, which can be viewed as a firm verification of the value proposition. It also provides a set structure and guidelines for the project development, clarification of rights, and a solid formalization of the two parties' responsibilities. However, it seems as though the customer's expected benefit derived from collaboration increases with the number of allocated resources and perceived project ownership. In comparison, it appears that there is less expectation of derived benefit in informal and less contractual relationships. However, less commitment and contractual responsibility, in turn, seems to decrease buy-in and customer motivation. Nonetheless, this is not robustly empirically supported by the findings of this thesis and should be investigated in future studies.

Additionally, regarding the organization of the relationships, an important finding is that the startups experience it as more useful to engage a smaller number of customer representatives. This may be explained by it being time-consuming to introduce and inform new customer representatives of the details and nuances of the project. The case companies engaged everything from one to eighty representatives, but it was of broad impression the best solution is to engage a smaller representative selection of informed and competent super users. Furthermore, value co-creation opportunities are optimized when everyone involved is aware of what the other parties know (Schreieck & Wiesche, 2017). In order to build reference points and a common language, it is crucial that the parties are equally informed, and one can argue that this is easier to achieve in a smaller group.

5.2 Customer interaction in new service development

The next part will discuss findings on interaction modes in co-creation between startups and customer and ultimately answer RQ2: *How do startups interact with customers when developing new digital services?*

The findings of the study show that the frequency of interactions and the utilized interaction modes in co-creation relationships differs greatly between cases. While some companies report of multiple interactions with several customer representatives each day, some companies report that interactions occur more seldomly, sometimes weeks apart. High customer interaction frequency during development is positively correlated with the market success of new services (A. Gustafsson et al., 2012). Nonetheless, a common denominator across the sample is that the interaction frequency increased significantly around the time of releasing a new version of the service. Before the release, companies are verifying specific details around functionality with the customer; after release, they gather and evaluate customer feedback and discuss the roadmap for further development. Essentially, interaction in the co-creation of new digital services can be described as cyclical around the release of new working software.

As for the interaction modes utilized, the case companies interestingly note face-to-face interactions as the most valuable in regard to co-creation. In particular, the study has highlighted in-depth interviews of problem holders, customer representatives, and users as especially useful. Interviews were usually conducted during the early stages of development to increase understanding of needs, problems, and customer processes. This is in part, in accordance with A. Ulwick (2002), which argues in-depth interviews should capture customer desired outcomes. Founders shared that one-on-one interviews frequently garnered crucial information that would not surface in any other context. This phenomenon may be explained by the nature of interviews allowing reflection and open sharing of problems and statements, that otherwise would not be shared with multiple people present.

It was also noted that it allows founders to dig deeper and get beyond surface-level answers, preferably getting to the root cause of problems. In this context, it is also essential to consider that customer representatives, in some cases, are reported to be overly positive to startup's ideas, to begin with. This can result in avoidance of critical notions and negative opinions, only saying things that founders want to hear. Countering this, in-depth interviews grants the opportunity to get personally to people and create social ties where they feel comfortable with being completely honest.

Most of the companies in the sample used workshops for different purposes. Predominantly workshops were conducted early stages of development for gathering knowledge about needs and problems and increase understanding of customer processes. However, the study reveals different ways of conducting workshops. While one company engaged an external consultancy company to facilitate a workshop series including ideation, idea selection, and concept specification, another used IT methods in workshops throughout development, essentially structuring workshops around feedback on and discussions around paper prototypes. Others used workshops to have open discussions on the core of the value proposition of the solution. It can be argued that workshops are an open and flexible way of interacting with multiple stakeholders, as the format can be adjusted to suit different purposes.

Observation was predominantly utilized to learn about customer processes, how existing services were used, and how new service worked in a real-life context. Similar to interviews, observations revealed essential information that would not have surfaced in any other way. This can be explained by the nature of customer practices being highly routinized but not explicated, often making customer representatives incognizant of details. In addition, founders highlight that observation allows for switching in and out of passive observational interaction to active questioning, enabling real-time discussion of issues and situations with as they occur. This aspect was especially valuable when observing the usage of existing solutions, as it enabled users to elaborate on the pain points and shortcomings of those services. This is consistent with the empathic observation that allows startup representatives to participate in compensating customer behavior (C. Christensen et al., 2007). Further, the study shows that observation of user testing provides embedded contextual information about the customer's work environment and processes, revealing factors previously not accounted for.

