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Guidelines for technology industry chatbot content development

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Abstract:
Chatbot is a software that can provide answers to questions and solve common problems on a web page or in an application. Companies are using chatbots to make processes more efficient and to increase customer experience. Currently most of the chatbots are published in the companies which are concentrating on consumer customers. Chatbots can helping customers to solve problems and questions with products and services company is providing.

This master's thesis studied how chatbot can be used to improve customer experience in global technology company and what properties and requirements users have concerning chatbot. Literature review included studies about user experience, customer experience and content strategy. Goal was to find out how these concepts are described and what makes them successful. Study was carried out by doing online survey to case company employees around the world. Survey was built partly based on studies in the literature review. Study results were used to create content development model and guidelines for chatbot by using design science research.

Results showed that people are willing to use chatbot and chatbot have positive impact on customer experience. In addition, primary content of chatbot should be customer support, technical information and product information. Study also implicated that people have positive attitudes towards chatbot and it has positive effect on customer experience. Outcome of this study were guidelines that can be used in chatbot content development. Guidelines are easy to use and easy to understand. Addition to this, guidelines solved existing problem in the case company. Guidelines are intended for people who are developing and creating chatbot and its content. They can be used in the development of the chatbot and also reviewing existing chatbot. They can be also developed further since user experience, customer experience and content strategy concepts are evolving all the time and based on them, these guidelines can be developed further.

Keywords: user experience, customer experience, content strategy, chatbot, design science

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Tiivistelmä:
Chatbot on ohjelmisto joka vastaa tavallisimpiin kysymyksiin ja ratkaisee yleisimpiä ongelmia verkkosivulla tai sovelluksessa. Yritykset käyttävät chatbotteja prosessien tehostamiseen ja paremman asiakaskokemuksen tarjoamiseen. Tällä hetkellä suurin osa chatboteista on käytössä yrityksissä jotka tarjoavat kuluttajatuotteita tai kuluttajapalveluita. Chatbot auttaa asiakasta ratkaisemaan ongelmia ja vastaamaan kysymyksiin koskien yrityksen tuotteita tai palveluita.

Tämä Pro Gradu -tutkielma tutki kuinka chatbottia voidaan hyödyntää asiakaskokemuksen parantamisessa teknologiateollisuuden yrityksessä. Lisäksi tutkimus selvitti ominaisuuksia ja vaatimuksia mitä käyttäjillä on chatboteille. Kirjallisuuskatsaus käsitteli tutkimuksia jotka tutkivat käyttäjäkokemusta, asiakaskokemusta ja sisältöstrategiaa. Tavoite oli selvittää miten nämä käsitteet oli määritelty ja miten saavutetaan paras mahdollinen käyttäjäkokemus, asiakaskokemus ja sisältöstrategia. Varsinainen tutkimus toteutettiin verkkokyselynä yrityksen työntekijöille ympäri maailmaa. Tutkimuksen kysymykset ja teemat perustuivat osittain kirjallisuuskatsaukseen. Kyselyn tuloksien avulla rakennettiin ohjeistus ja malli käyttäen suunnittelutieteellistä lähestymistapaa.

Tuloksien perusteella vastaajat ovat halukkaita käyttämään chatbottia ja chatbotilla on positiivinen vaikutus asiakaskokemukseen. Tämän lisäksi, chatbot sisällön pitäisi keskittyä asiakastukeen, tekniseen tukeen ja tuoteinformaatioon. Tuloksista myös selvisi, että ihmiset suhtautuvat positiivisesti chatbottiin ja se vaikuttaa myös asiakaskokemukseen. Tutkimuksen lopputuloksena rakennettiin ohjeistus mitä voidaan käyttää chatbotin sisällön suunnittelussa ja sisällöntuotannossa. Ohjeistus on helppokäyttöinen ja sitä on helppo ymmärtää. Tutkimus myös ratkaisi yrityksessä olevan ongelman joka liittyy chatbotin sisältöön. Ohjeistus on tarkoitettu ihmisille jotka kehittävät chatbottia ja luovat sisältöä siihen. Ohjeistusta voidaan käyttää suunnittelusta, mutta myös olemassa olevan chatbotin arvioinnissa. Tämän lisäksi ohjeistus on mahdollista kehittää eteenpäin, sillä käyttäjäkokemus, asiakaskokemus ja sisältöstrategia kehittyvät koko ajan ja siksi ohjeistusta voi kehittää eteenpäin jatkuvasti.

Avainsanat: käyttäjäkokemus, asiakaskokemus, sisältöstrategia, chatbot, suunnittelutiede

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1 Introduction

In the past years new chatbots have been published constantly and companies are focusing to develop them further all the time. Chatbots are offering new resources for value creation to customer (Riikkinen, Saarijärvi, Sarlin & Lähteenmäki 2017). They are used frequently in the business to ease different processes and are particularly used in a customer service. Chatbot is virtual agent that is engaging verbal conversation with the customer and answers are based on formal models (Przegalinska, Ciechanowskia, Stroz, Gloor & Mazurek 2019). Chatbot is a software that can provide answers to questions and solve common problems on a web page or in an application. Aim is to help customers to find solutions more easily and quickly. Chatbots may use simple scripts to answer specific questions, or more advanced artificial intelligence algorithms for more flexibility. It is important to acknowledge difference between chat and chatbot. Chatbot is a computer program and chat is a live interaction channel between humans. Today many chatbots are increasingly used in business-to-customer channels such as banking and insurance providers and this creates pressure to create new knowledge how chatbots can be used in value creation for customer (Riikkinen & Others 2007).

Chatbots are helping customers to solve problems and questions with products and service companies are providing. However, there aren't many chatbots in the business-to-business channels. Most of these chatbots are only used in internal channels by the employees and they are mostly helping questions concerning human resources and are helping to solve problems with information systems and applications. This chatbot will be published in a customer portal which is under development and aims to cover all contact points of customers to company. Customer portal is collecting all information and tools to same place for customer. Currently everything is scattered around to different web pages and portals. Goal of this project is to increase positive customer experience and chatbot is one part of this project.

1.1 Background of the study

This thesis will concentrate on chatbots in technology industry. In technology industry chatbots are very uncommon and they are mostly used in internal channels. This study is commission from a global technology company, and outcome will be used in designing and developing of the chatbot. Study will concentrate on expectations when searching information and reasons why chatbot is used instead of other options available. In addition, it aims to study thoughts and feelings about chatbot and one goal is to find out would people recommend using of chatbot overall and would they recommend use of it in a business-to-business environment. Also motivations to use chatbot and content of the chatbot are studied. Study does not cover technological specifications or requirements. Since Chatbot will have huge affections how customers are experiencing company products and services it is important to ensure before publications of the chatbot what requirements are and what needs customers has. Excellent user experience is important and need to be considered when developing chatbot. Since chatbot is in the online portal which covers all the products, tools and contacts it is important also to focus on customer experience and content strategy.

1.2 Research question

Research question for this study is: How chatbot can be used to improve customer experience in the business-to-business environment in the technology company? Survey covers whole content development from expectations of information search and attitudes and thoughts towards chatbot to planning of content in a certain area of business to specific information availability. In addition, it covers also possible content updates to chatbot after development not to forget what people think of chatbot and what does it require from chatbot to improve customer experience. Research methodology also supports this question since it covers whole area of content development from attitudes and expectations to how information should be presented and what information chatbot should include.

1.3 Research structure

Literature review will go through different studies in the area of user experience, customer experience and content strategy. Next part explains shortly what chatbot is and what kind of technologies are used in the case company. In addition, this part also explains cloud computing and Azure environment which is used develop chatbot in the case company. This part also has short explanation what kind of chatbot case company already have.

Survey will be conducted by doing online questionnaire to employees of the company. Survey aims to provide information about searching information, attitudes towards chatbots, motivation, reasons to use chatbot, how information should be presented and what content chatbot should cover. Questionnaire is partially based on user experience questionnaire developed by researchers Laugwitz, Schrepp & Held (2006). In addition, questions are planned and reviewed together with the case company representative to answer to questions what company wants to study and find out. Addition to this, all questions in the survey are connected to customer experience and user experience.

Study outcome will be used to develop guidelines for chatbot content development by using design science. Survey will be built from the perspective of user experience, customer experience and the content strategy. Instructions will be presented as model which covers overall picture of chatbot content strategy. Model parts will be explained more deeply after presentation of model and they work as guidelines. These guidelines can be also seen as a short check list which is providing user with the new ideas.

2 Literature review

Literature review needs to be carried out since it is important to find out what kind of studies are already existing about user experience, customer experience an content strategy and how these studies fit into the perspective of chatbot. In addition, it is important to find something that can also be used in this study. Main goal of this literature review is to find different aspects about user experience, customer experience and content strategy that can be used in this study. It is important to define what user experience, customer experience and content strategy is and how user experience and customer experience can be improved. By defining these it is easier to create survey that takes these topics into account. Aim is to go through different studies and find information that could be used in the creation of this survey. However, chatbot aspect is important to keep in mind since this study is about how chatbot can be used to improve customer experience.

Literature review includes studies about user experience, customer experience, digital customer experience and content strategy. Since chatbot will published in the customer portal it is very important to pay attention to user experience and digital customer experience. Since this study is researching content of the chatbot it is important to look into content strategy. Also, technological solutions are discussed shortly. Reason why this area is worth of studying is that there aren't many studies about business-to-business chatbots and especially how they can improve customer experience. Most studies are concentrating to area of business-to-customer and often only to usability which is narrower concept than user experience. In addition, studies are often concentrating on already existing chatbot or web page and they are not studying how to build chatbot content. In this study main priority is user experience and digital customer experience. However, to understand digital customer experience it is important to know what customer experience is meaning overall. Since this study aims to create model for content creation it is also important to explain what content strategy is and how it can be help creating chatbot.

2.1 User experience

User experience is dynamic and subjective, but it is also context dependent. User experience emerges from user or customer interacting with product, service, system, or object. Concept of user experience is widely accepted by the human-computer interaction researchers as wider field of studying. Problem with the definition of user experience is that it is associated with fuzzy and dynamic concept such as emotional, hedonic, experiential and aesthetic variables (Effie & Roto, Hassenzahl, Vermeeren & Kort 2009). User experience is more than just technology used. It is complex and dynamic encounter and it is subjective since it is consequence of user's internal state which includes expectation, needs and motivations. Usability, complexity, purpose and functionality is affecting how good user experience is (Hassenzahl & Tractinsky 2006).

