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ONLINE TOOL CHARACTERISTICS IN VALUE CO-CREATION

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Vuonna 2020 maailmaa muutti COVID-19, joka laajeni pandemiaksi. Viruksen aiheuttaman muutoksen vuoksi, organisaatioissa ryhdyttiin toimenpiteisiin. Toimenpiteillä työntekijät siirtyivät toimistoilta etätyöskentelyyn, mikä tarkoitti ICT-työkalujen käyttöä yhdessä työskentelyyn.
Tämä tutkielma pyrkii löytämään työkalujen ominaispiirteitä, jotka edesauttavat arvon tuottamista. Tutkielman ongelmaan haetaan ratkaisua systemaattisesta kirjallisuuskatsauksesta, teemahaastatteluista sekä temaattisesta analyysista. Kirjallisuuskatsauksen tarkoituksena on luoda pohjaa empiirisen tiedon keräämiselle. Empiirisen tiedon keräämisen analysointiin käytetään temaattista analysointia, jotta uutta tietoa voidaan verrata olemassa olevaan teoriaan.
Tutkielman tuloksista voidaan päätellä, että työkalujen ominaispiirteitä on havaittavissa. Tämän tutkielman tapaustutkimuksella löydettiin kolme tekijää, jotka näyttävät edesauttavan kohdeorganisaation arvon luomista. Näitä löydöksiä olivat reaaliaikainen tiedon välitys, tiedon rakenne ja luottamuksen herättäminen yhteistyökumppaneissa.

Asiasanat: arvo, luominen, työkalu, piirre

ABSTRACT

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During the year 2020, the way to work changed dramatically as the COVID-19 pandemic shook the world. Because drastic measures were needed to prevent the virus from spreading, more personnel were recommended to work from home offices. On the other hand, this remote work development meant more personnel working with ICT-enabled collaborative tools across the single case study organisation.

This thesis approaches the research problem introduced with a systematic literature review, a theme-based interview data collection and a thematic analysis. Within the systematic literature review, the aim is to find out what is already known about the research problem through systematic methods of finding and analysing data. Empirical studies, in turn, are reflected in systematic literature review findings, and the data is collected through theme-based interviews. Finally, from these two approaches, the details of the findings are done and shown.

According to the results, characteristics can be found that promote value co-creation. These characteristics allow a dyad exchange of services. Implications, however, are based on a single case context. Within the study context, it was identified that the tools should have characteristics that promote real-time information sharing, structure, and methods to promote trust between the stakeholders within value co-creation.

Keywords: value, co-creation, tool, characteristics

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1 INTRODUCTION

During the year 2020, the way to work changed dramatically as the COVID-19 pandemic shook the world. Because drastic measures were needed to prevent the virus from spreading, more personnel were recommended to work from home offices (Lyons, 2020; Gartenberg, 2020; Christie, 2020). On the other hand, this remote work development meant more personnel working with ICT-enabled collaborative tools across organisations (Deloitte, 2020).

The author of this paper has worked within project management, utilising both online and offline tools. Because of the developments in 2020, the devices became more online as face-to-face interactions were no longer available. For this personal interest, this thesis was made to understand the phenomenon within customer value co-creation. More precisely, it was found interesting what are the characteristics of these ICT-enabled tools that allow customer value co-creation to happen.

This thesis approaches the research problem introduced with a systematic literature review (SLR), a theme-based interview data collection, and a thematic analysis. Within the SLR, the aim is to find out what is already known about the research problem through systematic methods of finding and analysing data. Empirical studies, in turn, are reflected in SLR findings, and the data is collected through theme-based interviews. Finally, from these two approaches, the details of the findings are done and shown.

This thesis approaches the research with inductive matters. As the inductive approach allows data to lead to the concepts and relatively (Yin, 2015, p. 100), thus, this paper can be argued to be an inductive approach to the study context. This thesis approaches the research question via SLR and empirical study data from which the relativeness and concepts are gathered.

1.1 Research problem

This thesis aims to understand how remote work can have efficient customer value co-creation in service-dominant logic. As remote work increased in 2020 due to the global pandemic (Deloitte, 2020), the need to understand efficient work has increased. Moreover, how this increased remote work impacts value co-creation is still being determined.

Within this thesis, the focus is on value co-creation and takes IS artefact of online communication tools. Communication tools are a broad subject area as they can represent a variety of technologies. Because of this, this thesis tries to narrow down the concepts by using a research question *"Which online communication tool characteristics promote customer value co-creation in service-dominant logic?"*.

This thesis is qualitative research. This thesis uses a systematic literature review (SLR) for the theoretical study. A theme interview is conducted for the empirical research to dive into a single case value-co creation context. Finally, based on both SLR and empirical studies, the thematic analysis is done to dive into the data.

This thesis is divided into three parts. Firstly, the SLR method and findings are presented. Secondly, the empirical study is introduced and presented with the results. Lastly, the findings against the research question are presented, and the conclusions are made from the data. Each of the parts dedicates a section of the process used for that specific part to increase the reliability of this thesis.

2 LITERATURE REVIEW

In this study, the literature is reviewed with structured methods to create a solid understanding of the research question topic for further researchers to continue this work. Going through the existing literature through structured methods is recommended by several authors for the literature review process (Okoli and Schabram, 2010; Paré et al., 2015).

The purpose of the literature review in this paper is to understand the phenomenon behind the research question and to provide a foundation for the empirical study conducted later in this thesis. Okoli and Schabram (2010) discuss, that most research uses this approach to make a solid foundation for other parts of research. Furthermore, the descriptive case study can benefit from solid theory background, although it could limit the ability to make discoveries (Yin, 2011, p. 28).

The theoretical study within this paper goes as follows. First, we introduce the reader to the literature review process and how the data is searched and from where. Next, the reader is introduced to how the data was selected and how the data was extracted from the literature data. Lastly, the findings from the literature are represented, and the conclusions for the empirical part of this thesis are made.

2.1 Literature review process

This thesis follows an approach by Okoli and Schabram (2010). This helpful literature review allows this thesis to understand further the prior knowledge of the topic of interest (Paré et al., 2015). Furthermore, because this thesis is built on inductive research, providing strong rigour through existing theory is recommended (Hyde, 2000; Paré et al., 2015).

The purpose of the literature review within this thesis is to give the reader idea of what is known already about the thesis research question. Moreover, this thesis provides the reader with a starting point to understand the phenomenon within possible further research. At the end of this literature review, there should be an understanding for the reader:

- which existing theories give insights into the research question
- how the process can be backtracked and be used within the further research
- what were the findings of this thesis, and how were the results made

The literature review within this thesis follows an explicit protocol by Okoli and Schabram (2010) to give an understanding the reader of what steps are made to gather the existing theoretical data. To understand the process, see figure 1.
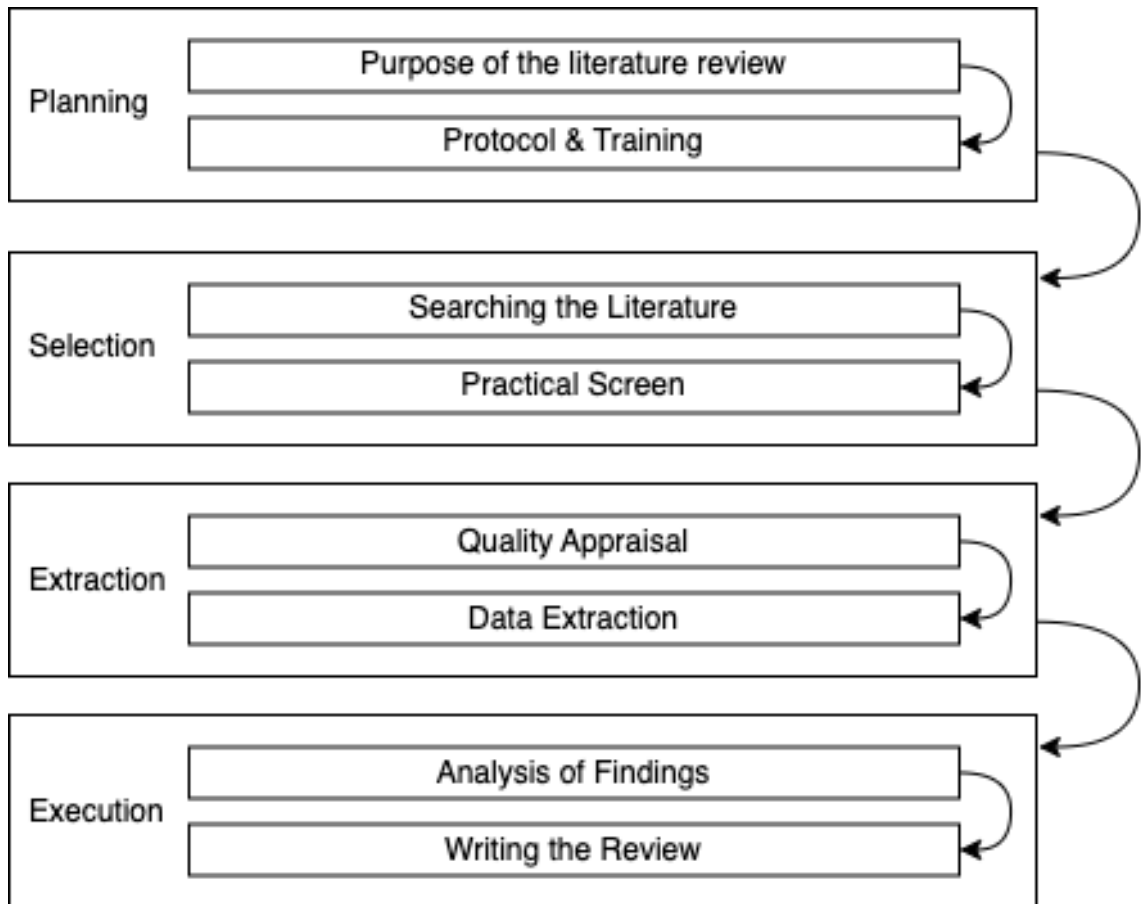
FIGURE 1 Structured literature review process (Okoli and Schabram, 2010)

The literature for this thesis is searched by multiple search engines as recommended by several authors (Templier and Paré, 2015; Paré et al., 2015; Okoli and Schabram, 2010). When a duplicate file was introduced both within the search engines used and within the course files, the files from courses were diminished from the literature review.

There were two leading search engines for literature: Scopus and ProQuest. Both these engines were used in the same manner of search terms used. For this literature review, "co-creation" was a fundamental search term. This search term was then enriched with "tool", "communication", and "service-dominant". These terms were selected from this thesis research question, *"Which online communication tool characteristics promote customer value co-creation in service-dominant logic?"*. The sub-questions introduced were excluded from the search criteria to keep the search terms clear and promote the literature from the main research question instead of the helping sub-questions. For the list of search criteria used for the protocol, refer to appendix 1, table 2 or table 3.

The terms "tool", "communication", and" service-dominant" were selected by the author after initial searches within search engines. Terms within the research question, such as characteristics and promotion, were also scanned but resulted in poor results and were dropped out of the data set due to this. However, scanning the search engines with the mentioned poor terms did raise terms

that resulted in relevant search results. The terms Communication and service-dominant terms were found to provide material that was both quantitatively and qualitatively sufficient for the research question. Term tool was selected as the results with synonyms such as instrument and device resulted in search results that were both out of the field of study, and initial skimming resulted in a poor match towards the research question. The search terms used are done by trial and error; thus, the reader should face the findings as any research; the results are subjective and based on the author's biases. Refer to [TX: Search terms excluded] for the detailed list of different terms excluded for this initial scan.

TABLE 1 Systematic literature review search criteria used

Term	Exclusion reasoning
device	Terms resulted into engineering papers that were not related towards IT field
characteristics	Resulted into poor number of results that spanned wide range of fields of studies such as insurance
promote	Resulted to a small data set within all the fields of study
customer	Resulted into a huge data set within several fields of studies both in business and social studies. Left out to narrow down the material exhaustion

The protocol to use proceeded by defining the purposes for search engines used. For Scopus, the objective was to have the best knowledge from specific journal types as the search engine supported finding publications through publication type. ProQuest, on the other hand, was used to ensure comprehensiveness within the materials. On the other hand, the purpose was also to include as quality materials as possible because the search engine allowed searches to be conducted through peer-reviewed papers only.

After defining the protocol and purposes for search engines used, the literature review process proceeded to actual searches. First, based on the decisions made in earlier steps, the search engines were used to collect initial data sets. Next, the spreadsheets were downloaded with the research abstract, keyword, and title data for further analysis. At this stage, the search results were only filtered by the defined search terms to make the data as comprehensive as possible.

The comprehensiveness was assured by taking a wide variety of articles under review, which were not solely limited to the IS field. However, even where Scopus accepted filtering by the subject field, the searches did not apply this filter to get complete comprehensiveness. Instead, the filtering was done on both search engines on the publication type level, where only conference or journal-related articles and proceedings were accepted.