As discussed in 5.1, one of the focal points of communication in co-creation is creating a common understanding between customer and company. The rapid sharing of complex ideas across organizations with different competencies, languages, and cultures, often leads to misinterpretations and confusion. Findings show that using visual representations of ideas and structuring development around tangible prototypes and mockups is a powerful way to deal with this issue. Such boundary objects are highlighted to aid the collaboration between various experts with diverse viewpoints and ways of working, by letting them communicate through a common reference point (Hawkins et al., 2016). Prototyping showed to be instrumental in the process of transforming customer ideas into implementable service concepts. Further noted prototypes are widely used in early stages to concretize service concepts, as well as a tool to validate functionality throughout the development process. There seems to be evidence that the startups that actively used prototyping had fewer development mishaps, and in turn, were more efficient than those implementing ideas customer ideas directly.

The study highlights a clear division between the companies that utilized predominantly digital interaction modes and those frequently utilizing face-to-face interactions. Geographically remote collaboration excludes the opportunity to observe and spend time with users, making companies unable to help users or discuss challenges as they occur. This is emphasized as a pain-point in the co-creation process as it leads to a blind spot for the developing company, that essentially miss out on potentially valuable information for the development of the service. In contrast to findings in the existing literature (Kabbedijk et al., 2009; Yang & Chen, 2008), this study does not provide evidence that face-to-face interactions are time-consuming and inefficient ways of interacting with customers. Founders express the wish to conduct more interviews, observations and workshops and emphasize the fruitfulness of these interaction modes regarding customer learning. It can be argued that this underlines the value and importance of geographical proximity as well as the use of face-to-face interactions in co-creation relationships.

As anticipated, e-mail accounted for the majority of digital interactions in the co-creation relationships. E-mails were used for status updates, follow-up of leaders and individual users, and was considered the main communication channel daily. Interestingly, several case companies integrated feedback mechanisms into the service; which enabled users

to report errors and provide feedback on the service. This proved to be highly valuable in regard to gathering input, but as the mechanism were one-way channels, the functionality had no additional value for interaction with the customer. The surge of the Covid-19 epidemic made face-to-face interaction impossible, and interestingly it created a division of the case companies. For some companies, it meant temporarily postponing development, while others continued by increasing the use of digital interactions. Video calls and messaging services like Slack were highlighted as a replacement to the scheduled face-to-face interactions.

Considering the value co-creation aspect of collaborative relationships, it is compelling to discuss the role of the customers. The study shows that customers inhabit two main roles in collaborative relationships. Firstly customers serve as a source of information and domain knowledge, which is referred to in the literature the intermediate role (Lusch & Nambisan, 2015). Secondly, the customer inhabits a hybrid role where they contribute with ideation, testing, and feedback: a combination of the designer and ideator role (Lusch & Nambisan, 2015). Interestingly, few of the companies engaged customer representatives as equal members of the development, as in co-development/design (Sanders, 2000). However, in the majority of the investigated cases, the startup company is the decision-maker and leading party, making the customer a reactive and more passive party. Nevertheless, there were a few cases where the co-creation were parties were truly equal. For instance, one of the case companies developed a service concept from scratch with customers as an equal decision-maker. This was a strategic choice to ensure the service idea had firm anchoring in the target industry from the beginning.

Interestingly none of the case companies used online communities to interact or engage with their customers. Communities are cited as a powerful source of customer ideation and resources (Romero & Molina, 2011), nevertheless, none of the case companies utilized the technique. However, several of the startups developed other strategies to exploit the resources and labor of their customer. Most notably, one of the startups used several customers' internal training documents to create scalable value in their service. Comparably another startup made customer-created content shareable and reusable, substantially increasing the embedded value of the service with customer labor. Interestingly, both these companies deliver services that can be defined as one-to-many platforms, where the value sourced from one customer is distributed to the rest of the customer base. In turn this means the value of their service increases according to the amount of contributing customers: meaning their business models are inherently based on co-creation.

One of the central parts of value co-creation is joint ideation between customer and company. The findings point to several challenges and opportunities related to ideation. Firstly, findings show that there is generally is a limitation of customer imagination, which reinforces the findings of the previous literature (Leonard & Rayport, 1997; A. Ulwick, 2002; Veryzer, 1998). This has previously been explained by customer's limited reference point, making it difficult to imagine things beyond previous experiences. However, this study suggests that the phenomena additionally can be explained by customers being overloaded with new information. While startup representatives are experts in the relevant problem area, customer representatives are quickly being caught up to speed before promptly being engaged in ideation. The abundance of new

information makes ideation challenging, which pushes the need to provide the customer with enough time to familiarize themselves with relevant information.