According ISO 9241-210 user experience considers all aspects of user acting with the product including product, service, environment and even facility. On the other hand, user experience is often seen as same as usability which is narrower concept concentrating mostly is system easy to use. User experience goes beyond usability since it includes usefulness, desirability credibility and even accessibility (Stewart 2015). However, according Edwards (2015) ISO standards are quite abstract since they need cover all possible user experience requirements. Study implicated that user experience in business-to-business software and different digital channels such as web pages aren't at same level as in business-to-consumer companies. User experience includes interaction that person has with the company. These interactions are for example interaction with the software company providing company web pages or mobile application. User experience could also include interaction with the call center, advertise or sticker. However, usually user experience concentrates in the use web page, software or mobile application. User experience in business-to-business companies isn't offering same experience as in the business-to-consumer companies. Good user experience is normally built from variety of different factors. These factors are flow of use which makes user to forget surrounding environment. Second one is delight and third one is framework how web pages or software is built. Fourth one is hierarchy which makes user ensure most important factors.

Last one is users' feel of control. One important thing is also user interface which user is seeing as whole and not as individual elements. Addition to concrete studies about user experience there have also been more theoretical studies.

Dong-Hee (2015) investigated factors behind user experience. Study implicated that user experience research about physical goods and different services are very common but factors behind these researches hasn't been studied. Study presented model of measuring the quality of experience in mobile applications. Outcomes were tested by using structural equation model analysis and index calculation. Study acknowledges that after year 2010 concept of "smart" has been taken a new meaning in the context of computing and information technology. Study speculated that we are moving from era of smart phones to an era of smart technology. Study is proposing the creation of customer satisfaction index for smart technology. Since smart technologies are increasing all the time it is important to create user centered index model for these technologies. Survey questionnaire for the study was developed based on expert's knowledge. Group consisted of professors, researchers and industry experts. After creating survey, link was posted to different web forums. There were 11 different hypothesizes about smartphones. First six Hypothesizes handled quality of system, content, service from the perspective of utility and hedonicity. Hypotheses seven and eight were about utilitarian and hedonic performance. Rest were about user satisfaction on loyalty and complains. All of them were supported by the outcome of study. Goal of the study was to test proposed model about smartphones and to explain how individuals developed behavioral intentions about the use of smart mobile services. Research based on this model increased knowledge and understanding of user experience and satisfaction of smart mobile devices. Study implicated that usage of smart devices are determined by the value and quality that leads to better customer satisfaction. This leads to more recommendations which leads to more purchases. In addition, prize changes don't have big impact when customers are satisfied with the product or service. Moreover, study implies that perceived quality in service, content and system are important. Study conceptualizes notion of quality and estab-

lishes the relationship between quality and perceived values that customers are preferring. There are also multiple studies that aim to create new ways to measure user experience.

Researcher Kujala, Roto, Väänänen-Vainio-Mattila, Karapanos & Sinnelä (2011) aimed to develop way to measure long term user experience. Study implicated that current studies are mostly focusing on short term user experience rather than long term user experience. Study proposed method "UX-curve" for measuring long term experience. Method aims to assist users to find out reasons why their user experience has changes over time. Proposed method was tested with 20 mobile users. It particularly focused on specific memories of the use of mobile phone and willingness to recommend it to others. Study recommended that perceived attractiveness of mobile phones was related to a user satisfaction and possible recommendation of the product. Researcher created a template connecting different theories from chronological order of user experience and theories predicting later behavior. Answerers were asked to draw a line that describes their user experience from the buying of product to present day. After drawing the line answerer were asked to describe reasons of user experience changes. After describing these changes answerers were asked to answer from the researcher's perspectives. Three different perspectives were chosen based on existing literature. Perspectives were appeal, utility and ease of use. In the study there were 11 different platforms that were evaluated such as Facebook and laptop and five different curves to draw. Outcome was total 100 different curves. Most common practical reasons for decreasing user experience were functionality, durability, and practicality. In addition, most common hedonic reasons were about stimulation, identification and beauty. Study provided qualitative and quantitative data about user experience trends. Results are suggesting that method is useful tool for evaluating long term user experience since it provided rich and useful data about the product and reasons why user experience changed over time. According study most powerful curve was curve of attractiveness since it provided largest amount of reasons why user experience changed. Study suggests that improving trend of user experience has effect on user satisfaction and attractive curve has significant relation to

user satisfaction. User experience has been studied widely through 21st century. Still there has been some problems on defining user experience.

Lallemand, Gronier & Koenig (2014) suggested that user experience is not a new concept but already existing. It is rooted to user centered design and usability and it is not social or individual. It seems that when studying user experience very often background variables are affecting to presented user experience statements. In addition, need of standardized definitions of user experience was varying between different cultures. Study also implicated that user experience definitions should be focused on user and it is not connected to marketing or companies. Study acknowledged multidimensionality of user experience. In addition, Pappas (2018) proposed that trust, privacy, emotions, experience and purchasing intention combined are affecting on purchasing decision in online store. It also implicated that personalized service or web page had significant effect on purchasing decision. Study highlighted that trust, happiness and customer experience are key reasons why people are doing purchase decision. On the other hand, there have been also studies that are researching user experience from a different perspective compared to common studies.

Skjuve, Haugstveit, Følstad, & Brandtzaeg (2020) studied user experience and which factors are affecting to user perceptions of chatbots and conversations with chatbot. In addition, they studied also effect known as "uncanny valley" which means situation where users aren't sure if they are interacting with a robot or a human. This will lead to feelings such as dislike, unease, unpleasantness or insecurity. Study participants were led to believe that they are chatting with a chatbot named Ann regardless of whether they were talking with chatbot or a human. Study showed that impersonality and lack of self-disclosure have negative effect in conversational interaction. Study implicated that users are adjusting their expectations based on information they are receiving during conversation and not information they received before conversation about chatting with human. In addition, users felt that some answers of Ann seemed odd and out of place. This implicated that Ann couldn’t follow conversation properly. Study suggested that lack of

social smarts is making conversation less pleasant. Study couldn't prove that conversation would fall into "uncanny valley" when discussing with chatbot. This implicates that it is still long way for chatbot to become too human-like.

2.2 Customer experience

Customer experience refers to quality of customer interactions with company and relationships to company services and products. It includes pre-sales and post-sales and it can be direct or indirect. Direct interaction would be when customer buys company products and indirect when customer reads articles or reviews from social media about the company (Batra 2017). According Meyer & Schwager (2007) customer experience is also subjective response of customer indirect or direct contact to company but in addition, it includes quality of offering, quality of customer service, product packaging, products, ease of use, features and reliability. Reason for companies heavily focusing on customer experience is that today customers are interacting with the company through multiple different channels and Medias. Managing customer experience requires companies to integrate different business functions such as information technology, service operators and even external partners. Aim is to deliver positive customer experiences. This makes customer experience management more complex (Lemon & Verhoef 2016).

Study conducted by Bustamante & Rubio (2017) researched in-store customer experience and created model for measuring it. Scale provided multi-concept diagnostic tool that helps retailers to create experiential shopping environment that creates value for customers and increases loyalty to the store. However, there have also been more traditional studies about customer experience. Gentile, Spiller & Noci (2007) acknowledged problem that there aren't practical tools available to measure and effect on customer experience. There is six dimensions based on existing literature when discussing about customer experience. First level is sensorial which addresses human sight, hearing, touch taste and smell. Second part is emotional component which includes feelings and moods of customer. Goal is to create emotional experience with the company and its brands and products. Third part is cognitive component such as thinking of conscious mental

processes. This could affect to usual idea of product or mental assumptions. Fourth part is pragmatic component which is usability and use of product and entire product life cycle. Fifth part is about lifestyle and pursuing the lifestyle. Lastly is relational component which concentrates on relationship and social context between users of products and services of the brand. Study was carried out based on these dimension and outcome was four guidelines to increase customer experience. Guidelines included developing experience driven innovations, functional features of commercial offer, providing venue for integrated customer service and creating "consuming experience" and last part was to acknowledge different parts of customer experience components with different products.

Klaus (2011) was researching if companies are measuring right things in the customer experience. Study acknowledged that marketing has been gone through three different phases in the past 25 years. First phase was to create brands that are moving fast. Second phase was to build customer relationship through service marketing. Final phase was to create compelling customer experience. It was presented that marketing hasn't keep up with these phases. Study concentrated on creating measurement scale for customer experience. It was stated that customer experience blurs traditional distinctions between service and product because customer experience is mostly focusing on value it brings to customer. This value arises together from the product and service. At first SERVQUAL which refers service quality was used to help to measure customer experience. SERVQUAL focuses on customer assessment of the service and human interaction with the products or services. It concentrates to value in use. Based on service quality study created measurement of customer experience quality. This helps to identify dimensions and attributes that explain important marketing outcomes. In the first stage scale was divided into five different topics which are process experience, product experience, lifetime costs and risks and to provide experience. Next step was scale purification which adjusts the scale based on sample of customers. Third step was refinement through confirmatory factor analysis which validated scale. Fourth and final step was validation of scale with the use of customers. Created scale can be seen in figure 1. Scale explains

relationship between customer and company. In addition, study considers individual experience as a factor in customer experience

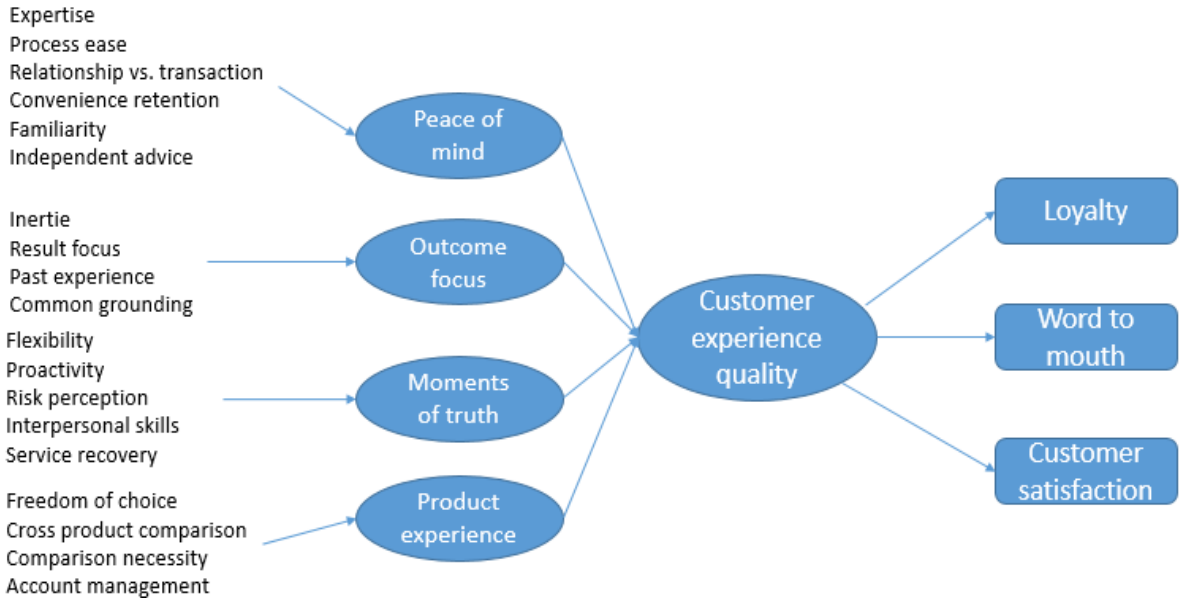

Figure 1. Adaption of Customer experience quality scale (Klaus 2011).