After finding the initial search terms, search databases and search results, a screening was conducted for inclusions. The process started by limiting the total number of search results. The initial inclusion was done by restricting the publication year of the studies between 2004 and 2020. The start date was chosen as this year, as Vargo and Lusch (Vargo and Lusch, 2004; Lusch and Vargo, 2006)

first introduced concepts of Service-Dominant logic to the public. The end date was chosen to limit the search results to the end of the year 2020. Finally, the search results were limited to only those papers with English as their publishing language.

2.2 Literature review material selection

After finding the initial search terms, the search was conducted first on Scopus. Scopus results were limited during this step to include journal or conference proceeding articles. In addition, this search engine narrowed initial records by adding conditions to only include specific documents accepted by protocol. After the search engine results were included, the results were imported to Zotero for further analysis.

TABLE 2 Scopus literature search process through

Step	Description	Total number of papers
Defined purpose of engine	The engine is used to provide search results from a wide variety of study fields other than IS	Not available
Protocol	Define initial search. The texts should be freely available or accessible through JYU provided access methods.	Not available
Searching for the literature	The search terms were used to gather initial search result amounts	6089
Practical screen	Include the papers that were published between 2004 and 2020, the paper language was in English and document type was valid	1212
Total number of papers		1212

After the first results were imported into Zotero, the ProQuest search engine was used. For this search engine, the same search terms were used as before in Scopus. As the search engine did not support searching by publication type, this search condition was dropped. However, the search engine supported peer-reviewed material searches. Thus, this condition was included in the search results. After the search results were retrieved, they were imported into Zotero for further analysis.

TABLE 3 ProQuest literature search process through

Step	Description	Total number of papers
Defined purpose of engine	The engine is used to enrich data provided by Scopus and to provide search results from wide variety of study fields other than IS	Not available
Protocol	Define how the search terms function the same way the terms work within Scopus. Limit out the field of Business as the search engine does not support it	Not available
Searching for the literature	The search terms were used to gather initial search result amounts	893
Practical screen	Include the papers that were published between 2004 and 2020. Include only peer reviewed papers, the paper language was in English. Include those papers that have been peer-reviewed and document type was valid.	659
Total number of papers		659

After initial inclusions within search engines, the inclusion moved towards the quality of papers. For Scopus search results, this meant initiating exclusion to the data search results by citation amount. For this thesis, a citation count of 80 was chosen. For ProQuest, the exclusions were made by adding filters for peer-reviewed publications. Finally, the results from both engines were added to Zotero and cleaned from duplicates. In the case of duplicates, the search engine which reported more meta-data information for the research paper was favoured.

TABLE 4 Literature duplication remove process

Step	Description	Total number of papers
Ensure metadata is present	After importing all the materials, check with Zotero that all the metadata is present	1921
Initial quality appraisal	Remove duplicates that were found from Scopus and ProQuest	1363
Total number of papers		1363

After getting the data sample, the data was further filtered by including only those materials with full text. This process was done with the help of Zotero PDF finding and allowed trimming down the total number of papers. The total number of articles available for further exclusions through full texts was 582. These documents were analysed further to include only those with matching abstracts and titles. The documents were further checked if the material was in English; if the paper was in any other language, the record was excluded.

TABLE 5 Final literature review process result of papers

Step	Description	Total number of papers
Merge documents	Merged documents from course materials and from both search engines to one dataset.	1363
Find full texts	Use Zotero PDF find tools to determinate if there was a PDF available. Include only documents that had full text, accepted version, or submitted version available	582
Analyse document metadata	Go through document title, abstract and keywords. If these did not have emphasize towards value co-creation with either communication or tools that would be IS related, the document was excluded	108
Analyse document language	Analyse the documents and exclude documents that were not in English, exclude those that had five or less pages of content	98
Score materials	Score materials-based publication cite score. The cites core must be at least 3	53
Analyse quality	Skim the papers; If paper is poor quality by not meeting the criteria passed before, they're essays or discussions or the papers for other reasons don't meet quality standards, they're left out	43
Total number of papers		43

2.3   Literature review quality appraisal

The quality appraisal of the content continued by reviewing the data through titles and abstracts. The article was included in this thesis if either titles or abstracts provided evidence that the paper has used any search terms and is related to the IS field. This last step filtered the data for this paper before the literature data were extracted and analysed.

During meta-data analysis, the exclusions and inclusions to the papers were done from this thesis' context. As this thesis focuses on value co-creation within the business-to-business (B2B) world, all the papers that implied different contexts at this stage were dropped out. The main themes for excluding the articles, in order of ranking the articles, were

- Article meta-data lacked either an abstract or a title.
- Articles related to government contexts, such as smart cities or municipality co-creation

- Article related to tourism or hospitality context, such as Airbnb usages or tourism services
- Articles associated with Business-to-consumer (B2C) context, such as airport self-service desks
- Article related to some other field of study other than business, software technology or IS
- Articles did not imply a relation to this thesis' themes either by:
  - value co-creation was not de-coupled tools or communication; for example, the abstract did indicate working together but did not use value co-creation as a keywords
  - co-creation was discussed in the co-destruction context
  - There was no heavy implication towards value co-creation throughout the abstract, title and keywords.

The total number of papers for data extraction was 43. After accepting the total amount of papers and comprehensiveness with the instructor of this thesis, the data was extracted. With the help of NVivo software, the process started by classifying each article into either "value co-creation", "Communication", or "tool" themes. The coding of each file automatically populated the themes. When coded, a paper could end up into any of the themes if it discussed more than one topic of interest.

TABLE 6 Number of codes within themes

Theme	Number of papers in theme	Number of code blocks including child themes
Value co-creation	43	245
Communication	34	157
Tool	23	81

The process had implications towards positive bias at the end. Until the final analyse of document meta-data, the subjective impacts did not affect the process. During the analyse, it was left for the analyser to include or exclude based on personal thoughts. To counter this issue, the research problem took a strict methodological approach until the very end, as proposed by Kitchenham and Brereton (2013). It is up to further researchers to determine if better materials were available.

Within this chapter, the literature review process was introduced. First, it was discussed why the approach for systematic literature review was chosen for this thesis. Second, the standard method used within this thesis' literature review was introduced. Third, the literature review process was documented for further studies to trace the results from this thesis to work further.

3 VALUE CO-CREATION

Professors Vargo and Lusch introduced Service-Dominant Logic (SDL) in 2004. (Vargo and Lusch, 2004; Lusch and Vargo, 2006; Vargo, 2011). Since 2004 the Service-Dominant Logic has become a widely accepted dominant logic to create value between providers and customers (Lusch and Vargo, 2006). The roots of value co-creation, however, lie before its introduction by Vargo and Lusch. The origins were from the early 21st century when firms started to shift from Research & Development towards creating value with customers (Cova et al., 2011). This shift has made SDL value co-creation which is getting more traction in the markets. On the other hand, active development by Vargo and Lusch has supported traction. (Lusch and Vargo, 2006). Even in its roots in marketing and business theories, Service-Dominant Logic is practised in the Information Systems (IS) field. In IS, SDL has been used to theorise exact value co-creation models in software business service innovations. (Lusch and Nambisan, 2015).

Within the Service-Dominant Logic, intangible operant resources exchange services to create value (Lusch and Vargo, 2006). This value creation model distinguishes SDL from the traditional Good-Dominant Logic model. Operant resources in SDL can include customers, customers' resources, employees, and organisations. On the other hand, all these constructs within value creation are socially involved in the value co-creation context. (Lusch and Vargo, 2006; Edvardsson et al., 2011). Within this context, whether they are firms or customers, stakeholders try to obtain support by enabling or facilitating others (Lusch and Nambisan, 2015). On the other hand, S-D logic sees operand resources as tangible and static. In turn, this neglects operand participation in the value co-creation process actively. Operand resources are a way to obtain support from tangible resources through the SDL model (Lusch and Nambisan, 2015; Edvardsson et al., 2011).

Value-in-use, or in other words, value-in-context, and value-in-experience, is a fundamental concept of SDL customer value co-creation theory (Vargo and Lusch, 2004). Customer value is created only within value-in-use. This idea of value creation context should move into the company thinking. Firms should always consider how to process customer value co-creation through value-in-use. Firms could, for example, make prototypes and use other fast methods to collect customer value (Grönroos and Ravald, 2011; Lusch and Nambisan, 2015; Tran and Park, 2015). In contrast, the supplier's role is to support the customer's value-creation process rather than provide solutions. As a result, customers might not be aware of the solution offerings before value-in-use becomes apparent in actual customer use. (Grönroos and Ravald, 2011; Verma et al., 2012; Smith et al., 2014).

The customer's role is to co-create value with the service provider. Moreover, customers should always actively participate in value co-creation (Vargo and Lusch, 2004). This participation is a focal issue when firms think and react to their marketing (Grönroos and Ravald, 2011). Within the SDL, value is created for the customer, the provider, or others in the value-in-use context. On the other hand, value creation in GDL occurs towards the customer through offerings. (Grönroos

and Ravald, 2011; Lusch and Nambisan, 2015; Edvardsson et al., 2011). For this reason, the value creation process could never be one-sided (Grönroos and Ravald, 2011). Moreover, the multi-sided operation should always consider the customer an active participant within the value co-creation context (Barqawi et al., 2016). In turn, this is a fundamental of S-D logic: S-D logic has developed into the theory of how the different service-providing actors can create value together (Jaakkola et al., 2015).

There are emerging topics on integrating the customer towards the value co-creation process through Actor-to-Actor (A2A) and Actor-for-Actor (A4A) models. These models remove the distinction between customers and providers (Polese et al., 2017; Akaka and Vargo, 2015; Lusch and Nambisan, 2015; Edvardsson et al., 2011; Vargo, 2011; Breidbach & Brodie, 2017). On the other hand, these models usually rely on Front-Line-Employees (FLEs). FLEs are provider actors who work with direct involvement with the customers (Melton and Hartline, 2015; Verma et al., 2012). Utilising the FLEs as active participants in value co-creation could result in better outcomes from the value co-creation process as responsiveness to market needs improves (Santos-Vijande et al., 2016). Due to active participation, the FLEs become more involved in the value co-creation process. This, in turn, could result in better value co-creation outcomes (Santos-Vijande et al., 2016; Melton and Hartline, 2015). The different stakeholders within the value co-creation process might have a skill asymmetry, which could explain better outcomes from value creation. Better outcome through skill asymmetry is fundamental to the service economy's existence. (Saradhi et al., 2017).

Actor roles within SDL can vary between ideator, designer, and intermediary roles. The roles bring their values and co-creation capabilities into the value co-creation process. Firstly, ideators can bring knowledge and context understanding from customers. Secondly, designers use understanding to make matching components or resources. Finally, customer services build on top of these components and resources. Thirdly, the intermediary role focuses on broader cross-polite knowledge. The intermediary's role is to create and maintain the nonobvious across ecosystems to provide value for themselves and other stakeholders. This intermediary role differs in hand from ideator and designer. The ideator and designer focus more on individual actors within the value co-creation process, but the role intermediary does not. Instead, the intermediary's role is to focus on a large pool of actors within the value co-creation. (Lusch and Nambisan, 2015).

Integrating the customers through these emerging models, like FLE, creates an immediate and proactive environment in which capabilities are integrated towards the value co-creation process (Polese et al., 2017). In some circumstances, integration happens with the help of value propositions. The value propositions holistically integrate the operant resources towards the value co-creation process (Frow & Payne, 2011). However, as Chandler & Vargo (2011) suggest, value is always context related. In some cases, service platforms could be the integrative operand resource (Löfberg and Åkesson, 2018). Operant resources integration methods can vary, but the idea of why to integrate persists. The deeper customer

integration to value co-creation, the better chances are that firms serve customers better. With deeper integration, better chances are that customers are willing to buy firm value (Verma et al., 2012; Saradhi et al., 2017). Buying leads to the value-in-experience that value co-creation participants, FLEs or others, can participate actively. New value propositions may emerge from this value-in-use. This leads to an active cycle of value creation in which actors participate within the value-in-use context (Chen et al., 2012). But to achieve this cycle, the FLEs need to have skillsets and motivation to participate with the customer and with their service experience (Chen et al., 2012; Santos-Vijande et al., 2016)

Employee training usually focuses on either functional or relational (Plé, 2016). In this context, the operant resources might end up in a situation where they cannot supplement all knowledge in the value co-creation process. However, firms must dynamically adapt the operant resources towards the value co-creation process (Polese et al., 2017; Randall et al., 2011). However, due to the nature of the service context, more dynamic services should gradually promote FLEs adaption. The firms should understand that FLEs must adapt services to meet customer expectations (Saradhi et al., 2017). Dynamic adoption of the changing needs in context and through service offerings means that firms cannot stay put. The firms should empower the co-creation process actively. This empowerment could be achieved by reconfiguring the operant resources participating in the value co-creation process over time. (Edvardsson et al., 2011). When reconfiguration happens gradually, the FLE roles will also change to a stronger or weaker value co-creation role, which on the other hand, allows the FLEs to adjust their knowledge of the customer's value co-creation process. This adjustment could lead to better customer service. (Lindfelt and Törnroos, 2006; Saradhi et al., 2017; Santos-Vijande et al., 2016). In time, the customer could become active participation when the customer learns more about the offering and the customer has the tools to succeed (Melton and Hartline, 2015). This customer adaption could allow customers to reconfigure their needs within the value co-creation process (Löfberg and Åkesson, 2018).