Another challenge related to joint ideation is customers lacking technical competence. This study shows that this can affect customer's ability to consider the technical feasibility of ideas and understand how technical complexity affects the development timeframe. These findings directly reinforce the discoveries of the previous literature (Bennett & Cooper, 1981). However, other studies have provided evidence that the lack of technical competence makes customers free from technical limitations, making their ideas more radical (Magnusson & Kristensson, 2010). Regardless, the researcher argues that startup should engage in co-creation with companies with technically competent representatives as this will positively affect the quality of ideation and the interaction with the startup.

Additionally, the study reveals that prototypes and visual representations of the service directly stimulate customer ideation. The findings show that the majority of customer contributed ideas are obtained when the customer gets to see or test prototypes. As prototypes are effective ways to communicate different attributes of the service (Kohavi et al., 2009; Sampson, 1996), it seems to nurture the process of customer ideation. A plausible explanation is that visual representations of the service make it easier for customers to perceive the service's concepts and envision them in the context of use. The researcher argues this underlines the importance of visual aids when engaging in joint ideation with customers.

Extensive customer ideation consequently leads to a need for an idea selection process. The study reveals that startups employ idea selection approaches such as CMO working as an idea filter, customers are involved in idea selection workshops and startup setting up a multistage idea filtering process. Findings show that idea selection has several facets. As previously discussed, the startups validate that they have understood the idea correctly and have a common understanding with the customer. Secondly, the startups verify that the idea provides actual value-in-use for the customer. The final facet of idea selection ties into scalability, as the startups are looking for service concepts that are valuable not just for the pilot customer but for the entire marketplace. The study has shown that the consequence of blind implementation of customer ideas often leads to useless functionality and overall a less efficient co-creation process. Conclusively, the researcher wishes to reiterate the importance of robust idea selection, including value verification efforts with the pilot customer and actors across the marketplace.

6 Conclusion

Finally, the researcher will conclude the thesis by summarizing the main findings regarding Research Question 1: **How do startups learn about customers when co-creating new digital services?**

The study has shown that value co-creation in the entrepreneurial context is centered around customer learning processes. Firstly, parties engage in knowledge transfer, which can be defined as the use of various interaction modes to gather information about customer needs, problems, and processes. In this phase, the startup is trying to understand the customer's daily operation and practices, as well as the context and pathways in which the service will be consumed. Findings suggest that the customers should take a more active role in the knowledge transfer process, as startups rely on uncovering the information they possess. At its core, knowledge transfer is about transforming customer representative's tacit knowledge about the organization, into structured information that can guide the service development.

Further, the startups are engaging in a continuous process of creating common understanding with customers, where the use of boundary objects are highlighted. Concerning this, the startups commonly release iterations of the service, getting feedback from the customer. Lastly, value verification is happening with pilot customers and externally with other actors in the marketplace to validate that service concepts yield high value-in-use.

The study has uncovered that customer's expectation of the derived benefit for participation in collaboration can create challenges to co-creation relationships. In order to deal with this issue, parties should formalize the derived benefit and create goal alignment in preliminary phases. Further, the study has shown that customer expectation and motivation are managed by continuous dialogue that highlights progress, clarifies objectives and deadlines, and fosters transparency regarding challenges and changes. Evidence from the study also highlights that there is great value in integrating employees into customer organizations, regarding customer learning and building close customer relationships. Concerning this, it can be argued that both parties should take a more active role inside the partner's organizations.

Conclusively, the researcher will summarize the main findings regarding research question 2: **How do startups interact with customers when developing new digital services?**

Interactions in co-creation relationships can be described as cyclical around the release of new working software. Companies showed a significant difference in the frequency of customer interaction, ranging from once every other week, to multiple times a day. Further, the study has shown that there is a division in how startups and customers interact in the co-creation process. While some companies blindly implement customer ideas, others engage in extensive value verification to validate the value-in-use. Further, it is noted that the companies exclusively utilizing digital interaction modes, miss out on embedded contextual information that seems to only be available through face-to-face interactions.