Study demonstrated stronger relationships between customer experience, loyalty and quality than between customer satisfaction and loyalty. Study also established direct link between customer experience quality and oral recommendation. Scale created can help market researchers to identify strongest attributes that effect on customer experience associating with company marketing outcomes of the company. Managers should consider customer experience one of the main strategies of the company. Scale explains oral recommendation and loyalty better than customer satisfaction. Most of the studies discussing about customer experience are concentrating on area of business-to-consumer. There aren't many studies that are focusing on business-to-business perspective. However, there have been some studies in field of business-to-business researching customer experience.

Kumar, Steward & Morhan (2018) studied how information technology companies can improve customer experience when delivering complex information systems. Companies are facing compelling challenge in the marketing and sales in solutions delivery process

because in some cases, they are using ad hoc teams where members are very skilled but doesn't have experience to work as a team. It is very difficult to companies to choose correct people to team who have skills to complete project but also ability to work as a team. If team is not working efficiently together, then level of delivered customer experience is not high enough. It is also important for team to work efficiently together for a long period since information systems delivery usually takes several months or even years. Study was conducted by interviewing executives in the technology company Fortune. These persons were responsible for the sales and deliver process. Outcome revealed seven factors that should be acknowledged when creating team for delivery project. First factor is to identify people who have appropriate level of expertise. This can be achieved by discussing with the customer about what expertise they have that could be utilized in project. When this is done it is easier to choose delivery company experts. Second factor is to consider customer industry. When team has people, who have knowledge about customer industry it is much faster and easier to achieve project goals together with customer. Third factor is project management skills. Project manager is essential for successful project. Project manager ads as eyes and ears of the project and deliver information to team members. Project manager should know when it's right moment to bring different experts into the project. Fourth factor is involvement of sales team. When sales team is involved from the beginning of the project it is easier to define scope and costs for the project. When scope is clear and costs stay in line, customer will be more satisfied. Fifth factor is optimal deployment of work resource. It is not efficient to keep all the experts in the team all the time. It is important to acknowledge optimal time to bring experts into the project and reassign others from the project when they are not needed. This will keep whole delivery organization agile. Sixth factor is to take advantage of different consulting companies. It is not always most efficient and cheapest way to hire all experts to company. In some cases, it can be better idea to hire experts from outside. Last factor is to ensure availability of experts. It is important that some centralized database where all the people of the company are listed with their expertise. This makes it easier for managers to find best possible members even though their own social environment is lacking them. These seven factors will help organizations to be

more successful in the delivery projects and helps to ensure best possible customer experience.

2.3 Digital customer experience

Digital customer experience is more than just interaction with the web page. It includes products delivery, sales support not to forget products and services consumption. It is total customer experience which effects on customer feeling of value and service quality. This constantly affects how loyal customer is (Petre & Minocha 2006). It is also suggested that digital customer experience includes also ease of use, customization and connectedness. Still, ease of use remains most important part of digital user experience (Rose, Clark, Samouel & Hair 2012).

Studies in the field of digital customer experience are mostly concentrating to business-to-consumer environments and platforms and not to a business-to-business environment. McLean, Al-Nabhani & Wilson (2018) studied relations to retailers' mobile applications. Research aimed to understand the variables that are influencing to customer experience in retailer's mobile applications. Study presented seven different hypothesizes ranging from variables of ease of use to a customer experience effect on how frequently customer is using mobile application. Study was conducted by using web-based questionnaire. Questionnaire was studying customization, convenience, ease of use, enjoyment, timeliness, satisfaction with experience and positive emotions. Study findings highlighted importance of utilitarian factors of technology. This involved ease of use, convenience and ability to customize experience. These factors are affecting on perception of experience and they increase level of enjoyment when using mobile application. Customers who are not experiencing these factors are not feeling high level enjoyment. This will lead customer being dissatisfied and experience negative emotions. Study highlights that mobile applications are often used "on the go" anywhere at any time and mobile shopping is felt as convenient way of shopping. Study suggests that use of mobile applications is driven by these utilitarian factors and used by utilitarian manners. Study

proposed key variables influencing to mobile commerce environment customer experience.

Straker & Wrigley (2016) were concentrating on how companies should design digital platforms to evoke desired emotions in customers. Research was made by using case company Burberry which is fashion retail company which claimed in 2006 that they will be the first fully digital company. Aim was that brand will be available in all digital channels and devices anytime and anywhere. Burberry has six core strategies. First one is to inspire with brand and second one is to realize product potential. Next one is to optimize channels and then unlock market potential. Last two is to pursue operational excellence and build own culture. In this study empty Venn diagram was the foundation of this study. In addition to perspectives of emotion Venn diagram also included business strategy and digital channels. Study measured and analyzed all six core strategies and past marketing campaigns. Customer's comments were gathered from different digital touchpoints and they were categorized into six emotions: satisfaction, desire, admiration, enjoyment, stimulation and love. This study developed already existing model further and diagram developed can be seen in figure 2. Study outcome showed that designing digital channels and marketing overall should evoke feelings and moods with the customer that align with brand. In addition, digital channel should create attitude, behavior or meaning to the brand. Also creating community that brings customer together and evokes feelings that were mentioned before is important. All in all, customers motivated by key emotions that make them part of the Burberry community. Goal is to bring brand, culture and customers to same story.

Figure 2. Adaption of Burberry's digital engagement model (Straker & Wrigley 2016).

Study conducted by McLean & Wilson (2016) studied need of online customer support. It aimed to understand is there need for online customer support in business support website. In addition, it acknowledged existence of online customer experience. Study was seeking answers for four different objects. First one was to understand length of time customer wants to spend in the web page for searching answer. Next objective was to examine requirements of online support. Third one was to understand customer emotions in relation to customer experience. Last one was to develop theoretical framework to understand online customer experience. Study was carried out by creating three different tasks with 160 participants in government provided business support pages. Outcome showed that when answers is found fast it has significant effect on positive online customer experience. However, it also showed that people had more positive emotions when they had to seek information from the web page and found it even though it took more time. Customers weren't willing to spend more time searching answers than they see necessary. In addition, customers are expecting to complete tasks in a timely manner. If time exceeds certain point customer will become dissatisfied. In addition, if customer is expecting that they are required to spend more time in the web page they become

dissatisfied and will abandon search. Study also suggests that customers are aware of time they have spent in the web page. If customer feel that they have been spending lot of time searching for information need of online customer support will rise. In study average time passed when customer needs online customer support is 2 minutes and 11 seconds. This implicates that customer conducts search in web page before seeking online customer support. However, this indicates that customer is not happy with the web page since they need to contact online customer support to find answer. This has negative effect on online customer experience. Online customer support has role to make online customer experience positive. Study also indicates that emotions have effect on online customer experience. If customer is searching information too long negative emotions will rise. All in all, online customer support helps customer to solve their problem and not abandon their search. This will lead to positive experience.

Boulton (2017) studied on what makes chatbot great and how it can increase customer experience. Chatbot is designed and deployed based on good understanding of company customers. It must have clear mandate and vision that create measurable value to customers. Chatbot needs to take customer experience to new level and best chatbots are continuously improved. Study creates clear steps how chatbot should be developed. First step is to acknowledge best possible use cases. Next step is to create excellent conversation flow to answer customers' questions. Chatbot needs to have required information available and it should be integrated to existing knowledge bases and systems where information is easily available for chatbot to present. Chatbot should be learning and improving all the time. In a long term chatbot should be able to have even more sophisticated conversations with user. Finally, advanced artificial should be implemented. When development is rushed, this leads to situation where customer expectations rise and, in the end, chatbot is not as innovative as it's promised to be. Also, if chatbot is not built with human centric approach it will not be successful. First chatbot should be simple and it should only answer to some common basic questions. Creating successful chatbot requires diving into deep into the customer journey and finding the best possible solutions for company customers.

2.4 Content strategy

According Baehr (2013) content strategy is combination of knowledge management, content modeling and even user experience. Study aim was to develop sustainable content strategy for technical communication body of knowledge. Study was conducted by doing content analysis and by studying user generated data. In addition, different knowledge bases were benchmarked. Body of knowledge defines scope and reach of foundational knowledge, expertise and trends within certain field. Since technical communicators work in the very specific field and they produce, develop, design and manage are complex it is very complex task to create tangible knowledge base which captures all the aspect and expertise of the certain field. Study aimed to solve this problem by defining body of knowledge and content strategy which is linked standards and practices. Body of knowledge represent depth and width knowledge in the field and connects different practices in the whole industry. Effective content strategy requires determination of factors that drive and influence the organization of content, how information is classified and tools that users are using to contribute and access to information content. Creation of content strategy requires analyzing of users, content, needs of organization, processes and technologies. Knowledge management requires systematic approach to capture, organize, maintain information and deliver it to user. Content management is tool to manage electronical content through its life cycle. In addition, it includes identifying content requirements in advance. One important part of content strategy is modeling, defining and maintaining of content assets. Content assets are including all content of information or database such as topics and articles. Content modeling is architecture of information. It involves categorizing content from generical information to hierarchical information. In knowledge management also user experience is important aspect to consider. Information must be understood by human and it needs to be viable to help user to understand structure and presentation of information. User experience design has three essential tasks for content strategy, and these are information architecture, interaction design and user design. Idea is to involve users as part of content strategy. This study was part of existing “Technical communication body of knowledge” which is

evolving knowledge base that covers many aspects and topics of technical communication. Portal was analyzed and after this it was described as information model map which can be seen in the next figure. It describes how portal is build and what content it has. This information mapping technique is later used in this thesis.