There should be knowledge from the customer's everyday lives to understand the customer (Edvardsson et al., 2011; Barqawi et al., 2016). Considering SDL value co-creation context, value-in-use knowledge is not just about the needs. Value co-creation understanding is a broader context in which operant resources are embedded into different attributes (Edvardsson et al., 2011). According to Lusch and Nambisan (2015), operant resources are socially constructed intangible resources within value co-creation. Knowledge sharing occurs within value co-creation by operant resources. This sharing happens through two-way oper- and resource communications. (Edvardsson et al., 2011; Santos-Vijande et al., 2016; Tommasetti et al., 2017). On the other hand, social structures, through norms and guidelines, govern and rule two-way communications. Norms and guidelines may affect value co-creation (Edvardsson et al., 2011; Adamik and Nowicki, 2019; Jaakkola et al., 2015). For example, the firms should gather understanding from the organisational process and the customer's value-in-use context. This information may affect the value co-creation process (Ketonen-Oksi et al.,

2016; Chandler & Vargo, 2011; Edvardsson et al., 2011). This in-depth-information could be gathered, for example, alongside prototypes, from an iterative release model where the value co-creation stakeholders conduct discussion between value release process' (Long et al., 2017; Barqawi et al., 2016)

4   COMMUNICATION IN VALUE CO-CREATION

Previously it was discussed what is known of value co-creation characteristics in SDL. Information about FLEs, A2A, and A4A actor and their relations towards value co-creation was found. The findings next focus on communication with remarks towards a value co-creation process.

Knowledge can be shared by many roles participating in the value co-creation process (Lusch and Nambisan, 2015; Polese et al., 2017). However, the information should be put into operand resources, such as books or information sheets engagement, to make knowledge available to others in the customer value co-creation network (Breidbach & Brodie, 2017). Sharing the knowledge through operand and operant resources results in better communication as the understanding of value-in-use becomes more immediate to all stakeholders within the value co-creation network (Edvardsson et al., 2011; Breidbach & Brodie, 2017). Better communication and interaction also improve service and market success (Verma et al., 2012).

Not every role is willing or able to share knowledge (Chen et al., 2012). For this reason, the operant resources should identify the roles that initiate sharing value-in-use capabilities. For example, this role could be the one that Lusch and Nambisan (2015) conceptualise as an ideator. Of course, ideators are not a single source of truth to customers, but organisations should always consider how actors react to other's initiatives (Tuominen et al., 2020).

All the actors work simultaneously, and all stakeholder processes are coordinated jointly (Grönroos and Ravald, 2011). Within this context, communication can happen with the help of social media, services or other operant resources that allow the stakeholders to collaborate (Long et al., 2017). On the other hand, this collaborative process provides valuable information and constant contribution towards the process (Barqawi et al., 2016). On the other hand, this continuous process allows the customers to contribute towards the process and get the best service value, resulting in a better co-creation experience (Lusch and Nambisan, 2015). Moreover, this integration can be a constitutional part of any service provided. Through this integration, the customer becomes an active participant through customer contributions towards value co-creation (Gersch et al., 2011).

Value co-creation practitioners can actively or passively pursue tight customer relationships (Randall et al., 2011). However, it is noted that within co-creation models like A4A, the exchange of services is coupled with the actors' sensitivity (Polese et al., 2017). In this sense, relationships between the value co-creation participants must actively seek information regarding other actors involved. Thus, the actors should mostly be active participants in the value co-creation process (Edvardsson et al., 2011).

Relationships with customers need a dialogue between companies and customers. Companies should actively seek to create a customer dialogue with social media to respond to this. (Verma et al., 2012). Dialogue can happen via various stakeholders, like the innovator roles within the value co-creation process, but

dialogue should exist to understand the customer experiences (Verma et al., 2012; Lusch and Nambisan, 2015). For example, FLE's involvement within dialogue can increase the innovativeness of the value co-creation process. The process tends to happen within the value-in-use context. When dialogue occurs in this context, the better the FLE customer understanding. (Melton and Hartline, 2015; Verma et al., 2012).

No matter how many stakeholders are active in the value co-creation process, the dialogue between the stakeholders should always be democratic (Verma et al., 2012). All the members should have equal rights and means to discuss issues with each other, and no party should be a dominant participant within the value co-creation network (Verma et al., 2012; Fyrberg and Jüriado, 2009). In this sense, communication allows information not to get lost as organisational silos, in turn, are demolished (Rusthollkarhu et al., 2020).

Actors within the value co-creation network observe the reality of the services being exchanged in dyad manners (Polese et al., 2017; Chandler & Vargo, 2011). But on the other hand, this is in line with how teams should always ensure continuous communication (Barqawi et al., 2016). Moreover, as Gersch et al. (2011) point out, customer integration should be a fundamental part of value co-creation. Hence it could be seen that tight communication that happens in a reality of service exchange is a key part of communication in value co-creation.

Firms can act as facilitators in sponsored online communities. Within these communities, the firms are more a facilitator than active participants in value co-creation. (Priharsari et al., 2020). Figure 2 introduces the different communication aspects of value co-creation ecosystems, such as sponsored online communities.
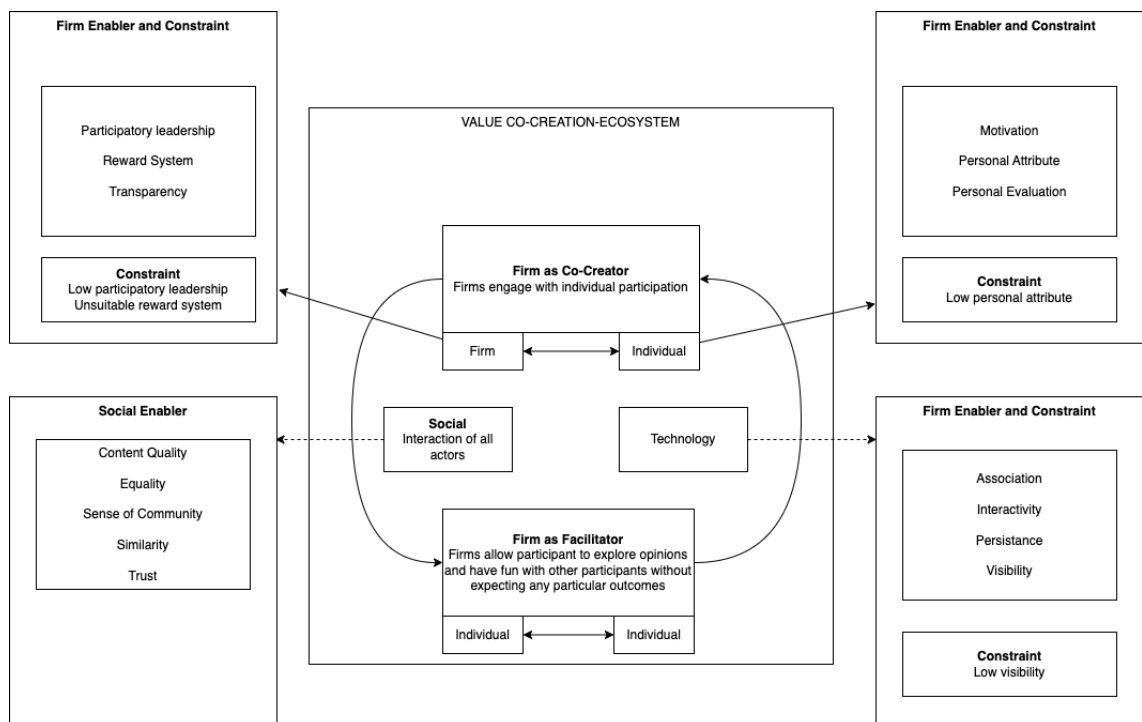

FIGURE 2 Value Co-Creation Ecosystem in Sponsored Online Communities (Accordingly to Priharsari et al., 2020)

Within value co-creation ecosystems, the customer is integrated towards value co-creation by providing benefits for all stakeholders (Priharsari et al., 2020; Polese et al., 2017). To understand the benefit, these stakeholders should, however, understand what principles the systems are working on top which they are (Gersch et al., 2011). By understanding what makes the benefit, firms can serve better value co-creation with customers (Priharsari et al., 2020).

Value co-creation happens through different attributes within sponsored online communities. First, firms act as an enabler and as a constraint. This means that the firms are more participatory leaders than active participants in value co-creation. Firms allow having a reward system in which the customers can have different monetary or other rewards in their actions towards value co-creation. Last, the firms offer transparency within sponsored online communities where customer, outcome and process transparency are done. However, firms can constrain the value co-creation ecosystem by not participating towards value co-creation or having included a reward system that is unsuitable for specific use. (Priharsari et al., 2020).

By enabling sponsored online communities, firms can have value towards value co-creation. Focusing on content quality, the usefulness of information is better. Moreover, providing a sense of community and equality improves the bond between the stakeholders. On the other hand, bonding is enriched by similarity and trust in which the stakeholders trust that they interact with their peers and share interests. (Priharsari et al., 2020).

Communication within co-creation ecosystems can be enabled by technology. Technology itself does not provide a value but what the users can do with it (Löfberg and Åkesson, 2018). By focusing on associating content and the stakeholders within the value co-creation ecosystem, providing interactivity between its users and having persistence and visibility, the technology can help the value co-creation. Furthermore, by not allowing the low visibility of technology not become an obstacle, the technology can be utilised to enable communication seamlessly within the value co-creation network. (Priharsari et al., 2020).

5 COMMUNICATION TOOLS FOR VALUE CO-CREA-TION

Previously, introduction to what is known about S-D logic in general and what is known in the communication context. Next, it is going to be introduced what was learned from tools in service-dominant logic and how they tie together with previous themes. Finally, a synthesis towards empirical study is made after the theme analyses.

Different actors in value co-creation have different needs and wishes for tools implemented as operant resources within value co-creation (Polese et al., 2017; Barqawi et al., 2016; Gersch et al., 2011). As Lusch and Nambisan (2015) have stated, there can be different roles to capture the value co-creation innovations, so the tools that exist as operant resources within the value co-creation network should promote the value co-creation experience of different roles (Gersch et al., 2011). Because the tools are technology in the end, it should be understood what as well these technological tools can do (Löfberg and Åkesson, 2018).

Technology can help to integrate customers towards the value co-creation process through Help Desk software and Live Chat features (Barqawi et al., 2016). Help Desk software, for example, can help firms understand customer needs and possible problems by enabling the customers directly interact with the customer (Barqawi et al., 2016). For this reason, the business process and possible IT infrastructures should consider the customer's expectations so that the customer can support the value co-creation process (Gersch et al., 2011). Furthermore, through the Help Desk and Live Chat features, a high level of customer involvement can be utilised within the value co-creation process, and thus the expectations should be more straightforward to be satisfied (Gersch et al., 2011; Barqawi et al., 2016; Melton and Hartline, 2015; Verma et al., 2012).

The tools are operant services a firm provides for customer use in a value co-creation context (Edvardsson et al., 2011). The services have characteristics that allow a specific unit of work to be completed intuitively and provide access towards intangible information and resources, operant resources and symmetric resources (Edvardsson et al., 2011; Breidbach & Bro-die, 2017). For example, from the SD-logic service systems (SDLSS) perspective, refer to table 7. As services can be represented by their modules, the service characteristics can utilise the model of SDLSS to implement the best possible unit of work model for value co-creation (Liu & Wang, 2010).

TABLE 7 Characteristics of SDLSS (Edvardsson et al., 2011)

Characteristic	Number of comments
Intangible	75
Operant resources	26
Symmetric information	16
Conversation	12
Value proposition	12

Service(s)   9

Companies should actively seek collaboration through tools that facilitate value co-creation (Merrilees, 2016). The collaborative tools can be enabled by Web 2.0 tools such as Help Desks and Live Chats, but there's a possibility to allow social media platforms and automated software agents to collaborate towards value co-creation (Long et al., 2017; Barqawi et al., 2016; Ketonen-Oksi et al., 2016). Within these Web 2.0-enabled platforms, the firm role adapts towards being a sponsor and a facilitator towards value co-creation rather than an active participant within it (Priharsari et al., 2020). Through the change, however, the company can enable tracking of events more easily and analysing the needs as Customer Resource Management (CRM) software allows to gather large amounts of data from social media platforms (Rusthollkarhu et al., 2020). This is on the alignment towards customer integration towards value co-creation. On the other hand, however, the methods are different. Customer integration can happen automatically through CRM and Web 2.0 platforms, allowing the firms to spend more time analysing customers' needs and hence getting a deeper customer integration through crowdsourcing (Lusch and Nambisan, 2015; Rusthollkarhu et al., 2020; Adamik and Nowicki, 2019).