The study highlights face-to-face interactions as highly relevant for co-creation. Firstly, in-depth interviews are emphasized to strengthen customer relationships, increase honesty and openness, and allow founders to get beyond surface-level answers. Workshops are characterized as a flexible and dynamic interaction mode that can be adapted to different purposes. Observations enable real-time discussion of issues and situations with as they occur as well as a powerful insight into daily customer operations and use of service.

Several challenges with interaction in co-creation have been discussed. For instance, the limitation of customer imagination and lacking technological competence affect customer's ability to engage in ideation. It is highlighted that boundary objects such as prototypes, mockups, and visual aids help diminish inter-organizational communication barriers. Boundary objects create a common reference point that alleviates interactions across organizations, radically diminishing the barriers created from differences in company competence, language, and culture. Additionally, the study reveals that prototypes and visual representations of the service directly stimulate customer ideation. This may be explained to make it easier for customers to perceive the concepts of the service and envision them in the context of use.

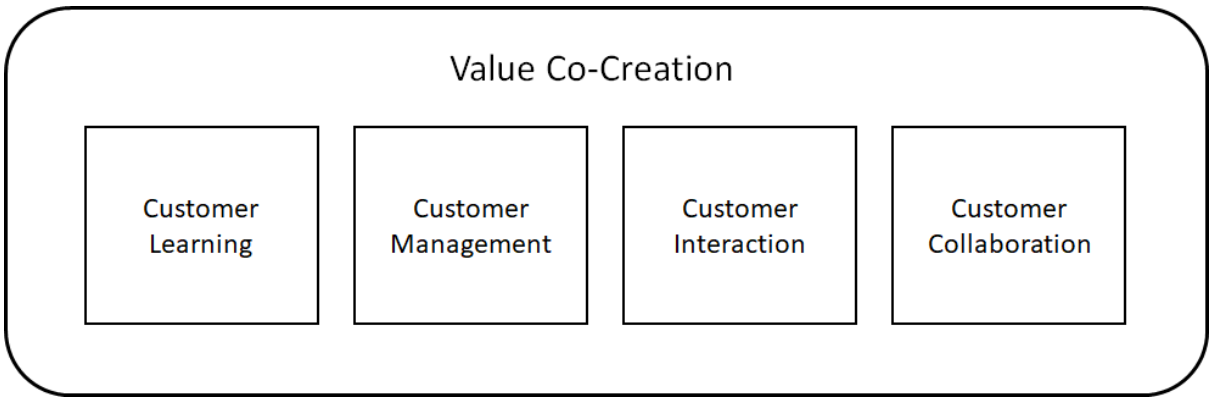

Figure 6: Value Co-Creation in entrepreneurial context

Conclusively, the thesis is summarized by presenting a model of the fundamental elements of value co-creation in the entrepreneurial context. Firstly, co-creation is driven by Customer Learning, which includes need finding, customer process understanding, and overall knowledge transfer across organizations. Secondly, value co-creation is enabled by Customer Management practices, such as management of customer motivation and expectations and formalization of the collaborative relationship. Thirdly co-creation is fundamentally based on Customer Interaction; consequently, startups utilize various interaction modes to gather customer ideas, get feedback, and learn. Lastly, extensive Customer Collaboration allows parties to come together in joint value-creating activities.

7 Implications

7.1 Managerial implications

This study provided valuable insight into how startups can co-create new digital services with customers. Following, the researcher has suggested some specific managerial implications:

First, managers should use time and resources to find a suitable pilot customer with competent employees. Instead of engaging tens of representatives, findings suggest that engaging a smaller group of competent and motivated individuals might be a more efficient way of co-creating. Customer representatives should favorably possess domain expertise related to the relevant problem area and adequate technical competence. When a suitable customer company is identified, the customer should be involved as early as possible, as early feedback is essential to challenge internal assumptions, early involvement also creates buy-in and ownership in the project. Additionally, the derived benefit of participation in development should be discussed and preferably formalized in the course of the preliminary phase.

Secondly, managers should consider employing measures that decrease the organizational distance. For instance, the study has shown that co-creation relationships can benefit significantly from integrating startup representatives into the customer organization. Managers should create opportunities to immerse themselves in the customer environment, as it grants opportunities to learn about the customer's daily operation and practices, as well as the context in which the service will be consumed. On that note, managers should consider utilizing face-to-face interactions such as interviews, workshops, and observation, as they allow customers to reflect and explicate relevant information. Startups should also consider socializing with customers to build trust and openness between parties.