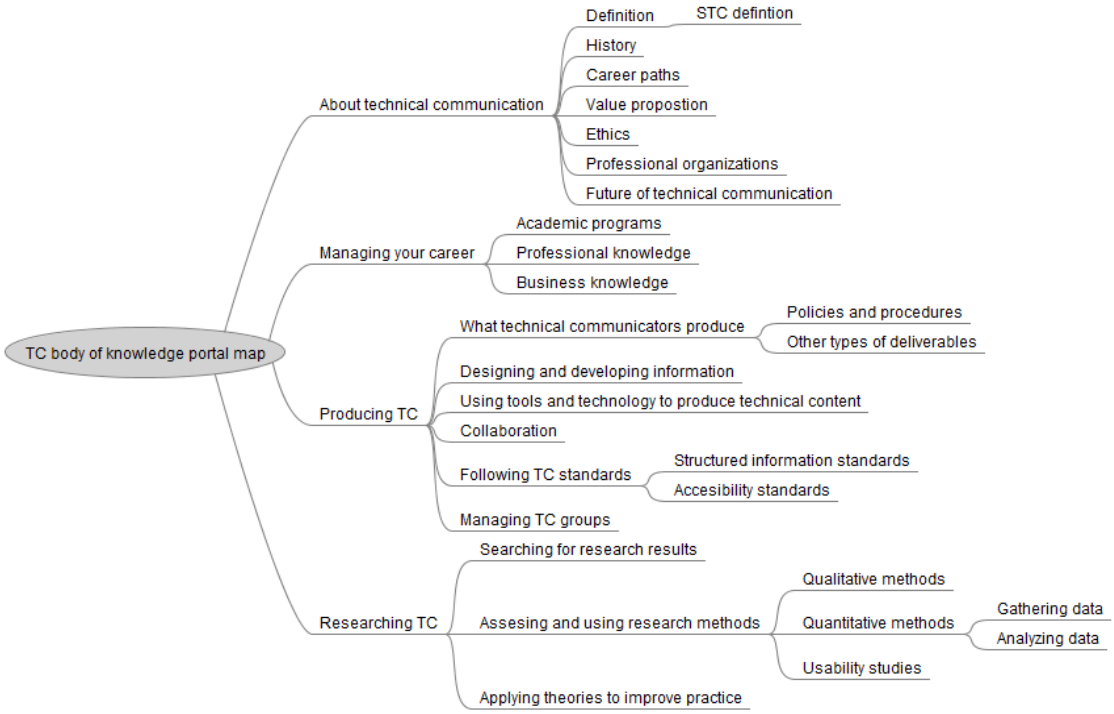

Figure 3. Adaption of information model map of TC body of knowledge (Baehr 2013).

Second part of the Baehr (2013) study was focusing on trends of technical communication. Study was conducted by going through different technical communication portals and based on that hierarchical model was created. Next part was focusing on user experience. In this part users were ranking different technical communication topics. Best ranked topics were academic, accessibility, business and consulting. Outcome of study was three-tiered topic list that will be used in the development to technical communication body of knowledge portal site. Outcome can be seen in next figure.

Subject index	Emerging	Trending
Accesibility	Big data	Application development
Business knowledge	Certification	Cloud computing
Consulting	Content strategy	Game development
Content strategy	Education	HTML 5
Education and training	Mobile strategies	Mobile computing
Globalization	Needs assesment	MOOCs
Information design	Project management	Tagging
Information development	Science communication	Universal design
Information management		XML
Instructional design		
Research		
Social media		
Structured authoring		
Technical editing		
Technical writing		
Usability and user experience		
Visual design		
Web design and development		

Figure 4. Adaption of three-tiered list (Baehr 2013).

Blakiston (2013) described in the article how content strategy was developed to University of Arizona library. There wasn't any content strategy for library web pages and because of this content of the page is not comprehensive. Goal of the study was to ensure that content is useful and updated and easy to find. At first audit of content was conducted. Idea was to identify all pieces of content in the web page. Each piece received identification number and all pieces were evaluated as well as possible. Most common problem was outdated information, confusing URL structure and information architecture. Based on content it was divided into four categories which all received responsible content owner. After this user personas were created and based on this core strategy was written. In addition, to understand the environment different stakeholders were interviewed. After these all results were used to create editorial standards that included headers size, use of punctures, removing unnecessary effects, standardized terms and linking standards. In addition, voice and tone of the website was established. Content strategy included also workflow how new page will be established. These steps are coming up with the idea, consulting website steering group, consulting provider, talking to

content manager, new page is created, drafts are shared to reviewers, reviewer edits text and then text will be published. Addition to this, also workflow for deleting website was created. Last part of strategy was to make it sustainable. This included ensuring that content managers know what they are doing and permission to use working time to content development was ensured. It also included training of content managers and evaluation metrics for the content and web page.

2.5 Literature review results

Goal of literature review was to find out what user experience is, what customer experience is and what content strategy requires. In addition, it was important to find something that can be used in this research. Based on the literature review, user experience is about expectation and motivation. Addition to this, it is about value and quality. User experience takes into account functionality and usefulness. Also content is important when talking about user experience. However, two most important thing about good user experience is ease of use and overall experience of use. It is important to consider these results when creation survey and it is important to address these aspects of user experience in the survey. Customer experience is about quality of interaction and quality of customer experience. If customer is receiving added value it will have positive impact on customer experience. Customer experience addresses feelings and moods of the customer. Addition to this, also good usability increases positive customer experience. However, to understand how customer experience can be increased positively it is important to look in the past. All these aspects are important when creating survey to this study and they will be addressed in the questions. People don't want to spend too much time by searching information in the web page and they have requirement for fluent online support. People want to find answer fast and chatbot can help people finding it faster in the web page. However, knowledge base that chatbot needs to cover as much information as possible and some knowledge base should already existing before creating chatbot. Addition to his, it is crucial to acknowledge best possible use cases for chatbot. All of this will be considered when creating this survey and survey helps to achieve these requirements for the chatbot. In addition, this survey helps to plan development since if

development is not planned, there is high probability to make customer experience worse since expectations are high for the chatbot. Planning of information architecture and interaction design are important when creating new knowledge base or web page. This is same also for the chatbot. These aspects will be considered in the survey and guidelines will address also content of the chatbot.

Literature review found out many aspects of user experience, customer experience and content strategy. With the help of these outcomes survey will be partially planned based on these. Since study is about customer experience all these aspects are crucial for the study. Literature review helps planning of a questions and it also gives frame for the questions. Literature review didn't find any similar study and most of the studies were focusing on retail business and they were carried out in the business-to-consumer environment. This gives good foundations to study customer experience in the business-to-business environment and also chatbot and content aspect gives new insight to this topic.

3 Chatbot technology

This chapter will shortly explain what chatbot is. Since today chatbots are commonly executed in the cloud platforms it is important to go through what cloud platform is and what cloud services are. Since case company is using Microsoft Azure cloud platform, this chapter will handle cloud platforms from that perspective and also explains shortly what technologies Microsoft Azure has for the chatbot development. Addition to this, this chapter will introduce chatbot Richard what is used in the case company internal channels and in testing environments.

3.1 Chatbot

Chatbot is software that responses to natural language and mimics real conversation with the human with the help of artificial intelligence. Some Chatbots have only entertainment value but others are used for commercial purpose. Chatbot can handle multiple customers at the same time (Reshmi & Balakrishnan 2016). Currently chatbots are commonly used in the banking and in the insurance companies and to provide new value to customer (Riikkinen & Others 2007).

3.2 Cloud computing and Microsoft Azure

According Microsoft Corporation (2020) Microsoft Azure is cloud computing platform. Cloud computing enables access to different servers, networking, software, data and analytics through Internet. Traditionally different files were stored to personal computer but when using cloud platforms, they are stored to online and are usually accessible anywhere where Internet is available. Today cloud computing platforms are more secure, reliable and flexible. In addition, cloud platforms tend to be less expensive. Typically cloud services are only paid based on use of platform. It is also good to acknowledge that cloud platforms are often scalable to current requirement. Benefits of cloud computing are lower costs since using cloud eliminates requirement for buying hardware and setting up own datacenters. In addition, infrastructure is managed and updates by the

company who provides cloud platform. Cloud services are also globally scaled, and they are providing right amount of resources for current situation and they are available all geographical locations. Other benefit is good performance since cloud server's hardware is updated constantly to meet required performance. In addition, companies that offer cloud platforms are offering variety of different security policies and technologies to strengthen it. One benefit is also that if more computing resources are required it is easy and fast to provision them. Cloud computing also helps to increase productivity since all servers are handled by service provider and customer doesn't need to think of these when creating new software and applications. Last benefit is reliability. Cloud platforms are making backups all the time and this means disaster recovery is fast. In addition, data can be mirrored to different cloud facilities.