Within the previous chapter, a service ecosystem for value co-creation was introduced by Priharsari et al. (2020). As service ecosystems can generate or constrain diverse forms of collaboration and service exchange within ecosystems, IT should be understood as a facilitator that looks closely at to process within the value co-creation (Lusch and Nambisan, 2015). Lusch and Nambisan have identified (2015) several themes that should be investigated within the IT field of SDL. For further information, see table 8.

TABLE 8 Key Themes in Service Innovation and the Research Implications for IT (Lusch and Nambisan, 2015)

Central Theme	Research Implications
Service Ecosystem	- What specific aspects or elements of the digital infrastructure would generate or constrain the diverse forms of collaboration and service exchange possible in the ecosystem (i.e., enhance structural flexibility)? - How can digital infrastructures enable (1) the dynamic construction and wide dissemination of and (2) searching for and identifying value propositions among diverse sets of actors in the service ecosystem (i.e., enhance structural integrity)? - What is the role of digital infrastructures in enabling a service ecosystem to become ambidextrous (i.e., in managing potential conflicts between structural flexibility and structural integrity)? - What characteristics of the digital infrastructure would facilitate the development of a shared worldview among the diverse participants or actors in a service ecosystem? - How should the digital infrastructure be architected so as to facilitate the easy incorporation of a dynamic set of rules of service exchange among actors (e.g., business processes and standards)? - In what ways can the digital infrastructure enable a wide range of value sharing forums to fit the nature and form of service ecosystems (and the diverse types of service exchanges)?
Service Platform	- In what ways can digital resources (components) be configured/developed so that they could assume an active or triggering (i.e., operant) role in service innovation? - How should the digitally enabled service platform be structured and positioned to enhance resource density and thereby maximize the opportunities for service innovation? - In what ways can IT support actors in searching for and bundling (mixing and matching) resources within and across service platforms? - How should a firm regulate or control the digital interface specifications of the various components (resources) to facilitate faster, economical, and effective resource integration? - What is the role of IT in implementing diverse and dynamic set of rules and protocols that help validate and verify structured and unstructured interactions between actors and resources through a service platform?
Value co-creation	- In what ways can IT support the different roles of beneficiaries in value co-creation—as ideator, as designer, and as intermediary? - How can online communities facilitate unconstrained knowledge recombination by beneficiaries (actors) in the service ecosystem? What technological/contextual characteristics mediate or moderate such a function by online communities? - What adaptations do actors need to make in their internal processes to facilitate value cocreation, and how do these processes/mechanisms interact with the digital infrastructure? - In what ways can IT enhance the transparency (role, process, and outcome) of value cocreation activities in a service ecosystem? How does the digital infrastructure interact with other strategies and practices to enhance such transparency?

Within this chapter, it was introduced what was known about tools that are used to co-create value. First, it was learned that there are specific tools and how they're used. Next, it was introduced how Web 2.0 technologies enable the integration of different stakeholders to value co-creation. Last, it was introduced which Service Ecosystem research implications exist within table 8. Next, a synthesis towards empirical study is made.

6 THEORY SYNTHESIS TO EMPIRICAL STUDY

This thesis research question is *"Which online communication tool characteristics promote customer value co-creation in service-dominant logic?"*. To approach the research question, a literature review was conducted to understand what is already known about the research question. The literature review was conducted as a systematic literature review where Scopus and ProQuest were used as search engines. The literature review resulted in 42 articles that were used for analysis. The analysis was done on the theme level using NVivo software, resulting in 483 code blocks spanning across value co-creation, communication, and tool themes.

First, SDL was introduced. In the literature review, the theme was understood to have its origins within marketing. However, IS-related research has been conducted (Lusch and Vargo, 2006; Lusch and Nambisan, 2015). There were implications on how SDL differentiates itself against other dominant logics, what characteristics SDL firms have, and how value-in-use is understood within SDL (Lusch and Vargo, 2006; Vargo and Lusch, 2004).

Next, the role of the customer and other actors was analysed. It was found that the customer is always a co-creator of value that creates value in use (Grönroos and Ravald, 2011; Lusch and Nambisan, 2015; Edvardsson et al., 2011). On top of the customer's role, it was introduced that there are different actor models, such as Front-Line-Employees (FLEs), Actor-to-Actor (A2A) and Actor-for-Actor models that distinct the roles between customer and firms (Polese et al., 2017; Akaka and Vargo, 2015; Lusch and Nambisan, 2015; Edvardsson et al., 2011; Vargo, 2011; Breidbach & Brodie, 2017).

On top of these models, it was learned that there could be different supportive roles within firms: innovators, designers, and intermediaries. These roles approach value co-creation and innovation from different perspectives, and thus they can be seen as roles that complement each other. However, these roles depend on how the services are exchanged and the type of resource integration achieved. (Lusch and Nambisan, 2015).

After the value co-creation communication theme within SDL was analysed, within this chapter, it was learned that communication by itself can mean interactions, knowledge sharing or any other kind of collaboration that different actors achieve. On the other hand, knowledge could be shared by different roles that participate in the value co-creation process (Lusch and Nambisan, 2015; Polese et al., 2017). On the other hand, it was learned that knowledge might not always be shared (Chen et al., 2012).

It was learned that communication should be versatile and democratic to promote innovation and value co-creation (Polese et al., 2017; Verma et al., 2012; Chandler & Vargo, 2011). To help this, the firms can enable service ecosystems via sponsored online communities, in which the firm roles adapt towards more facilitator roles than active participants of value co-creation (Priharsari et al., 2020). But no matter the technology, the participants should be integrated tightly towards value co-creation (Priharsari et al., 2020; Polese et al., 2017).

Tools were analysed as the last part of the literature review. Within this chapter, it was learned that technology could enable value co-creation through Help Desks and Live Chat features (Barqawi et al., 2016). They're always provided by the firms to the customer's value co-creation context in which the customer can complete a specific unit of work intuitively (Gersch et al., 2011; Edvardsson et al., 2011). For tools, it was learned that some characteristics have already been researched, as introduced in table 7. On the other hand, research implications exist on the service ecosystem view, such as in table 8.

Based on this thesis literature review, all themes have already been researched to some extent. In addition, the literature spans other themes than IS. However, the IS field is already presented. The literature review, however, showed that less is known about communication and tools, as seen in table 6.

Because of the shortcomings in the literature, it can be justified that the research question is valid and have implications towards creating new value for IS research field. For the empirical study, the literature review suggests that there are some starting points from which empirical analysis can be made. As the fundamentals of research are to make reasoned decisions, the empirical study focuses on conducting the study based on the findings in the literature review (Kakkuri-Knuutila and Heinlahti, 2006, s. 11–12.).

Within the empirical study, the focus will be made from a standpoint what are the characteristics of the Help Desk, Live Chat and sponsored online community tools. On top of this, the empirical study will focus on the different roles Lusch and Nambisan (2015) have introduced within their research. Lusch and Nambisan (2015) introduced implications for IT that will be used to formulate questions that allow more specific questions for interviews. See table 9 for its research implications by Lusch and Nambisan (2015).

7 Empirical research methodology

Because of findings within the literature review, a research methodology was selected to support the best possible output for analysing the characteristics of online tools in service-dominant value co-creation. Furthermore, case studies usually occur within the natural setting of the research context. Thus, a case study allows s better understanding of the phenomenon in everyday life and links the phenomenon within the causal chain (Benbasat et al., 1987; Conboy et al., 2012).

A descriptive case study allows right and revealing insights from a particular singular case (Yin, 2011, p. 79). Because the study context is built on top of a B2B company that works remotely and to capture all social scenes and interactions, a descriptive case study is selected for this study (Yin, 2011, p. 79). Furthermore, as this research is interested in value co-creation tools from the voices of all provider actors, the exact research method would be embedded single case study (Yin, 2011, p. 37-38)

On the other hand, a single case descriptive study is appropriate if the situation has been previously inaccessible to a scientific investigation (Yin, 2011, p. 79). Because of remote work shifts during 2020, scientific investigation has not yet been able to investigate a situation of this kind (Christie, 2020; Gartenberg, 2020; Lyons, 2020). For the reasons above, the methodology for the empirical study of this thesis is built on top single case descriptive study.

For the above reasons, the descriptive case study was selected for this study. Other research methods exist, but the descriptive case study based on the background information provides the best possible results as it matches the current situation, the pandemic, and the study context B2B company.

The previous chapters gave an overview of why a specific methodology for the empirical study was chosen. Next, it will be discussed in detail what benefits will be expected using this study. First, we drill down to the study selection within this thesis context. Second, the research method will be presented what data will be gathered through this thesis' expected study context. Thirdly, it is introduced how the data will be collected within this study. Lastly, an introduction to the case study B2B company is presented and how research ethics are considered.

7.1 Selection of study

For this study, the interviewees were recruited from a single company in which they represented different roles. Case company works within the information technology field and promotes customer value co-creation within their projects. Currently, the case company provides their services with Good-Dominant Logic, but the shift towards Service-Dominant Logic started a few years ago. Because of

this transition from GDL towards SDL, the case company was selected so that the thesis would create the most value.

The case study company, founded in 1999, aligns itself as a company that works within high-risk environments. These environments include public transportation customers and ATEX. ATEX is a European Union directive (European Union, 2014) that provides rules, guidelines, and information on how the zones with high risk for an explosion should be maintained and how the infrastructure should function within the environments (Tukes, n.a.). Because of these environments, the case company has identified that efficient customer communication is the key to ensuring that value is provided most efficiently.

One of the key aspects for value co-creation within the case company is the toolset they are using to provide value to the customer and with the customer. The transition from GDL towards SDL offers new ways of working with each other but also provides problems that occur when the toolsets are aligned more towards active value co-creation with the customer. Because the problems and opportunities can affect anyone within the small company, the case study company represents this case study aligned the interviews towards this problem.

The case company interviews were conducted for people that work or have other kinds of affiliations towards the company. The interviews represented a wide variety of backgrounds, and the daily operation responsibilities varied within the interviews. The case company interviews were coded as represented in table 11 by the places where the interviews occurred. For background information, the person was tagged as a Front-Line Employee (FLE) if the employee communication was active, meaning direct contact with customers at least several times a week. For a detailed description of how the case company interviews were conducted, see the Data Collection -chapter.

TABLE 9 Case Company Study interviews

Interview ID	Main operation	Work experience in company	Is Considered FLE
I1	Software Engineer	Employee for less than three years	Yes
I2	Head of Hardware Engineering	Employee for less than year	Yes
I3	Head of Customers	Employee for less than two years	Yes
I4	Upper Management	Employee for several years	Yes
I5	Upper Management	Shareholder for several years	No

Customer Point of view

Besides these case company representatives, the case company customer was interviewed. This interview consisted of a company that the case study company works with as a partner to provide solutions for commuting services. The interviewee has worked with the case study company for several years. The interview was coded similar way to the case company. More customer insights were tried to gather for this study; however, the other customers did not find the needed resources to participate. For this reason, the three targeted customer interviews

were cut by two, and only one was present and analysed for this study. Interview ID I6 is used in appropriate places for customer citations.

7.2   Research method

The study was conducted with qualitative semi-structured interviews. According to Drever (1995), semi-structured interviews are well-suited for small-scale research. This thesis can be considered a small scale as it consists of less than ten interviews. However, ten interviews were intended for this thesis' data set. The intended data set size was not met as not every person invited responded to the interview invitation. Because the data set is smaller than intended, there might not be saturation as it usually occurs around eleven to twelve participants (Guest, Bunce & Johnson, 2006).

The interviews were one-to-one, with much literature built around them (Hirsjärvi, Remes & Sajavaara, 2009, p. 210). Other methods do exist, but it is noted that the interviewee could be more comfortable with one-to-one interviews than with group sessions, as an example (Hirsjärvi et al., 2009, p. 210-211). The interviews as one-to-one also allow the researcher to ask for more information about a specific subject easily (Newcomer, Hatry & Wholey, 2015). Follow-ups later are also possible within one-to-one interviews when the semi-structured interview is used (Newcomer, Hatry & Wholey, 2015). Because of these reasons, the semi-structured interview was selected.

7.3   Data collection

The data was collected via theme interviews. Three interviews were conducted face-to-face, and three were done remotely. All the interviews were recorded for the transcription process, and all the interviewees gave permission to record. During the interview, the questions were aligned with the interview template provided. However, during the interview, follow-up questions were asked according to the interviewee's answers to a specific question. This granted a unique data set from the interviewees with the main themes present in all cases.

The interview was conducted as a semi-structured interview. This method was chosen, as Hirsjärvi and Hurme (2008, 48) point out this method allows the interviewer to keep the main themes the same across all the interviewees but ask follow-up questions that are more tailored to the interviewee responses. Furthermore, as the interviewees represented different fields of knowledge, these semi-structured interviews were reasoned with expectations that there might be different points of view. To understand the various aspects the interviewees represented, see table 9 for further information about the personnel and customers.