Thirdly managers should promote the use of boundary items when co-creating, as it provides a common reference point in co-creation interaction and stimulates customer ideation. Visual and tangible representations of service create a common understanding and basis for discussion and feedback. These efforts should be coupled with extensive value verification mechanisms for both the pilot customer and other actors in the marketplace. By thoroughly validating the value-in-use of functionality and service concepts, startups can reduce development time and create a broadly satisfactory service.

Fourthly managers should consider employing methods to manage customer expectation and motivation, as well as ensuring steady progress of development. An orderly way of supervising collaborative relationships is utilizing a joint roadmap containing all planned functionality, milestones, and responsibilities. Findings show that such project management tools help both parties keep track of development and are highlighted to regulate customer expectations and motivation. In regard to this, managers are also recommended to promote a continuous transparent dialogue, sharing status updates, progress, and unforeseen changes.

7.2 Theoretical Implications and Suggestions for Further Research

The existing research in this field of study has mainly been focused on co-creation in large established industrial companies. This study has expanded the field of value co-creation into the entrepreneurial context. It has provided an in-depth understanding of how startups interact and co-creates new services in collaboration with customers. The underlying data in this study has exclusively been qualitative. Further research investigating co-creation in the entrepreneurial context should include quantitative data and analysis, as it would provide a broader evidence base.

The evidence of this study tends to support and reinforce the findings of previous studies. Firstly this study extends the conversation regarding challenges related to lack of customer motivation (Alam, 2013; Maenpaa, 2011). Further, this study contributed with supporting evidence regarding the challenge of the customer having difficulty expressing needs (Hippel, 1994; Morrison et al., 2000; A. Ulwick, 2002), and the limitation of customer imagination (Leonard & Rayport, 1997; A. Ulwick, 2002; Veryzer, 1998). In addition, the study reinforces the findings related to difficulties managing customer expectations and customer's ability to consider the technical feasibility of ideas (Bennett & Cooper, 1981). However, some findings are inconsistent with other studies. For one, this study contrastingly highlights that face-to-face interactions are a highly effective way of interacting with customers. Furthermore, this study has shed light on issues and concepts previously not discussed. For instance, the importance of customer learning and inter-organizational knowledge transfer, as well as the extensive use of value verification efforts in co-creating.

This study has primarily investigated co-creation from the startup's perspective, as the underlying data has been interviews with founders and startup representatives. Further studies should include the customer's perspective and perhaps investigate the managerial practices employed by the customer company. Moreover, it would be interesting to investigate the related benefits and challenges for customers when engaging in collaborative relationships. Therefore, it is recommended to include interviews of various customer representatives in future studies.

As mentioned, this study has only investigated how startups and customers interact and co-create. Further research might want to investigate how co-creation affects the eventual market outcome of new services. Such studies could be conducted by analyzing and determining the degree of co-creation utilized in the development of multiple new services and ultimately compare their market performance. Similarly, studies could analyze how different interaction modes and co-creation techniques affect market performance. By utilizing a mixed-method approach, such studies could determine just how advantageous the co-creation approach is and determine superior interaction modes and techniques.

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Appendix

Appendix 1: Interview Guide

Introduction

- Can you begin with telling me little about yourself and your role at the company?

Customer interaction

- Why did you choose to develop with a customer?
- How do you work with the pilot customer, how is the process?
- How often are you in contact with the pilot customer?
- How do you interact digitally with the customer?
- What kind of face-to-face interactions you have with the customer?
- What kind of interactions do you think are most valuable to the development of their service, for co-creating value?
- Has the relationship with the customer changed over time?