According Microsoft Corporation (2020) there are three different clouds. First one is public cloud which are owned by third party providers and they provide their services though Internet. In public cloud all hardware, software and other supporting infrastructure is managed by the cloud provider. Microsoft Azure is public cloud and it is managed by Microsoft. Second one is private cloud. Private cloud refers to cloud computing resources that are used by a single business or organization. Private cloud can be in the company own datacenter or they can be bought from third party providers. Last one is hybrid cloud. It bounds together public and private clouds and resources can be shared between them. This gives business better flexibility. There are different types of clouds. One is infrastructure as service (IaaS). This is the simplest cloud computing service where company is renting information technology infrastructure such as servers, virtual machines, storage, networks or operating systems. This service is paid by use. It helps to save expenses since company doesn't need to by hardware by themselves and services is scalable for fast changes of requirement. This allows for example test and development of applications, web site hosting or big data analysis. Second one is platforms as service (PaaS). This refers to cloud computing services that are providing developing and testing of applications and managing software applications. With this service application can developed, tested and published faster since infrastructure is already existing in the

cloud. In addition, PaaS offers middleware, development tools, business intelligence services and database management system. In addition, it is usually developed to handle whole life cycle management of software or application. Next type of cloud service is serverless computing which overlaps little with PaaS. It helps developers to create new applications and software faster since there is no need to manage servers and infrastructure. Last cloud computing services is software as service (SaaS). This is method of delivering software and applications through the Internet usually subscription based. In this case cloud providers are hosting the application and managing the software application and taking care of infrastructure and maintenance. In addition, service provider also handles updating the subscribed software. Usually software is connected to through web browser or mobile application.

Microsoft Azure environment is providing two different applications that are used in the commission company. These are Microsoft QnA Maker and Microsoft Luis. With the use of these applications it is fast and easy to create chatbot tool to company. Chatbot created with this tool and it is hosted in the Azure cloud and it can be easily implemented to web page or different social media applications such as Facebook messenger or Skype (Microsoft Corporation 2020).

3.3 QnA Maker

QnA Maker was explained by Microsoft Coporation (2019) that it is cloud-based service that can process natural language and it is working in the Microsoft Azure cloud. It is easy tool to create natural conversation layer on raw data. It can be used to find most appropriate answer to question user is asking. It searches answer from custom knowledge base that company has created to system. QnA Maker can be used in any conversational applications such as Skype or Facebook but also in the web page. Best situation to use QnA Maker is situation when there is static information in custom knowledge base. Knowledge base can be built for example by using PDF document or question and answer template in web page. In addition, it is possible to manually add questions and answers to QnA knowledge base. QnA Maker is also useful when same

questions are posted repeatedly or when it is needed to filter static information based on meta data. In addition, QnA maker can provide multi-turn answers where different options are represented to user when certain question is asked. Common application where QnA Maker is used is chatbot. It is possible to import technical manuals, product manuals, spreadsheets or frequently asked questions to QnA Maker knowledge base. After knowledge base is ready it is easy to publish in Azure web app bot.

3.4 Luis

According Microsoft Corporation (2019) language understanding (LUIS) is cloud based service that works in Microsoft Azure cloud. It can apply machine learning intelligence to natural language text and aims to predict overall meaning and pull out relevant answer to question. Luis uses “intents” to identify topic. If user types for example “find me wireless keyboard for 30$” then intent of this question is to “find item”. After intent is recognized by Luis it starts searching for “entity” and this case entity is “wireless keyboard”. Briefly, intent is category and entity are detailed information inside intent.

3.5 Support bot Richard

Richard is a bot that is already in use in the company in some other departments and in internal use. It is created and developed based on company user experience guidelines and it helps mostly personnel in the internal channels. However, there have also been some small projects to publish it to customers. Richard is developed in the Microsoft Azure environment with Microsoft QnA Maker and Microsoft Luis. In addition, in some cases Microsoft Power BI is implemented to gather, and process received data. Richard is possible to implement to web pages or to a different messaging application such as Facebook Messenger, Microsoft Skype and Microsoft Teams. Outcome of this study will be used in the implementation and content development of the Richard in one particular department. Right now, only demo version is existing with minimal content. In the future, Richard will be published in the department customer portal.

4 Methodology

Since Chatbot will have effect on how customers are experiencing company products and services it is important to ensure before publications of the chatbot what requirements are and what needs customers has. Excellent user experience is important and need to be considered when developing chatbot. Since chatbot is in the online portal which covers all the products, tools and contacts it is important also to focus on customer experience and especially digital customer experience. Research questions for this study is: “How chatbot can be used to improve customer experience in the business-to-business environment in the technology company?” Data will be collected by sending online questionnaire to internal employees of the one department in the case company. After data is collected with the survey, results will be analyzed with a qualitative data analysis and goal is to understand what customer needs are for the chatbot and what are their past experiences and current attitudes towards chatbots. In addition, survey aims to find out what content chatbot should have. Analyzed results will be used to create guidelines what content chatbot should have and how content should be presented to customer. In addition, guidelines will cover attitudes and expectations about chatbot. At first answerer is asked to tell their continent, country and job function. This is important since when creating content to chatbot it is important to acknowledge the environment where chatbot is and who are the users.

After background questions survey is divided into several different parts. First part is concentrating on search of information and reasons why user chose to use chatbot instead of other options available. These questions were chosen because case company wanted to know more about these topics, and they are also helping on creation of content because this helps content creators to think more from customer perspective. Next part dives deeper into feelings and attitudes. This part is partly based on user experience questionnaire and goal is to find out more depth how use of chatbot affected to user experience and would answerers recommend use of chatbot. From this part it is easy to find key words for content creation such as motivation, speed and effectiveness. Final part is about future of the chatbots and business-to-business perspective of chatbot use.

It includes user's ideas about future of the chatbots and information that should be included in the chatbot. For the case company it was important to find out, have people in this field of industry used chatbot before and how people think about the future of chatbot and what are their thoughts about it. This part also studies what topics chatbot should cover and more depth analysis what these topics could include. This part will be important to content creators since it gives hints and ideas what information chatbot should have. In addition, it covers the way how information in chatbot should be presented to user.

When outcomes are analyzed next step will be a data mapping of questions to clarify what categories different questions are belonging. These categories are customer experience, user experience and content strategy. After this model for information creation is developed by using design science practice. Design science will be used in this study to create artifact that helps content developers in the development and planning of chatbot. Artifact is intended to use as a short check list for chatbot and chatbot content development. Method was chosen since it's commonly used in information systems research and outcome of this study presents artifact design science is creating. In addition, today design science has clear framework so different phases of study are well described and easy to follow. Design science and framework is introduced later. In addition, user experience questionnaire is explained shortly in this chapter. Presentation of the artifact is divided into two topics which are data mapping that helps creation of artifact and after this presentation of model and step by step guidelines.

4.1 User experience questionnaire

This method goal is fast and direct measurement of user experience. It is designed to use with common usability test but also as an online questionnaire. If questionnaire is used online, it is important that it can be completed fast. Questionnaire was developed in Germany and it uses analytical data approach. Each scale represents different aspects of user experience (Schrepp, Hinderks & Thomaschewski 2017). According Rauschenberger & Thomaschewski (2013) user experience questionnaire allows fast assessments

of user experience of the product or service. Scale is designed to cover comprehensive impressions of user. Document supports fast measuring of user's feelings, impressions and attitudes. If for example new product is published it is typical to ask if product is creating positive user experience or how user is feeling about it. User experience questionnaire is excellent tool for this kind of reviewing the product since very often answer it provides is enough to create overall picture how user is feeling.

According Schrepp & others (2017) this questionnaire contains 6 scales. First scale covers attractiveness. Second covers efficiency and third perspicuity. Next one is dependability and fifth is stimulation. Final one is novelty. All parts depend on each other and dependency is presented in figure 5. In addition, in figure 6 is example of user experience questionnaire questions. In this study user experience questionnaire is used to study attitudes towards chatbot since it is important to find out what attitudes are towards chatbot before planning on developing and publishing chatbot. Attitudes towards chatbot are crucial to find out before publishing chatbot since it will have effect on customer experience. Addition to this, goal is to find out what makes chatbot attractive to use and how attractiveness can be used to improve customer experience. User experience questionnaire was chosen to this study since it is good tool to find out what are people feelings towards chatbot. It helps to identify the environment where chatbot is going to be published. This is important since environment feelings and attitudes have impact on how chatbot will effect on customer experience after publishing.

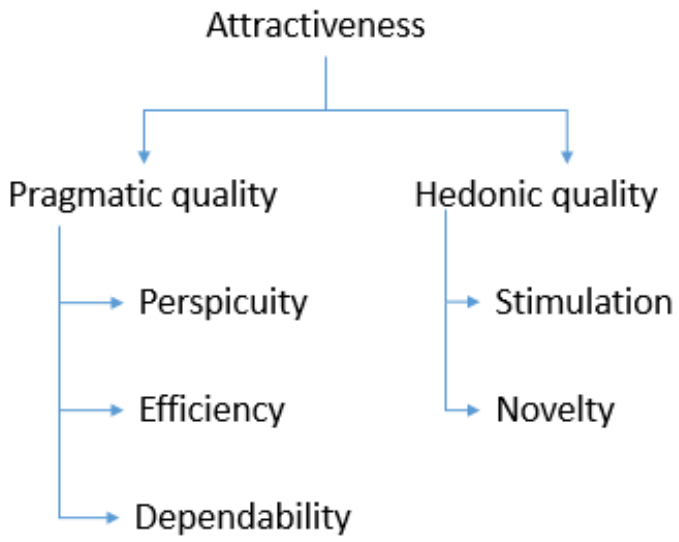

Figure 5. Adaption of scale structure (Rauschenberger & others 2013).

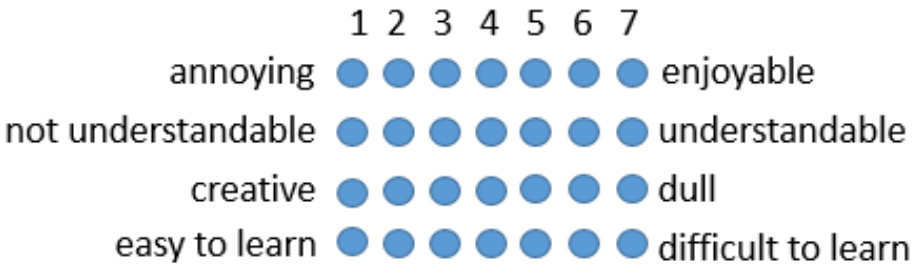

Figure 6. Adaption of English version of questionnaire (Rauschenberger & others 2013).