The interviews were conducted between June 2022 and October 2022. The interviews were phased into two different categories: the first category was about

the personnel working within the case study company. The second category was conducted later for a customer of the case study company. This grouping allowed the transcription process to start right after the first set of interviews was done and get the meaningful themes for further analysis. The latter group enriched the data with the customer's point of view to compare how the customer and employees view the research question, *"Which online communication tool characteristics promote customer value co-creation in service-dominant logic?"*.

7.4   Data Analysis

After the interviews, the raw phonetic data needed transcription. For this thesis, an Artificial Intelligence (AI) driven approach was selected to make the transcription process efficient and reliable. The efficiency was acquired by spending less time within the transcription process itself, as seen in [TX: Transcription times], and the reliability was due to factors of the process itself and time consumption.

The analysis started by converting the raw audio files to mp3 formats. These files were then uploaded to Azure Storage Containers, from where they were accessed by temporary links within Artificial Intelligence. The Artificial Intelligence used was Azure Cognitive Services, which enables real-time transcription from speech to text in Finnish (Microsoft, 2022). The actual workflow was a modified version of the Microsoft Cognitive Services Speech SDK sample. The AI transcribed with the Display method recognises the actual words, punctuation, and capitalisation. After the AI version, the exported version was again transcribed by the interviewer to correct mistakes in spelling and misunderstood words. Punctuation and other text semantics were left intact unless there was an absolute certainty that the transcription was completely wrong.
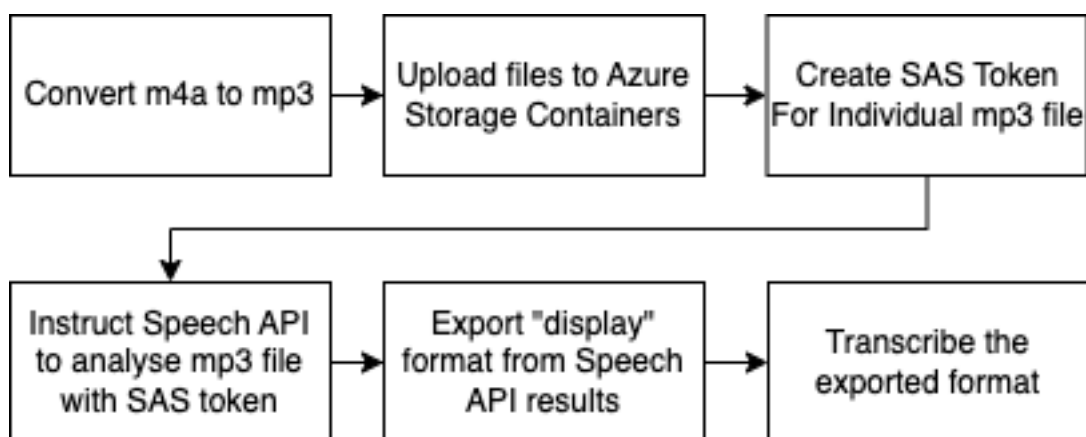

FIGURE 3 Speech API Process

The transcription times were captured at a minute level. This data itself provides little value to this thesis as there is no benchmark to what the transcription times would have been within this study as manual labour. This data, however, can be

used for further studies as an illustration of what the transcription times could be if AI was used to create the initial transcription. For factual data, see table 10. The times represented are rounded to the closest minute.

TABLE 10 Transcription times

Interview ID	Interview time	Time spent transcribing
I1	54 minutes	1 hour, 40 minutes
I2	1 hour, 2 minutes	2 hours, 10 minutes
I3	1 hour	1 hour, 30 minutes
I4	46 minutes	1 hour, 45 minutes
I5	36 minutes	1 hour, 5 minutes
I6	45 minutes	1 hour

The transcription resulted in 41 pages of transcription data for employee interviews. For the customer interview, six pages of transcription data were extracted. In total, there were 47 pages of data with 30815 words after the transcription. The pages and words have been calculated without paragraph breaks, with Calibri font and size 12 in Microsoft Word. This dataset was used for further thematic analysis.

Thematic analysis was chosen for the analysis method because thematic analysis grants "a method for systematically identifying, organising, and offering insight into patterns of meaning (themes) across a data set" (Braun and Clarke, 2012). Braun and Clarke (2006) discuss that the thematic analysis happens throughout the datasets, being the datasets constructed from specific interview groups or other methods. The nature of this thesis was to identify phenomena across the research question. Hence thematic analysis is the best option to get the best insights for this thesis. Other methods might exist, but because of constraints in this study resource and the study context-wise, thematic analysis is selected.

The analysis began with defining the sentences used for coding. Analysis tried to mitigate problems with simple words by utilising sentences instead of words. According to Elo and Kyngäs (2008), using only simple words might result in losing the context and hence causing inaccurate results within the analysis. In the beginning, the analysis started by taking the research question, *"Which online communication tool characteristics promote customer value co-creation in service-dominant logic?"*. After coding the material with the research question for relevant information, subsequent coding was conducted by iterating through the material. The data analysis resulted in a total of 180 relevant coding with several coding sentences used. For detailed information on the codes used and their impact on empirical study, see table 12. A breakdown of percentages per interview can be found in figure 4
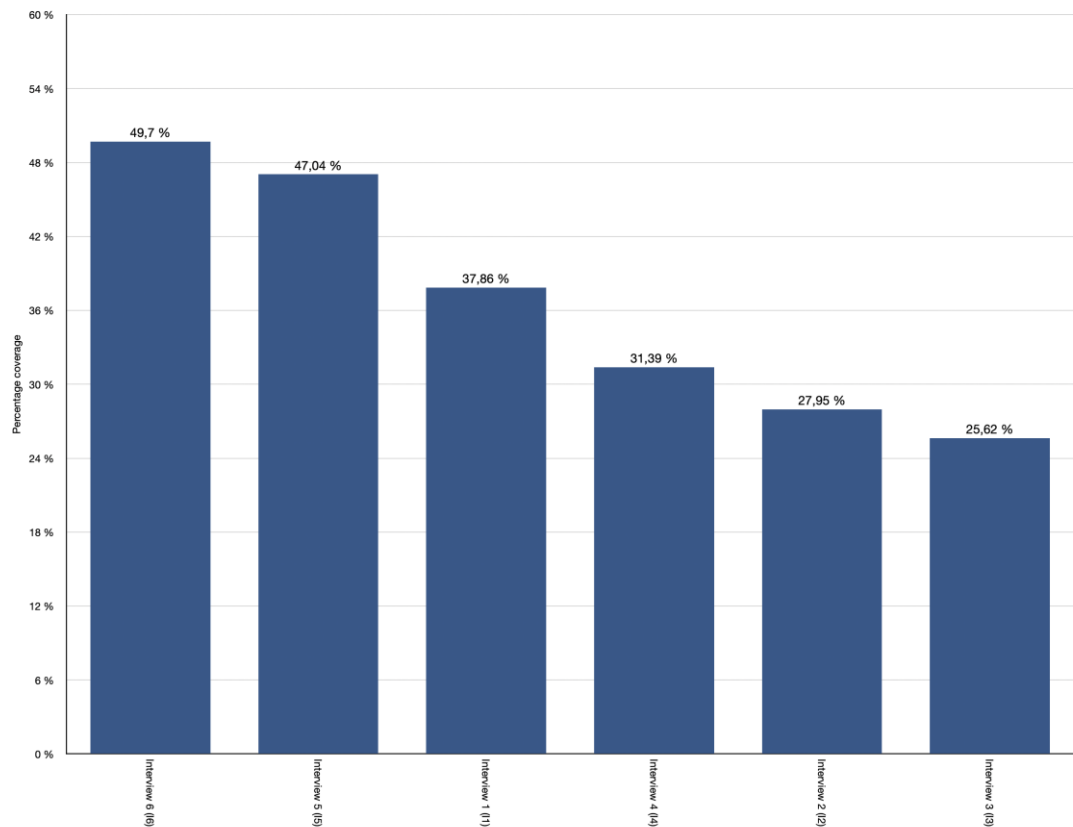
FIGURE 4 Percentage covered from first coding in material

After the initial coding based on the research question, the coded values were exported to a separate file. This file, in turn, was imported to NVivo again, and the sub-coding process began with this material. At this stage, the material was used as holistic material, and individual interviews were no longer present.

Coding the material introduced several sub-topics to answer the Research question. These sub-topics were sketched out by skimming the holistic material created before and then comparing the sub-topics to existing theory within the SLR. Based on the skimming, eight sub-topics were selected for further analysis. Within this stage, the material data could be coded to one or several sub-topics, whereas within the first stage, only the Research Question was used for coding. The sub-topics are listed in table 12 after the Research Question coding.

TABLE 11 Interview material coding

Coding sentence	Total number of times used in material
Which online communication tool characteristics promote customer value co-creation in service-dominant logic?	149
Characteristics of case study value co-creation	19
Characteristics of tools that provide value	42
Dialog between stakeholders	32
FLE contribution and expectations	22
Importance of real-time information in tools	13
Importance of trust in SDL and tools	15
Learning within stakeholder groups	13
Needs and characteristics of tool and dialogue structure	44

The customer interview was coded similarly to the case study employee interviews. First, the AI-transcribed version was corrected by hand. Second, the general coding was done under the topic *"Which online communication tool characteristics promote customer value co-creation in service-dominant logic?"*. After this initial coding, the sub-topics were used to match the customer interview with the case study employee interview. The percentage of material found from the interview was around 50 % total.

The customer interview resulted in some new information and provided insights for comparison. However, due to the nature of the interviewee position and the company, the actual findings revolved around dialogue and tools used. For more detailed information about the findings, see table 12.

TABLE 12 Customer interview material coding

Coding sentence	Total number of times used in material
Which online communication tool characteristics promote customer value co-creation in service-dominant logic?	31
Characteristics of case study value co-creation	4
Characteristics of tools that provide value	10
Dialog between stakeholders	5
FLE contribution and expectations	2
Importance of real-time information in tools	0
Importance of trust in SDL and tools	4
Learning within stakeholder groups	1
Needs and characteristics of tool and dialogue structure	1

Within this chapter, it was introduced how data was collected and how the data was analysed. First, the data collection method was introduced. Second, the transcription process was opened. Third, the data coding methods were introduced. Next, reliability and validity are considered and how these two essential aspects were considered during the empirical study.

7.5   Reliability, Validity and Ethics

Reliability and validity are typically used to measure the overall value of the research and the appropriateness of conclusions. Kaplan and Maxwell (2005) argue that due to the subjectivity and flexibility in qualitative methods, the reliability of the study is generally weaker than in quantitative methods, but the validity is often stronger. Kaplan and Maxwell (2005) continue that as the qualitative researcher is in close contact with the researched subjects and their attention is on the meanings and context, the researcher is less likely to overlook or exclude important information or ask wrong questions from the interviewees. They conclude by stating that the loss of reliability in qualitative research is counterbalanced by greater validity (Kaplan and Maxwell, 2005).

A fundamental goal for qualitative data analysis is an overall understanding of the studied topic. The data analysis is an iterative process, where after the initial understanding has been established, the analysis is constantly refined based on the researcher's interpretations, which in turn, causes the results of this study to be subjective by nature.

The reliability and validity were measured within this study because they should be investigated in every study (Metsämuuronen, 2006, 117). According to Kaplan and Maxwell (2005), reliability can be weaker within a qualitative study such as this thesis, but the validity can be stronger. Furthermore, Kaplan and Maxwell (2005) argue that because the researcher is closer to the interviewee and the interviewee's context, the less wrong questions might be asked of the interviewees. In contrast to Kaplan and Maxwell (2005), Tuomi and Sarajärvi (2009) argue that the researcher makes a subjective analysis of the data set. Hence, some things might be left untold (Burr, 2004).

Reliability means how trustworthy and scalable the study is (Hirsjärvi, Remes & Sarajärvi, 2009, 226). Because this study centres around one case study company and its customers, it can be argued that it is unreliable within other study contexts than the one selected for this study. Therefore, the results might differ when the research is conducted within different study contexts. To increase the reliability, this study has taken the following steps so that further research could be performed the same way, even though the results could vary.

Reliability methods taken

- The theoretical study is conducted as a systematic literature review to allow further research to find the same material selected for this study
- The steps how SLR was taken are well documented to allow further research to use the same steps
- The interview research questions are formed from the SLR, and the synthesis behind the questions and theory is documented
- The interview template is given as an appendix for further research to ask the same questions

- The analysis for interviews is documented and reasoned what key points resulted into which thematical analysis codes.

As Kaplan and Maxwell (2005) point out, reliability and validity are used to measure the appropriateness of the research conclusion. On the other hand, validity is measured by providing evidence that the research has studied the research problem specified. For validity, this research took some of the same actions as within reliability, but some additional steps were taken to determine how the validity is built into the research.