Customer learning

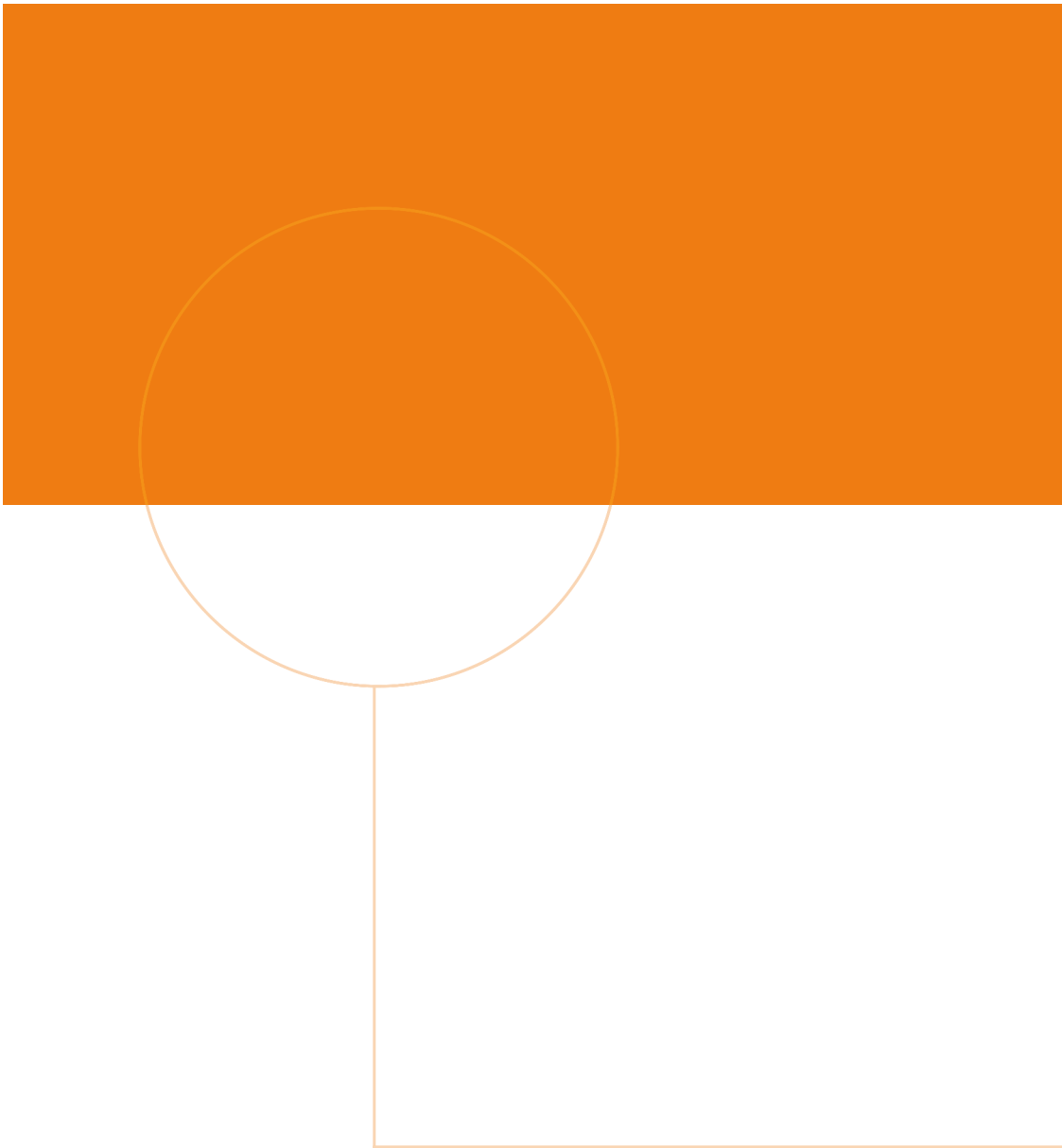
- What activities as been executed to increase understanding of the customer?
- How do you map-out and learn about the customer's practices and processes?
- How do you share what you have learned about the customer within the company?
- What information do you share with the pilot customer? Have you given the customer access to resources?
- Has the customer contributed with ideas for your service? How did it happen?
- Does the customer contribute regarding testing of the service? How does that happen?
- Have you received data from the customer? What kind of data, and how?

Customer collaboration

- What challenges do you have in developing with a customer?
- How do you handle the trade-off between tailoring to a pilot customer and keeping the solution scalable and generally valuable?
- How do you incentivize and motivate the customer to participate and be active in the development process?
- How do you handle customer expectations?
- How do you handle information sharing regarding confidentiality?

Value co-creation

- What do you know about the customer's business model / value drivers? How did you learn this?
- How have you tested / verified your value proposition with customers?
- How do you adapt the value proposition to the various stakeholders? Buyer, user, 2nd degree user
- How is the value proposition communicated to your customers?
- Have you quantified the value proposition? What role has it had?



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