4.2 Design science

In this study design science is used to create guidelines for chatbot content development. These guidelines will be used as a short check list for chatbot development and by following these guidelines in the chatbot development and chatbot content planning and development it is possible to create best possible first chatbot which has positive effect on customer experience. In addition, these guidelines can also be used in the reviewing of existing chatbot. These guidelines will ensure that customer's first impression about published chatbot is best possible which leads to better customer experience. Design science offers excellent approach for this kind of problem since it takes into account all

the steps in the development and also encourages to develop outcome even further. Addition to this, design science is excellent way to solve this kind problem since often outcome is model or guidelines for some particular defined problem. In this study problem is how chatbot can be used to improve customer experience in the technology company. Survey results will be used to build model and guidelines for the chatbot content development. Goal is to keep model and guidelines as simple as possible to use and it should be possible to develop one part further or even entire model.

According Hevner, March, Park & Ram (2004) design science is problem solving paradigm which seeks to create new innovative artifacts that are extending human, company and organizational boundaries and helps to improve them. Design science is searching for ideas, practices and technical capabilities through analysis and design. Creating artifacts relies on theories that are applied, tested, modified and extended through different experiments. It is focusing on solving existing specific problem and doesn't concentrate to phenomenal or occurrences in organizations. Design science is focusing on creating software, formal logic, mathematics or informal natural language descriptions. Study also introduced framework for design science, and it is presented in the figure 7. In the figure on the left side is existing organization which includes people, organization and technology that are already existing. Design science requires some unsolved problem what new artifact will solve, and this comes from the existing organization. On the right side there are foundations and methodologies that will solve the problem. In middle is the artifact itself – the solution. It takes unsolved problem from the left and with the help of the right side it creates solution and adds something new to organization on the left and to foundations and methodologies on the right.

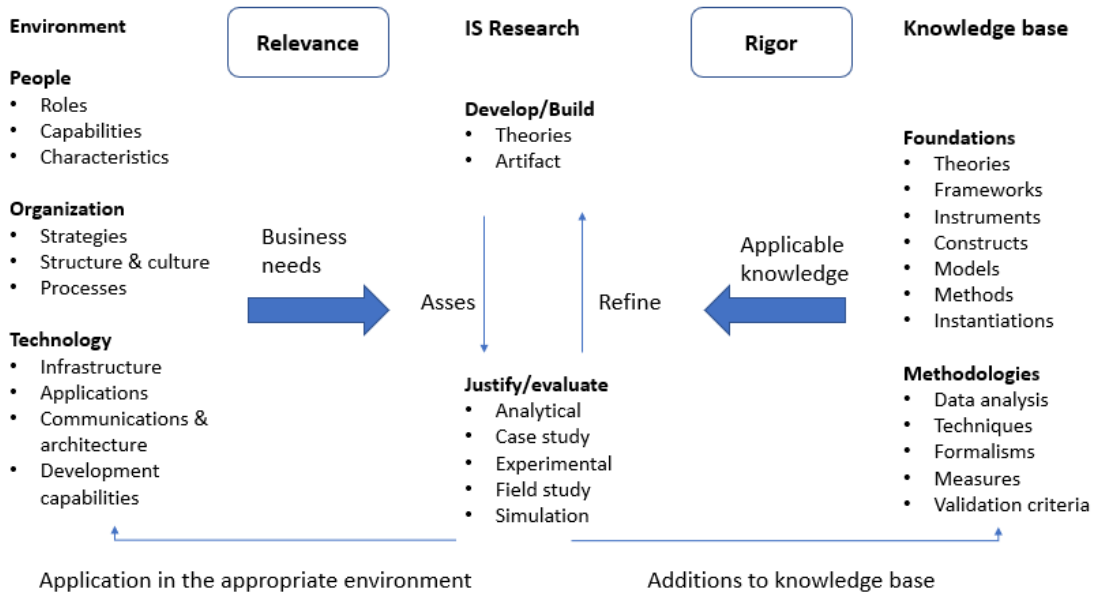

Figure 7. Adaption of design science framework (Hevner & others 2004).

To be successful in design science research there are seven guidelines. First one is creating artifact. This guideline requires to create viable artifact that fulfils its purpose and solves addressed problem in the organization. It is wort mentioning that artifact is not complete information systems. It is model of complete system. Second part of guideline is that artifact should be relevant to problem. Research should acquire knowledge and understanding that enables creation of artifact. Problem should be unsolved in the organization. Third guideline is concentrating on evaluating artifact. The utility, rigor and efficiency need to be demonstrated. Evaluation is one of the most important part in research. Business environment establishes requirements and outcome need to evaluate based on that. Artifacts can be evaluated for example in terms of functionality, completeness, consistency, accuracy and usability. Fourth guidelines acknowledge requirement about research contributions. Created artifact should present solution to specific problem and problem must be unsolved before artifact is created. Fifth one is the rigor of artifact. It addresses how research has been carried out. Research in design science requires different rigorous methods in both construction and evaluation. Rigor can be evaluated by using mathematical tools or non-formal approach. It is important to ensure

that artifact working well in environment and implemented effectively. Guideline six considers research process. If artifact follows effective research path it will be more viable. Last guideline is about communicating. Entire design science process and created artifact should be communicated to all stakeholders clearly. Design science artficat requires following of certain steps which according Peffers, Tuunanen, Rothenberger & Chatterjee (2008) are: 1) identify and motivate 2) Define objectives of a solution 3) Design and development 4) Demonstration 5) Evaluation and 6) Communicate. Study will follow these steps and other requirements design science method requires. Steps can be found from the figure 8 and they are described after figure.

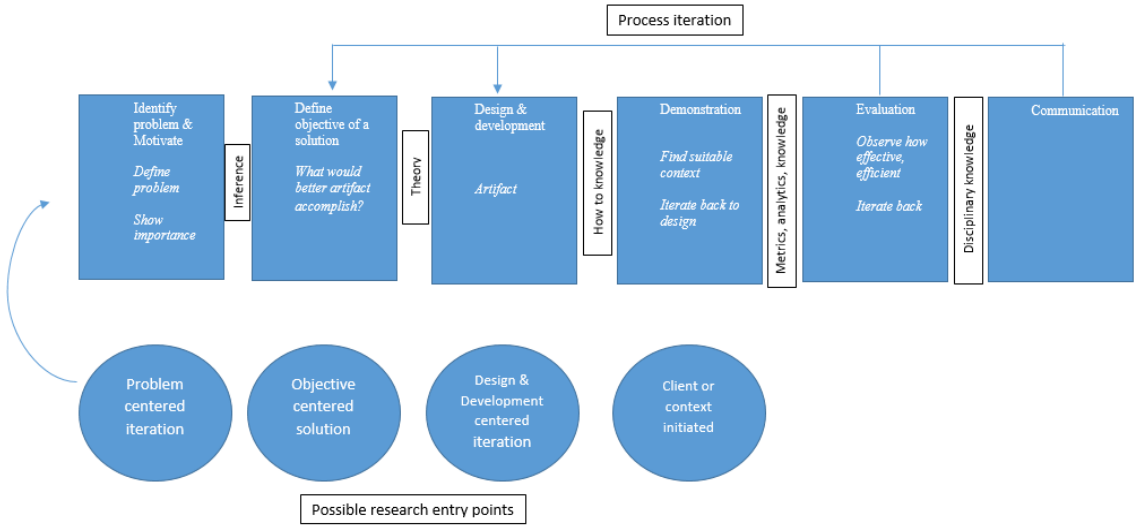

Figure 8. Adaption of design science research model (Peffers & others 2008).

Identify and motivate

In the first part it is important to define specific problem what needs to be solved. In addition, the value of research needs to be justified. Since problem definition is used in the artifact creation it can be good idea to divide problem to smaller pieces to ensure that solution capture the complexity of the problem. Justifying of the value of the research motivates researcher and audience to pursue best possible solution and it helps to accept outcome more easily.

Define the objectives of a solution

It is important to ensure that defined objectives are possible and feasible. Objectives can qualitative or quantitative. Qualitative objectives can be descriptions how solution is expected to support problems addressed and quantitative can describe how new solution would be better than current one.

Design and development

Artifact can be constructed models, instantiations or methods. It can also be new properties for existing solution, social or informal/formal resources. All in all, artifact can be any designed object that solves existing problem and gives contributions to existing research. This requires defining artifact functionality and architecture and then creating the artifact.

Demonstration

Artifact needs to be demonstrated and demonstration can be done by solving one or more instances of the defined problem. Demonstration can involve for example experimentation, simulation, case study or proof of concept. Demonstration needs to show effective knowledge how to use the artifact.

Evaluation

In the evaluation artifact is observed and measured in the environment it is created. This phase includes comparing the objectives and outcome. Evaluation can take different forms and it requires knowing of relevant metrics and analysis techniques. Evaluation can include comparison of functionality of the artifact with objectives. In addition, it can be for example comparing customer satisfaction results before and after use of artifact or some simulations. All in all, this part can include any appropriate empirical evaluation.

After evaluation researcher can decide does artifact solve the problem or is there need to iterate back to phase 3 to develop better artifact.

Communicate

Final phase is to communicate the problem and its importance to a relevant audience. Addition to communicating outcome to all required stakeholders, also communication of artifact utility, novelty and rigor are important. In addition, it is important to communicate did artifact solve addressed problem.

These steps in this study are clearly followed. In this study **existing problem** came from the case company. There wasn't any specific guidelines how chatbot could be used to improve customer experience. There were only assumptions. This problem needed solution because goal is to create and publish chatbot for the customers in the future. Problem was divided into three segments: user experience, customer experience and content strategy. With these segments considered it is easier to create survey which covers these aspects. **Objective of this study** is qualitative since results will be written language description. Solution will help solving problem by creating guidelines or a short check list which can be used in the chatbot development and future reviewing. Guidelines takes into account all aspects of the survey and collects them in one place and it is easy to use. This solution is better because currently there isn't any guidelines and there are only assumptions how something should be. Outcome of this study is providing researched information and there are no assumptions anymore. **Artifact is designed and developed** to be easy to understand and easy to use. It should serve as a fast check list but also increase curiosity to think more deeply about topics and also provide possibility to focus on researching some specific part of the artifact. Artifact will be developed based on outcome of the survey and it will work as a different way to provide findings of the research. Aim is that artifact could be also used elsewhere and not only in this specific company. **Demonstrations** is carried out by presenting artifact and study results to

stakeholders and experts in the company. Goal is also to familiarize stake holders with guidelines and also give ideas how they can be used in the chatbot development.