Validity methods taken

- Peer reviews were conducted where a study peer audited the theoretical part of the study and the research questions that were composed of the SLR
- The research question acted as a baseline for the interview analysis to find the information to the research questions at the first iteration of thematic analysis
- In between the interviews, a look interview was taken to earlier interviews through notes taken to ask if the earlier questions were valid and should be asked within the following interviews.

Even though the above methods have been taken, it should be carefully thought out what parts of this thesis should end up in follow-up research. The researchers should keep in mind that this is a single case study. Even though steps have been taken to provide more reliable and valid research for further use, the results from this thesis might not be usable within the following research.

Ethics were considered for this thesis, and several actions were taken. The university's information about personal information handling was used on the baseline. The sensitive data was kept to a minimum and only kept within the interviewee's introduction by design. Keeping the information about the interviewee as small as possible, the interviewee could be anonymised easily. On top of the anonymisation, the following measures were taken to ensure that interviewees knew how their data was handled all the time.

- The interviewee was always asked permission to use their data in a specific way
- The interviewee was always granted information about where their data was used and how it was used
- The interviewee was given information about what process was related to AI use
- The interviewee's raw data, including the recording, was kept only for a bare minimum time and destroyed after the return of this thesis
- The interviewee was sent information when their data was destroyed.

The above actions ensured that the interviewees felt as comfortable as possible about how their data was handled in this thesis. It could be that other steps would have been beneficial for this research, but the above steps ensured with the least effort that good research ethics are used. Further research should investigate additional methods to improve ethics within further research. Within this chapter, it was introduced how

- the case study company was selected
- what the case study company was
- how the empirical study was conducted
- how the material was transcribed
- how the transcribed material was analysed
- what reliability and validity methods were conducted before entering to results
- the ethics of this thesis.

Within the following chapters, the results of the empirical study are presented. First, an introduction to general-level findings is given. Next, the synthetic findings between SLR and empirical analysis are presented. Lastly, the answers to the research question are provided.

8 Findings

The empirical findings are introduced in this chapter. Firstly, the introduction to a case study value co-creation process is given. Secondly, it is represented what characteristics the tools have in interviewees' opinions. Thirdly, dialogue between the customer and case study company findings are presented.

After looking at the above topics, a deeper dive into the findings is made. Firstly, the importance of Front-Line-Employee in the case study company context is presented. Secondly, the real-time information sharing between the tools used is discussed. Thirdly, the importance of trust in Service-Dominant-Logic (SDL) in the context of the case study company is presented with evidence from interviewees.

All the topics within this chapter are enriched from the customer's point of view. For some chapters, the customer interview did not conclude any valuable insights. For those topics where valuable insights were found, the findings are represented under the *"Customer's point of view"* section at the end of the subject.

To conclude the findings, learning about the value providers and needs for the tools in the case study company context is represented before moving into the research question results. Finally, at the end of the findings, the interview data is wrapped up to provide evidence of what was found out about the research question, *"Which online communication tool characteristics promote customer value co-creation in service-dominant logic?"*.

8.1 Characteristics of case study value co-creation

According to Lusch and Vargo (2006), operant resources within Service-Dominant-Logic (SDL) can include resources and organisations from the customer. Within the case study company, there were notions that the customer does involve and creates value in the co-creation context within the daily business. Daily business, as an example, provided tools for customers to generate feedback for the case company through various methods.

> … quite much in the sense that we can get feedback from the customer environment on many different levels. The users give feedback to us, and we can communicate this feedback (I4)

> … for example, through CRM, we can capture customer value. For example, we gather the customer's wishes through it. (I4)

> I personally have not investigated it so in detail. Rather, I have given free hands to do, and I hope that every one of us has understood that there is the freedom to create customer-centric. (I4)

On the other hand, the case company adjusts its doings based on these feedback systems either automatically or systematically. This, on the other hand, was noted to come from within customers and not so much from the case company. This aligns with Edvardsson et al. (2011) notion about how the customer is understood by understanding the customer's daily life.

> The best providers are the ones who do proactive solutions for the customer and, on the other hand, create solutions in a way that the customer itself is happy about it. The customer, in the end, can make the acceptance and gets the outcome that measurably creates value for the customer (I5)

> …so, in the end, the satisfied customer is the thing that promotes the business as the customers do discuss with each other about things. (I5)

> One way or another, the ticketing links to their own development ideas and principles (I3)

Knowledge sharing, and the importance of knowledge sharing throughout the organisation, were understood to be a part of value co-creation. Therefore, operant resources discussed how knowledge sharing was done to gain more insight into how to create value with the customer. On the other end, this is in line with how sharing happens by operant resources bi-directionally (Edvardsson et al., 2011; Santos-Vijande et al., 2016; Tommasetti et al., 2017).

> Based on the feedback they provide; we can point our own process towards this need within the customer environment (I4)

> But our communication system could benefit from knowing what the customer uses. Perhaps some feature that works on one of the customers could work within another customer as well (I4)

> You should continuously provide the memory marks so that your current and potentially new customers remember you and you stay relevant to them. And it is something that you must repeat over and over again (I5)

8.2   Characteristics of tools that provide value

Different actors within value co-creation have different needs and wishes for tools (Polese et al., 2017; Barqawi et al., 2016; Gersch et al., 2011). This, on the other hand, was in alignment with the case study. Several different tools were used, and some of the tools were shared. Differences were made by the position the interviewee worked in.

> Well, for example, we could get something like Stack Overflow. It would be beneficial. Because if you think about how the system works, you could almost instantly find a solution that you are looking for potentially (I1)

> Fork work hour reporting we have our own system, but the problem is with integrating these different systems (I1)

> Simply put, you start from an email, and then you move on to the salaries and other costs, and how these systems integrate into each other is usually a problem (I2)

Some common tools that all the interviewees used were WhatsApp and email. Depending on the role, customer value co-creation happens on shared tools, such as the ticketing system. Value was also created by other tools, but these value co-creation uses were somewhat limited in some cases. For example, an automated process was used to gather customer feedback, but only one interviewee mentioned this during the interviews.

> Feedback-gathering automation, if you can put it that way, lacks a better term. But it is something that allows our customers to provide feedback within the site through a QR code whenever they have a problem in our system (I4)

On the other hand, this technology-enabled automation could be seen to integrate more into the value co-creation process (Barqawi et al., 2016). The integration within the case study company is not deep, however. In this sense, the opportunity to integrate the customers to value co-creation is not entirely seen through. On the other hand, the customer ticketing system was seen as a thing that worked; however, used in pair of HubSpot Customer Resource Manager (CRM).

> We have HubSpot in use for our needs, and I think it is very important. Any similar tool, for that matter,5 allows us to save contact information and find the customers easily and the previous conversation we have had with them. And the whole automation is something that is most relevant to us. (I3)

> Ticketing is something that works for us internally, and it is created by us. It is more of a notebook of what has been done on sites by IT or engineers. For example, IT can put tasks that are relevant to them there. Within the ticketing, we gather what has been done and how long it has taken us. (I3)

On the other hand, an interviewee reported that other tools could be used in conjunction with the existing HubSpot and ticketing system. This could indicate that the case study company is continuously looking into new ways to create value with the customer. The characteristics of the tools mentioned were in pair with the existing ones. However, they could provide more value through the "idea of professionalism."

> In a sense that the information is easily accessible, and you can audit the message chains. For example, you have a JIRA ticket or a service desk in use, and it all comes down to whether they work or not top-notch. For example, Salesforce has an extensive portfolio of tools to use here. (I5)

One of the interviewees mentioned the use of chatbots to create value. However, the bot was yet to be seen as an opportunity for the case study company. The

interviewee said the bot is a bit cold as a replacement for human interaction and hence was yet to be seen as part of value co-creation.

> So how you use a bot and how the bot answers depend on the usage. Quite often, you can get the answers you are looking for, but not sometimes you don't. (I3)

Based on the interviews, the case study company's characteristics for tools that provide value are

- information sharing automatisation
- asynchronous messaging
- shared knowledge base
- real-time understanding.

Customer's point of view

The customer did not report any tools other than the ticketing that was used as a tool actively used in value co-creation. Implications that the ticketing did function as a success factor were given, but on the other hand, also indications that ticketing did not work as a success factor within the value co-creation context. The customer interview did, however, give insights into real-time information sharing and its importance to the customer. The customer's daily activities could have been compromised when quick reactions were needed.

> Ok, so that ticketing ticket. It works well when there is something like a change in site, an increase in our assets, or something else. In those cases, it works quite well. But in other cases, it is too slow. Like in ad hoc problems within the site. (I6)

> Refuelling buses is something like working within a supermarket. There are many transactions, most of which happen by night. If the system goes out due to technical difficulties, we lose the bookkeeping on what was refuelled and where. So technical difficulties can impose quite a challenge on us (I6)

8.3   Dialogue between stakeholders

All companies need dialogue between providers and customers (Randall et al., 2011). For the case company, this dialogue could be seen, through the interviews, as a bi-directional in which both the customer and case company participated in dialogue actively. In a sense, this could have been seen as a democratic dialogue, a requirement for the value co-creation process (Verma et al., 2012). However, sometimes, within the tools used for a specific dialogue, interviewees reported that confusion happens from time to time.

> …or does the person always send the message to relevant shareholders, and you can get the solution from there. Sometimes you can get feedback on that solution, but sometimes you don't unless specifically asked for after the solution was provided. (I1)

> We do not quite often understand what the customer is saying and to whom (I2)

However, the dialogue was seen as open, and all the interviewees promoted open dialogue between the stakeholders. Most interviewees reported that openness, in general, was important in their opinion, which is also in favour of how theory aligns with how value co-creation should be done. This could be seen as a possibility for not ending up in silos that would cause communication to be lost (Rusthollkarhu et al., 2020).

> Personally, I do not see any kind of silos building up (I4)

> Listening to customers continuously helps to build more dialogue (I1)

> Honesty and openness are something that promotes the dialogue. Sometimes you cannot discuss everything, but something more productive is better. (I3)

Problems were seen as well. In some cases, the interviewees reported that they had not been a part of the value-creation process from the beginning. This caused, by the interviewees, confusion between expectations and realities in the specific value creation process. In this sense, value co-creation did not always end up with active participation from the customer side. Vargo and Lusch (2004) report that the customer's role must be to co-create value with a service provider.

> In the very planning phase, through the implementation and up until the point when the work is given to the customer, you must have an understanding of how the work and the communication will be done. Personally, I have not yet been here within the planning phase; thus, the communication building has provided a lot of work that I must do. (I2)

Front-Line-Employee (FLE) was seen as an important part of the dialogue between the stakeholders within problematic situations or others. FLE involvement was seen as a holistic possibility to capture value with the customer and to provide discussion to the customer when needed. The interviewees that reported FLE properties reported direct involvement with the customer, which is the provider's responsibility (Melton and Hartline, 2015; Verma et al., 2012).

> When you go with a mentality that you do not cover up your mistakes, and you do with the customer and always look to improve things within communication is the key element to work. Of course, one must be sensitive to whom to put on the customer interface because you cannot put anyone in that position (I5)

> In my opinion, the person who is doing the installations on site is the interface to the customer's representative of the site managers. Thus, the engineers can learn from the site managers while doing their jobs (I2)

> For example, if the team communicates to the customer, it just doesn't make sense. You must have a dedicated person who communicates from one point of origin and is socially ready to understand the situation at any given time (I5)

Holistically, the case study value co-creation process could be seen as a mechanism that promotes the theory found. Firstly, the case study company works with an open dialogue mindset with other stakeholders. Secondly, the case study company identifies that the Front-Line Employees play an essential role in the dialogue. Lastly, the case study company actively identifies and improves its value co-creation process, which is the key element to value co-creation to respond to market changes (Santos-Vijande et al., 2016).

Customer's point of view

Dialogue between the stakeholders should be informative and precise from the customer's point of view. From the customer's point of view, these characteristics within communication result in clear outcomes. This precision, on the other hand, results in better-suited offerings through the offerings.

> A product or service must have structure and, in a sense, meet our needs (I6)

> The first thing is that the price is correct for either the product or the service. This contrasts with what value the system brings to us. Secondly, I think that the total price is relevant to us so that it meets the budgeted price and it does not go over the specified budget. You start with specific specs, and then you go over the price and schedule, and we did not get what we asked for. (I6)

8.4 FLE contribution and expectations

FLE participation in value co-creation can be seen to respond to market changes (Santos-Vijande et al., 2016). For the case study company, FLE involvement was mainly responsive and a way to improve market offerings. However, notions about the reactiveness of offerings were seen as a possibility within the interviews.

> Well, if we discuss a customer having a problem, I think it is more of a culture and personnel-related issue if the thing can be resolved proactively (I1)

On the other hand, the caveats of not responding to customer contributions were seen as a problem. As operand resources are a way to obtain support towards the tangible operant resources (Lusch and Nambisan, 2015; Edvardsson et al., 2011), the inaccessibility to case study company's FLE could neglect value co-creation. This was significant fear in the interview data.