Evaluation will be carried out in two phases. First phase is in the concept level and it follows design science practice. Second evaluation is professional review where marketing expert in the company is by doing professional reviews for the artifact. Professional in the company will evaluate artifact and decide if it meets expectations and solves the addressed problem in this particular company and environment. Goal is to evaluate does artifact bring value to company and can it be used in the practice. **Communication** is handled by sending outcome to all stakeholders and informing them what this artifact is, what it's used for and what problem is solves. Addition to this, study results will be presented to stake holders in the company to ensure that all necessary people will be aware of the outcome.

5 Findings

Research questions of this study was “how chatbot can be used to improve customer experience in the business-to-business environment in the technology company”. Findings provided answers to this by studying different aspects of user experience, customer experience and content strategy. This research studied if there is positive environment for chatbot publishing and how chatbot have affected on people customer experience in the past. Addition to this, goal was to study what content chatbot should have and what expectations people have for chatbot. Outcome of this study was design science artifact which helps to ensure that chatbot will meet customer expectations and requirements best possible way.

Survey was sent by email to 324 employees of the company worldwide and 59 answered. However, only 41 answered to all questions since survey was divided into two different paths. First path was for people who have never used chatbot and they didn’t answer all questions. Second path was for people who have used chatbot at least once and they answered to all questions. From these 324 employees 19 wasn’t working in the company anymore, which means that 305 people received survey link. Answering time was at first two weeks from 9.1.2020 to 23.1.2020 but answering time was lengthened to 24.1.2020 since goal was to get at least 50 answers and after two weeks there were only 44 answers. First reminder was sent after one week and final reminder on 23.1.2020. After final reminder 15 answers more were received. This means answering percent was approximately 20%. Email list of answerers was received from the global marketing team and answerers were gathered around the world and they were working in the different tasks. All different departments of the company unit were presented in the study. Answerers were mostly office workers who are working as experts and managers in the company.

5.1 Background of answerers

In the beginning of survey answerer had to choose which continent they are from. Continents were listed in alphabetic order: Africa, Asia, Australia & Oseania, Europe, North America and South America. After this, answerers were asked to write their country and finally they had to choose their job function. Answerers continents can be found from figure 9.

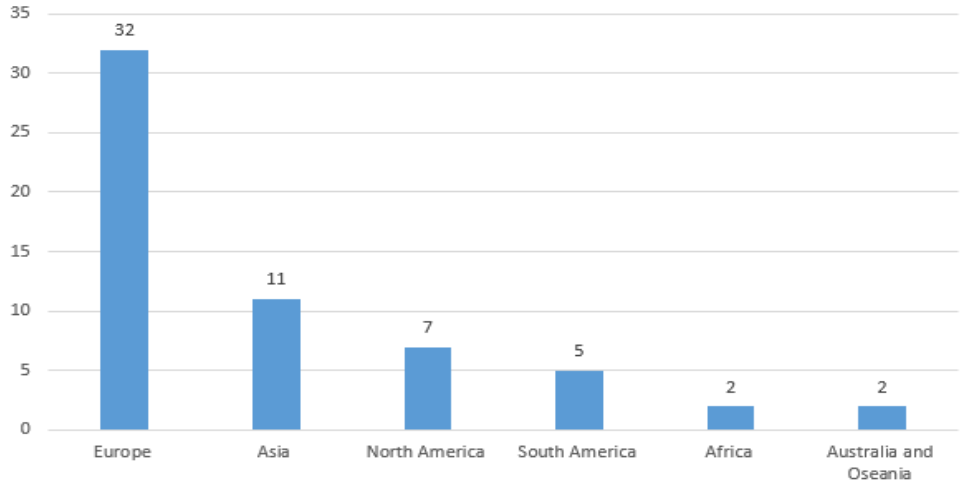

Figure 9. Your continent.

In some cases, results are compared between Europe and Asia since these were biggest answer groups. However, results are not entirely comparable since there was big gap between number of answers from Europe and Asia.

Second background question was about country of the answerers. Results can be found from figure 10.

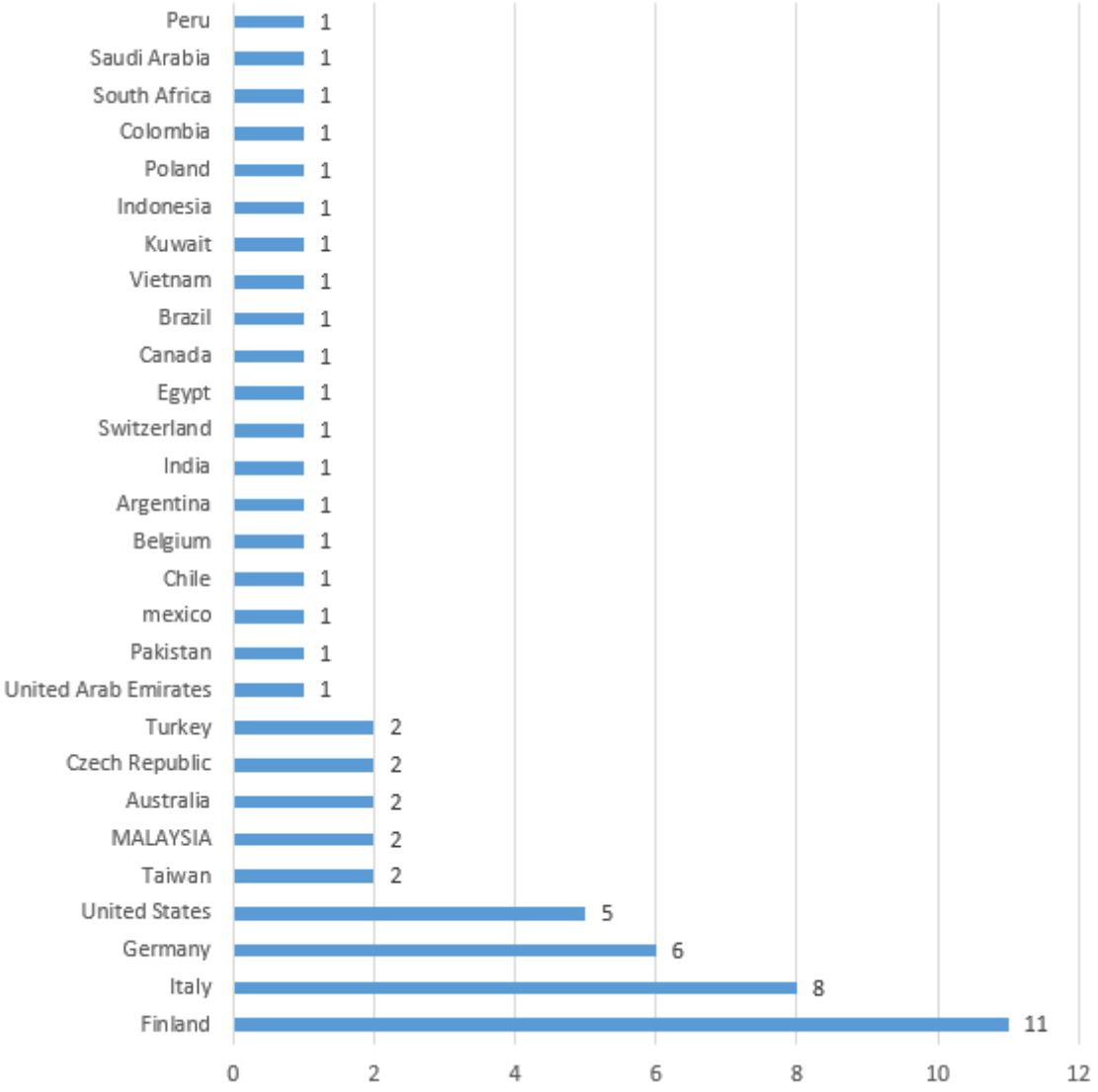

Figure 10. Your country.

As we can see from the results most answerers were from Europe with 32 answerers. Next biggest number of answerers were from Asia with the 11 answerers. Probably Reason for Europe having biggest number of answerers is that company representative who had gathered this list is working in Europe and is working mostly with European people.

Third and final background questions was handling answerers job function. Job functions were listed based on how human resources in the company is categorizing different functions. Outcome can be seen in the figure 11. Most likely reason for such big amount of people working in the sales and marketing is that email list was received from sales and marketing department and people in the list were mostly working in this department.

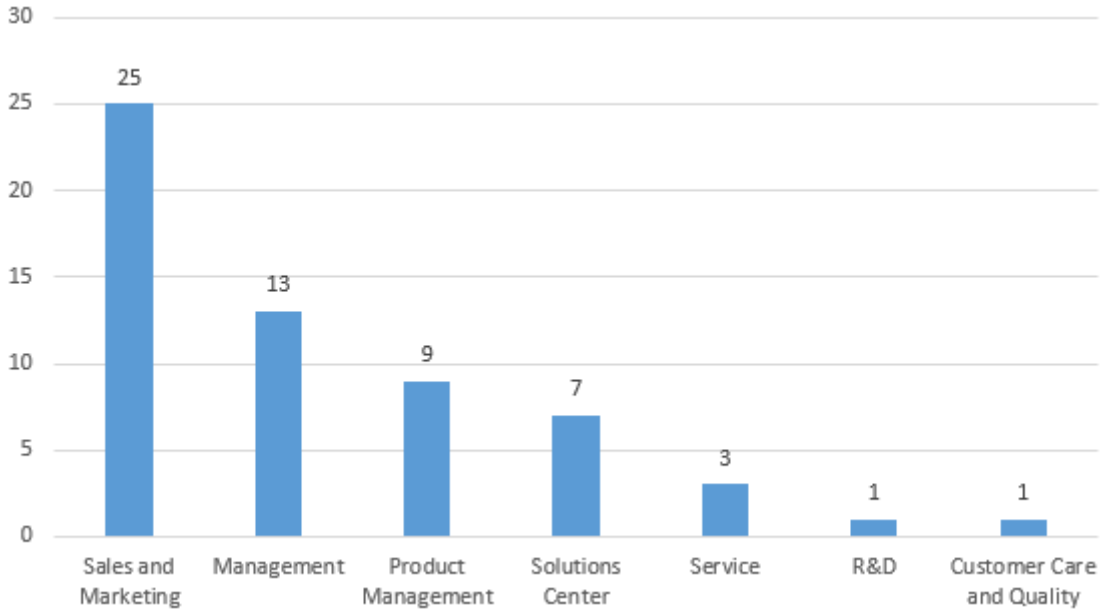

Figure 11. Job function.