> You don't, for example, answer customer calls for an extensive period. It gives quite a bad image and does not improve your image as trustworthy in the eyes of the customer. (I3)

FLE was not seen as just one person in the case study company. FLE could have been the customer support employee, the CEO, or any other person in the field. As Lusch and Vargo (2006) and Edvardsson et al. (2011) point out, the operant

resources can be employees and organisations, but they all share a common social construct. The interviewees reported several examples of how FLE can be, for example, the engineer or other stakeholder who provides value within value co-creation.

> For example, when I worked for another company: Even the company's employee, who handled deliveries, was somewhat of a salesperson on-site as he represented our company through the employee. (I2)

Customer's point of view

The customer's point of view differentiates from the case study interviews. From the customer's point of view, the best possible FLE could be the person who understands the problem they are trying to solve. On the other hand, the customer did report that a dedicated person to contact is sometimes valuable to the customer.

> Well, in my opinion, it is good that you know whom to contact (I6)

> Depending on how deep knowledge the person has, on the other hand. If the dedicated person is more of a messenger, it might not help us at all. But it depends on the end what we are asking. With critical things, it can come to a problem; with less important things, not so much. The problems arise especially within the ad-hoc situations in sites. But I think the dedicated person would like to do something else at night than answering the phone. (I6)

8.5 Importance of real-time information in tools

A key theme in service innovation and research implications introduced by Lusch and Nambisan (2015) discussed how IT could enhance the transparency of value co-creation activities in a service ecosystem. From within the interviews, interesting facts were gathered, some of which fall under real-time information sharing within the tools. However, the tools were found to be most reluctant in cases where they provided this instant and transparent value creation.

> Like software updates, we keep the customer within the loop of how they are done and how they affect things all the way through. And in other things as well, like providing the message that something was done by the bare minimum (I1)

> In the example, we can see in real-time where we are at with the maintenance work (I4)

The value of this was not, however, within the value co-creation but was more aligned towards the case study organisation management. Within the management, it was seen as a value that reports were available to know where each of the tasks is in.

So, we can gather in real-time as well how the work was done from the customer's perspective (I4)

I follow the business's key values, but on the operative side, it is as important that we follow JIRA tickets and their pass-through times in almost real time. (I5)

8.6 Importance of trust in SDL and tools

For the case study company, trust was the key element when working with the customer. Trust came from the real-time information within the tools, but other examples were given. Generally, these examples consisted more of single-sided value creation rather than multi-sided value co-creation.

The customer trusts us more, and they feel like we do things, and they always have someone to contact. Provides us with more deals in the future (I1)

Getting things done increases customer's trust in us (I3)

So, trust is an essential thing within our field. But it is something that we must cater for the customer all the time. (I2)

Open dialogue, and processes that promote open dialogue, were seen to improve trust. Especially when working with problematic situations, this open dialogue improved trust between the customer and the provider through democratic manners. Democratic communication between the stakeholders is a fundamental part of value Co-creation, according to Verma et al. (2012), and this fundamental issue should always be multisided. Within the interviews, the interviewees who worked more closely within the customer front line reported more democratic communications between the case company and the customers.

Of course, there are bots and other chat tools to communicate with the customer, but in my personal experience, trust is built from caring and being a human on the other end. (I3)

I would say that open dialogue promotes trust. Open dialogue and, if problems arise, being honest about them (I5)

Trust is related to the customer experience and how your company looks in the customer's eyes—for example, reducing the pass-through times and being able to adapt. Like if your customer contact point ends up in an accident, you have a replacement for the person and promote trust in the eyes of the customer.

Customer's point of view
From the customer's point of view, trust is an essential part of value co-creation. In the customer's opinion, trust comes from the outcomes of the specific projects.

Therefore, these projects and ongoing services should function as smoothly as possible after a project is done.

> Able to perform consistently. The system or service or the product. If something goes wrong, you have an action plan. On the other hand, you have the possibility to modify the offerings and can develop the solutions if like your needs change (I6)

> Lately [Case study company] has moved on to more process orientated and I think it is a good thing because earlier, it has been more of putting out of fires and very person dependant. Often someone has fixed things, but nothing was discussed on our end about it, and sometimes it was confusing if the fix did fix the issue. (I6)

8.7   Learning within stakeholder group

Customer needs adapt at any given time, and hence on top of open dialogue, the firms should be able to adapt the operant resources to value co-creation dynamically (Polese et al., 2017, Randal et al., 2011). For the case study company, when asked how they adapt learning with the customer, the interviewees reported one-sided value creation rather than two-sided value creation with the customer. In addition, the learning impacts were primarily measured through manuals, which could have been outdated.

> Quite different manuals are provided by the customer and us, but I don't know if we have touched them in ages or has customer touched them. (I1)

> We have new instructions on what and how the documents should gather (I1)

Some improvement examples were given, however. Those more practically involved within the value co-creation context reported that several case study company educations were in plans. However, none of the interviewees reported those educational steps to proceed to the value co-creation context.

> We could create training packages for our simulation environment in the office. We could create educational content for it and allow, in theory, anyone to install the same kind of device within sites. Those contents could be within Microsoft Teams in a directory or elsewhere. (I2)

> The customer learns from our system new things, but I don't think they update this learning anywhere. If they did, we could work more efficiently, in my opinion. (I1)

On top of the educational content, some interviewees reported that company culture aligns or should align more with continuous learning. This, in time, could improve customer participation in the value co-creation process as more of the tools required to learn are provided (Melton and Hartline, 2015). On the other hand, providing the tools to succeed could improve the value co-creation process

as both FLE and customers would become more involved in the value co-creation process (Santos-Vijande et al., 2016).

> The culture must be something that creates a drive to learn from critical thinking and to adapt own process. Constantly evolving the process systematically through learning from the customer is a key point (I5)

> We are getting more routine to documentation and thus promoting the culture now (I1)

8.8 Needs and characteristics of tool and dialogue structure

Tools in the value co-creation context should promote the experience of different roles within the value co-creation context (Gersch et al., 2011). For the interviewees, the different roles resulted in characteristics within both structures and how the tools could be utilised. In addition, several unique needs for the tools were also presented, which could promote the value co-creation context in the future.

For lacking needs within current offerings, lack of structure was raised several times within the interviews. The structure could have been either in the process or the tool itself, but the lack of structure was the common ground. The lack of structure caused different problems within the daily activities.

> An unstructured problem can be anything. Customers can put anything to their message, and we must interpret it to find a solution. And on top of that, we must use the time to organise our own doing. Who does what? (I1)

> In emails, you give the turn to speak to someone after yours, but it might not work, and someone else takes the stage. On the phone, this happens more often. (I1)

> Quite often, we get emails that are pointed to several different stakeholders. Afterwards, we must discuss the email at the office and organise our doings. Sometimes the email might require a huger meeting, and sometimes we do ad-hoc meetings. So takes a lot to understand what was discussed. (I3)

Even though the lack of structure was mentioned, there were several indications that tools now provide some structure for the value-creation process. These tools consisted of in-house created tools and external parties' tools. In both cases, there were implications that real-time information sharing was found within the tools.

> When we add this to our ticketing, it is documented, and we can follow it. We find it there. Quite often, we find the thing fast. (I3)

> GitHub leaves documentation all the time and within different stages of work that was done. It has a process that allows this. (I1)

> When the ticket is under work, we can get structured messages to different stakeholders in different stages. So we can notify the customer that we have done the thing in time. (I4)

The structure did not limit to the tools themselves. For example, some interviewees reported that FLEs are utilised to capture value creation within context. For the value capturing, also ISO-9001 process was mentioned as a process in which the value could be captured.

> We have only one dedicated person to handle the support tickets, and the process always follows through the person (I1)

> Like ISO-9001, we have a simple structure that allows doing the work within the same process. And, of course, on top of the standard, we have the related helps and manuals listed there to allow us to work with the process. (I2)

For concrete examples, the interviewees reported features that should exist within the tools to create structure into value co-creation. For example, the questions asked should be identifiable to a single person who should answer the question. This categorisation was identified as a key theme within the daily activities.

> I think it is often left out who should answer those emails in the end. Perhaps they intended it that way, but, in my opinion, it is not efficient communication. But categorising the messages could help that. Is this related to IT, HR, or some other part (I1)

> Categorising by directory. So, it would always be clear that it is there and those are things you need (I2)

Customer's point of view

From the customer's point of view, the structure affects all the stages of value co-creation. First, the offering should follow a structured timeline and specifications for the wished outcome. Secondly, there should be information promoted from the case study company to the customer throughout the project. Thirdly, the structure should hold events where stakeholders gather and discuss the issues.

> The product of service must have structure and, in a sense, meet our needs, and it requires that we have gone through the offering and determine what will be done precisely. Before creating a proposition or a contract. (I6)

> The structure needs schedules and precise information about what will be done. Budget and money are important as well (I6)

> …at some point, we had a monthly meeting where we could go through feedback orally and in structured ways. I haven't had them in a few years now (I6).

8.9 Empirical conclusions

Within this chapter, the interview results were presented. Firstly, it was discussed what findings for value co-creation context were found within the case study company. Secondly, the tool characteristics were presented from the interviews. Thirdly, the Dialog characteristics within the value co-creation context were introduced.

After presenting a basic idea of the value co-creation context, a deeper dive into data was done. Firstly, A look at learning and real-time information within the context was introduced. Secondly, trust was introduced from the data and its importance within this value co-creation context. Lastly, the needs and wishes for the case value co-creation context were presented.

Within the next chapter, the analysis based on the empirical and theoretical findings is conducted. These conclusions use practical and theoretical data to find answers to the research question, *"Which online communication tool characteristics promote customer value co-creation in service-dominant logic?"*.

9   DISCUSSION

Previously, the interview findings were represented. In this chapter, further analysis is based on the research findings from this study's empirical and theoretical parts. Firstly, the research question is addressed based on the results. Secondly, the theoretical implications of this study are presented. Thirdly, practical implications are presented as a conclusion to this chapter before moving to the thesis conclusions.

9.1   Addressing Research Question

This thesis tried to find implications for online tool characteristics that provide value in co-creation. The study was conducted within an IT company that works as a mechanical and software maintainer through its nationwide offerings. The customer's point of view was used on top of the case study company's point of view to find insights into the research question: *"Which online communication tool characteristics promote customer value co-creation in service-dominant logic?"*.

To build a base ground where the interviews should be conducted, a systematic literature review was conducted. This SLR resulted in three main topics from which the empirical part interview questions were composed. In combination with these two parts, practical and theoretical, the following findings are presented.

9.1.1 A trust might be a key factor

From the customer's point of view, the offerings that the case study company provides in value co-creation are mission-critical to them. As the customer stated, if something goes wrong with the offerings, their own business suffers greatly. Therefore, for mission-critical environments such as the customer's, it might be relevant for the tools within the provider's environment to enable trust.

As Randall et al. (2011) have stated, companies need dialogue with each other. One interesting finding was made regarding trust within this study context. Even though dialogue exists between the customer and the provider, there might be some confusion. For example, as I1 stated, the provider might not always understand what the customer says regarding a specific matter. On the other hand, the customer did not seem to benefit from the provider's ticketing system, as it was sometimes seen as slow. But, from the provider's perspective stated by I3, the ticketing seemed like real-time information about the state of maintenance and other works. In this sense, where the customer sees providers process the opposite ways in some cases, the dialogue might not be fully present within the value co-creation context.

Several operant resources, such as service offerings, can promote collaboration and communication (Long et al., 2017). However, an interesting finding was made regarding how the tools are seen and felt within the customer's context and the providers. Both customer and provider did have a common ground only on email, phone, and ticketing systems. However, neither stakeholder promoted any knowledge base that was commonly used, nothing was mentioned from the software development aspect as a common ground, nor did neither stakeholder representative mentions the real-time situation awareness case study company provides. Thus, in this context, it might be that there would be no common ground where trust could be promoted.

According to Verma et al. (2012), communication and open dialogue can improve trust between the stakeholders. Based on the research, the case study company does not seem to promote communication extensively through operant resources. There was evidence that FLEs, the operand resources, are used actively, and their tools enable the trust to some extent. These common tools were the phone and email from both customer's and the provider's point of view. However, the trust and open dialogue did not use online sponsored communities, such as Stack Overflow, shared knowledge base, and other tools that could promote trust through open dialogue and bi-directional knowledge sharing.

9.1.2 A structure might be needed for tools.

Both customer and the provider saw structure as a part of the value co-creation context. Some of the structure came from the process mentioned by I1, and some came from the tools used, as mentioned by I2. However, within the context of value co-creation, social structures, through norms and guidelines, govern the process (Edvardsson et al., 2011; Adamik and Nowicki, 2019; Jaakkola et al., 2015).

Even though results implicate that the structures are wished and existent to some extent, implications that social structures do not exist were found within the material. Several interviews, such as I1, I2 and I3, reported that often there could be confusion about who and how the communication should be established. This is an interesting finding because of the context where the value co-creation occurs. Firstly, there is an ISO-9000 process' that could implement the structure of norms and governance. Secondly, there are only a few tools used currently for open dialogue, none of which seem to have a structure in how they are used. Thirdly, email and other tools used in context are seen as good tools, but still, they seem to create confusion in the value co-creation context.

Concrete examples of what the tool should have to fulfil the value co-creation in context were given. One of the most frequently raised features was categorisation to structure. For example, categorisation was raised by I3 to give information about what was missing from the current tools the interviewee was using. The interviewee saw that within the context he uses the email, the structure by categorisation is a key missing feature that should be existent to the interviewee for better results.

9.1.3 FLE contribution could become a key factor

FLE can integrate customers into a proactive value co-creation process (Polese et al., 2017). Within interviews, the role of the FLEs was understood as an important part of the value co-creation context, in which FLEs tried to integrate the customers towards the company's offerings. In some cases, the FLE was built on top of a single source, which the customer did not see as the best solution. Considering the FLE role in the value co-creation context, the tools should enable the FLE's work most efficiently to integrate the customers into the value co-creation context.

An interesting finding was that the interviewed FLEs reported that customers report the value in context, but how value is captured varies case by case. In some cases, the value was captured through ticketing software, which was used for situations where problems occurred. In other cases, on-site QR code-enabled surveys captured the customer value-in-use. These data were integrated with HubSpot software to collect and save the data from all these sources. Considering the characteristics of online tools, this gives information that there can be several different types of tools in place (Help Desk, Ticketing). Still, they should be able to capture the value-in-use within the actual context the value is created in. This aligns with the theory that promotes fast methods for capturing value-in-use (Grönroos and Ravald, 2011; Lusch and Nambisan, 2015; Tran and Park, 2015).

9.1.4 Real-time could be needed.

From the customer's point of view, reactive value co-creation within this context would be beneficial, as it would both promote the customer's process flow and enable trust. On the other hand, the case study company has taken several actions to ensure that the value-in-use is captured as quickly as possible.

An interesting finding was made about what real-time offerings meant to different stakeholders. First, for FLEs, real-time information sharing is based on the reporting capabilities of what is happening. Secondly, the customer's point of view meant real-time information sharing of what will be done next proactively. Thirdly, for everyone jointly, real-time information sharing is about knowledge sharing. Therefore, real-time is needed and should promote open communication that allows all the stakeholders to see what will be done, what was done, and what will be planned next.

9.2   Theoretical implications

This thesis, built on top of online tools within SDL, contributes to understanding the online tool characteristics within a unique value co-creation context. Implications towards how different stakeholders within the value co-creation context use various tools to provide value to the context and how that context is seen from the customer's point of view.

There is a research gap within this thesis that has been identified. Because this thesis was done for a unique case of value co-creation context, different attributes are not considered. Firstly, this thesis is done in a context where the single case study company creates mechanical and software services. Thus, the thesis does not consider what the results would be in a company focused on only a single line of offerings. Secondly, the characteristics of both the customer's and the provider's views are different from those that could be within, for example, more prominent companies. Thirdly, several aspects found in the literature were absent within the research. For example, neither customer nor the provider did use Help Desks nor life chats that could enable value co-creation (Barqawi et al., 2016).

This thesis implies that the tools are provided to the customer's value-in-use context (Gersch et al., 2011; Edvardsson et al., 2011). The provider, in our case, had given tools for the customer to access and enable the value co-creation process through ticketing software, which the customer did see as beneficial in some cases. However, for other uses, such as internal customers within divisions, the tools used were very different: internal customers prefer GitHub as a tool rather than ticketing.

9.3   Practical implications

Based on this thesis, three practical implications are made. These implications provide future studies and the companies actively seeking ways to improve value co-creation through online tools within a new value-in-use context.

Implication 1: Online tools should promote trust through open dialogue
The online tools should have characteristics that give tools for FLEs to promote open dialogue and trust. Because trust was seen throughout the interviews as an important aspect of value co-creation, the tools should allow for gaining that trust. On the other hand, trust can be granted by the holistic views of what will be done next, what has been before and how different elements in the value co-creation context are considered proactively.

Implication 2: Online tool must provide structure for FLE
The online tool should give FLEs a structure so that the value co-creation could be easier to manage, leave less change to confusing elements, and provide structure for saving and sharing the structured data. The most common downfall the interviews presented was that the structure was missing in some of the tools and processes used within the current value co-creation context. This study implies that the characteristics of online tools within Service Dominant Logic should allow the structure to be present but leave flexibility to how the value-in-use is captured.

Implication 3: Information sharing in real-time
Stakeholders have different needs for the tools used in the value co-creation context. Hence the information should be shared in real-time through the selected tools. The tools could be catered to within the value-in-use context but still share the information through active programming interfaces or by other means with each other. By using these types of sharing between the online tools, the reporting capabilities could be done for several different sources to FLEs but still serve the customer's view from their preferred selection of tools.

Within this chapter, it was introduced what was analysed based on the interview results. First, it was introduced how the research question was addressed. Secondly, the analysis was presented, and key aspects of the findings were given. Thirdly, Implications towards the existing research and practical aspects were given. Finally, the conclusion of this thesis is made in the next chapter.

10 CONCLUSIONS

This thesis tried to identify the characteristics of online tools that promote value co-creation. To address this, a research question was presented *"Which online communication tool characteristics promote customer value co-creation in service-dominant logic?"*. Based on this research question, a systematic literature review was conducted alongside case study interviews.

For the systematic literature review, and thus, most of the theoretical implications of this study, Service-Dominant Logic was used by Vargo and Lusch (2004), Akaka and Vargo (2015), Lusch and Nambisan (2015), Grönroos and Ravald (2011), Verma et al. (2012). Service-Dominant logic literature, on the other hand, was enriched with existing theories from both communication and online tools. These enrichments are based on the work by Randal et al. (2011), Gersch et al. (2011), Edvardsson et al. (2011) and Polese et al. (2017). Several other theories were used within the systematic literature review, but most of the theories came from the work of the above authors.

Based on the theory, a road to empirical study was made. The practical research method was chosen based on the theory and the case study in which the empirical part of this thesis would be conducted. For saturation, a target number of interviews was set (n=10). However, the practical part resulted in fewer interviews (n=6) due to external factors. For the interviews, the questions were composed based on the theory.

10.1 Limitations

This thesis does come with its limitations. Firstly, some similar studies resulted in more interviews than this. Where, as an example, the study (Peffers et al., 2003) used 30 interviews as a data set, this study uses only 6. Secondly, this thesis revolved around a single company and its customers. Thirdly, the interviewees represented several different stakeholders of a single company.

Because the data set (n=6) is quite limited, it might not represent a holistic view of the research question within the single case study. The personnel within the company are well represented (33%). However, the customer's point of view is mainly unrepresented (< 20 %).

Because this thesis revolves around a single company and its customers, it has limitations. As the nature of the company might be unique, and no similar case company could be found, some of these results might not apply to another company. For other companies, the results might differ due to company size, customer characteristics, the industry the case company works in, and where the focus group for interviews is.

Because the company is a small business comprising around 15 personnel at a given time, the percentage of employee involvement was high (33%), but it

also presented different departments. Therefore, focusing only on one department would have given different results than those shown here.

10.2 Future research

This thesis suggests that there is space for future research. Firstly, due to a single case study research, future research should find more generalisable results through multi-case studies. Secondly, future research could find the results within the actual value-in-use context through observations and other methods. Thirdly, the tools could be pinpointed which to find the characteristics.

Multi-case studies could provide insights from similar value co-creation contexts but lead to better generalisation. This thesis presented only a small number of views, most of which were given by FLEs. Providing information through different roles, with enough quantity, how the online tool characteristic needs would act could be found. For example, Lusch and Nambisan (2015) discuss ideator, designer and intermediary roles and their role within the value co-creation context. Absent in this thesis, these roles could be dived into in future research. This would allow finding how online tool characteristics' opinions differ from this thesis' results.

Because firms should capture value within value-in-use as fast as possible (Grönroos and Ravald, 2011; Lusch and Nambisan, 2015; Tran and Park, 2015), future research could investigate the value co-creation context through observations. This thesis limits the views from the value-in-use context in a way where FLEs might not have access to everyday activities. For this reason, it could be looked at how the value in use is now captured efficiently in another value co-creation context.

Future research could pinpoint the tools to include for research. This thesis did not limit what tools were used; hence, the empirical study resulted in a holistic view of the tools actively used. Narrowing down, for example, ticketing systems could provide valuable research on which characteristics in specific tools suit fast value-in-use capturing and which aspects do not.

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APPENDIX 1: SLR SEARCH CRITERIA USED

These examples are retrieved from Scopus. The time they were used, and the number of results given. For example, the inclusion of articles based on the published year is given.

Before inclusions

Search criteria	Results

(
 	
  (TITLE-ABS-KEY (co-creation) AND TITLE-ABS-KEY(Service-dominant))
  OR   (TITLE-ABS-KEY(communication)   AND   TITLE-ABS-KEY(tool))
  OR (TITLE-ABS-KEY (co-creation) AND TITLE-ABS-KEY(Service-dominant) AND TITLE-ABS-KEY(tool))
)
 	
 AND (LIMIT-TO(SUBJAREA,"BUSI"))
 AND (LIMIT-TO (SRCTYPE , "j") OR LIMIT-TO (SRCTYPE , "p"))
	6336

After inclusions

Search criteria	Results

|(
 	
  (TITLE-ABS-KEY (co-creation) AND TITLE-ABS-KEY(Service-dominant))
  OR   (TITLE-ABS-KEY(communication)   AND   TITLE-ABS-KEY(tool))
  OR (TITLE-ABS-KEY (co-creation) AND TITLE-ABS-KEY(Service-dominant) AND TITLE-ABS-KEY(tool))
)
 	
 AND (LIMIT-TO(SUBJAREA,"BUSI")) AND (LIMIT-TO (LANGUAGE , "English"))
 AND (LIMIT-TO (SRCTYPE , "j") OR LIMIT-TO (SRCTYPE , "p"))
 	
 AND PUBYEAR > 2004
 AND PUBYEAR < 2021
	5142

APPENDIX 2: INTERVIEW TEMPLATE

Interview Template

Before the interview make sure that

- You've shared the questions to be asked
- You've noted that the interview is semi-structured : The questions in the interviews are not taken as granted, more can arise
- Ask the respondents to sign the contract of how the interviews will be done; This should be asked as well at the beginning of interview
- You've shared the PPTX / Other presentation that'll wrap key concepts like FLE roles, SDL and so forth
- Make sure that the interviews stay within time limit of 50 minutes, keep extra 10 minutes for follow up questions (so 60 min in total). The times can be different
- Prepare laddering "Why" questions if there are possibilities based on the previous interviews

Background

- Do you accept how this interview is handled in terms of how it is recorded, how the data is parsed using 3rd parties and how the data will be anonymized?
- How long have you worked in this role or roles?
- Have you worked previously in some other roles? Please specify
- How would you define your interaction with customers? Is it active on weekly basis?
- Do you work with customers ins some kind of a online sponsored tools?
- How would you define your role within communication with customers?

Theme: Value co-creation

- Which kind of benefits do you see from creating value with the customers? (B)
  - Why did you raise these benefits? (F)
  - Why these? Why not some other possibles?
- Which kind of caveats do you see from creating value with the customers? (B)
- In what ways can IT support your value co-creation process?
- Which kind of business processes have you implemented to implement value co-creation?
- What characteristics do firms as enabler and constraint in your opinion affect towards value co-creation?

Theme: Communication

- How can IT help to validate and verify structured and unstructered interactions between actors in value co-creation?

- In your opinion, what are the top things that communication with the customer must have from provider's perspective?
- Which kind of characteristics does active customer communication have in your opinion?
- Which kind of characteristics does the communication in your opinion have within online communities?
- If customers work together to communicate the value or help each other, what kind of benefits does it provide in your opinion?
- Which social interactions characteristics do in your opinion promote value co-creation?
- Which individual values promote pariticipation into value co-creation in your opinion? What constraints?

Theme: Tools

- For your role, which kind of characteristics do the tools have you use actively? (B)
- How the implemented business processes allow to interact with value co-creation tools in your company?
- In your opinion, why does HelpDesk or Live Chats promote value co-creation with the customers?
- In your opinion, why does online communities (Youtube, Stack Exchange or such) promote custoemr value co-creation?
  - Why do these characteristics promote customer value co-creation in your opinion? (F)
  - Which of these characteristics you use in your work? (F)
  - What kind of tool characteristics do you think provide most value to value co-creation? (F)
  - Why are these characteristics important to you? (F)
- What benefits do online tools bring to value co-creation in your opinion?
- How do you utilize the tools to capture value co-creation?
- How can online communities facilitate knowledge management in your opinion?
- What characteristics of the digital tools the development of a shared worldview amongst diverse participants of actors?
- What characteristics do tools as enabler and constraint promote to value co-creation in your opinion?