5.2 Search of the information and reasons to use chatbot

This part of the survey was studying expectations when searching information and reason why answerers chose to use chatbot to find answer instead of other options available. In addition, it studied how often answerers had used chatbot. First question was about expectations when searching information. Answerer were asked what are the most important thing when searching information. There were four pre-determined different options and “other” for the most important thing when searching information. It was possible to choose all choices and it was not limited to one. Options were fast to find, easy to find, accuracy of information, easy to understand and option “other” where

it was possible to write own preference if it wasn't found from the existing options. Results showed that ease of finding information was the most popular with 41 answers. Next most popular was accuracy of information with 40 of answers. Third one was fast to find with 32 answers and fourth was easy to understand with 29 answers. Only 1 chose "other" and it was "up to date information". There weren't big differences between different continents. For example, both Asian and European answerers appreciated fast and easy way and 50-60% in both continents chose this. However, there was little difference between choosing accuracy of information. From European people 64% chose this and from Asian answerers 46% chose this. In addition, 36% from both Asian and European answerers chose "easy to understand".

Next question was studying how often answerers have been using chatbot. Options were: 16 or more, 11-15, 6-10, 1-5 and 0. If answerer choose 0 survey moved to last part of survey which were studying expectations and content for the chatbot. If answerer choose 1 or more study continued to examine answerer feelings and attitudes about using the chatbot. In this case, majority 31% hadn't ever used chatbot and choose 0. On the other hand, 48% of answerers had used chatbot 1-10 times. However, 19% of answerers chose 16 or more times. Only minority of 3% had used chatbot 11-15 times. Results suggested that European answerer have used chatbot more often compared to Asian answerers. In Asia 55% of answerers had never used chatbot and in Europe most common answer was 1-5 and 6-10.

Next question studied reasons why answerer chose to use chatbot instead of other options available. There were 8 different options and it was possible to choose multiple answers. Option "There was no other solution available" was the most common answer. However, if we look the figure, we can see that most answers are on the left which implicates that people want to use chatbot because it is easy and fast way to find answers. In the figure results are presented as number of answers since there was chance to choose multiple answers and percent would go above 100%. There was also one "other" saying "Good for very basic questions". It is not possible to compare results between

different continents since only minor of answerers from elsewhere than Europe answered to this question.

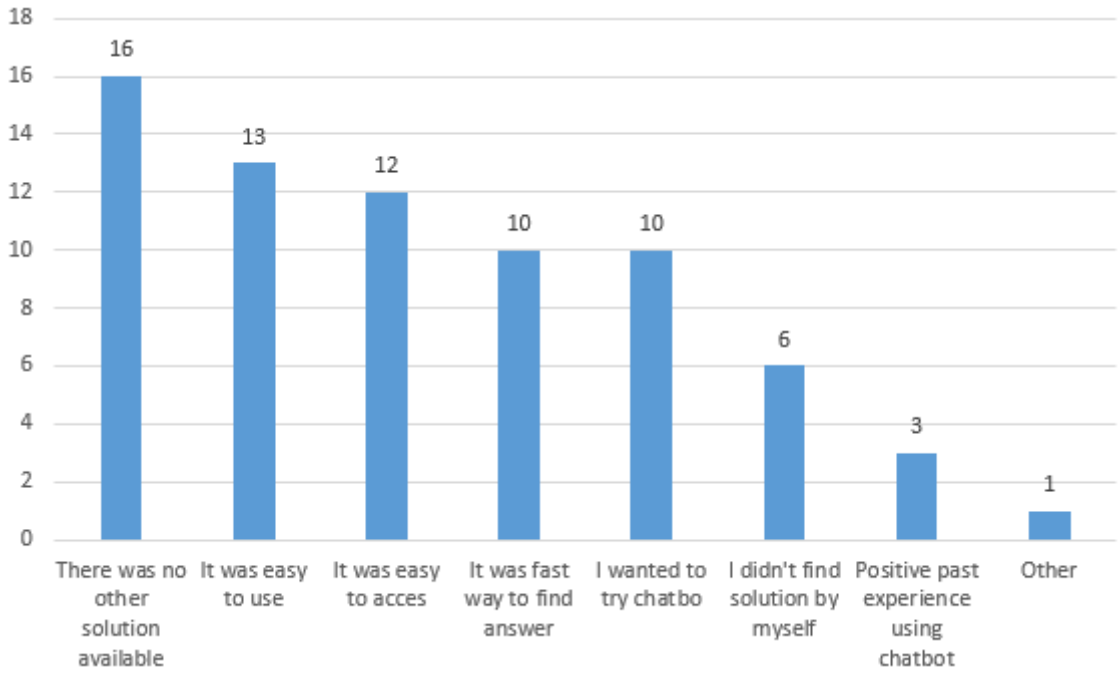

Figure 12. Reason for using chatbot instead of other options available.

5.3 Feelings and attitudes

This part studied what people thoughts about chatbots are and what their feelings and attitudes are towards chatbots based on experience with the chatbots. At first answerers were asked are they seeing chatbot as interesting idea overall. It was possible to choose only one option. Option for question “is chatbot interesting idea” were extremely interesting, interesting, partly interesting, little interesting and not interesting. Only 10% choose little interesting or not interesting. Majority 51% choose interesting or extremely interesting. In Asia and in Europe the most common answer was “interesting” with 45-50% of answers. However, overall European answerers felt that chatbot is little bit more interesting idea compared to Asian answerers.

Next question was partly based on user experience questionnaire presented in the beginning of methodology chapter. Goals was to study how answerers had experienced use of chatbot. In these questions there were five different options and answerer had to choose one. Options went from positive to negative. Results can be seen in figure 13. Results are implicating that overall feelings are neutral. It is important to acknowledge that everyone didn't answer to these questions. Only those who had used chatbot at least once answered. Those who haven't used chatbot skipped these questions.

Answers	41				
	Enjoyable	Slightly enjoyable	Neutral	Annoying	Extremely annoying
How did it feel to use chatbot?	12 %	24 %	39 %	20 %	5 %
	Extremely easy	Easy	Average	Difficult	Extremely difficult
Was it difficult to use chatbot?	10 %	59 %	29 %	2 %	0 %
	Extremely fast	Fast	Average	Slow	Extremely slow
How fast did you find answer?	2 %	34 %	39 %	12 %	12 %
	Extremely efficient	Efficient	Average	Inefficient	Extremely inefficient
How efficient it was to find answer?	0 %	27 %	44 %	17 %	12 %
	Extremely motivating	Motivating	Slightly motivating	Little motivating	Not motivating
How motivating it was to use chatbot?	2 %	32 %	34 %	20 %	12 %

Figure 13. Feelings based on experience.

Next questions studied if answerer would recommend chatbot and reasons why they would recommend it. Most of the answerers would recommend using chatbot occasionally. Results can be seen in figure 14. Most answerers chose occasionally and few "never" answers were given. However, nobody recommended chatbot to be used always. Even though results between different continents are difficult to compare, trend seems quite same between different continents.

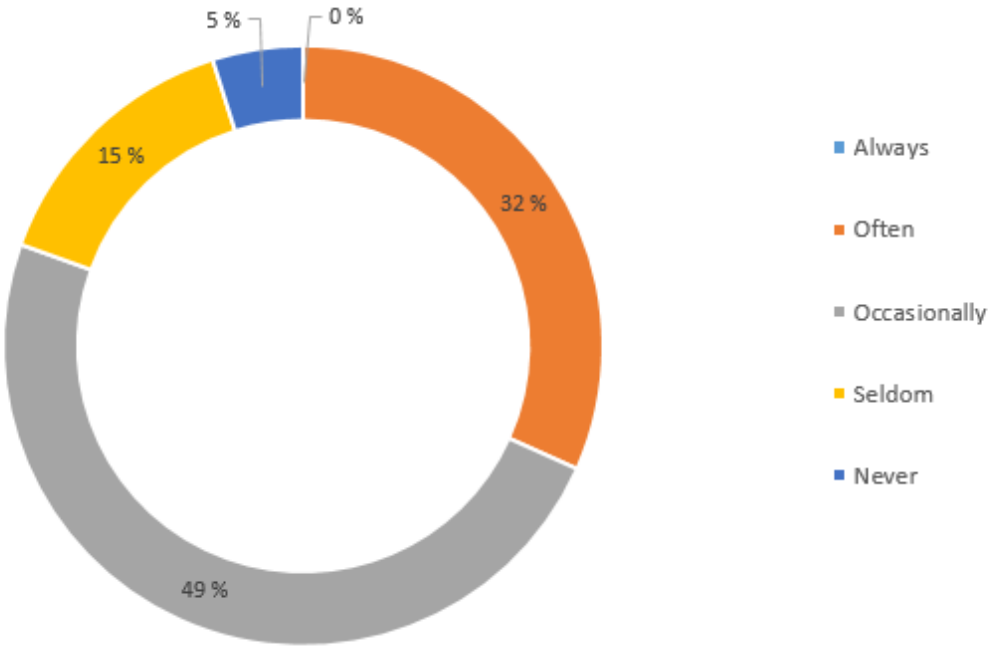

Figure 14. Would you recommend chatbot.

Next questions studied more depth why answers would recommend chatbot. This question was optional, and 22 answers were received. Most answers were about finding answer fast and easily. In addition, possibility to find answer 24/7 was mentioned. Also, chance to save time since there is no need to send emails or to call somebody was mentioned. All in all, most of the answerers underlined that chatbot is good tool to find simple answers and for example manuals or training material. It was also acknowledged that in some cases chatbot user is an expert and it might be difficult for chatbot to follow conversation and answer correctly. In addition, one good task for chatbot would be to help navigation in the web page. However, one answerer felt that using chatbot is waste of time since artificial intelligence is not that developed yet. In addition, also chatbot performance issues was expected to be good to recommend chatbot.

5.4 Chatbot in the business-to-business environment

This part studied how in the past the use of chatbot has affected to customer experience of user and how chatbots future is seen overall. In addition, it studied what content chatbot should have. First question studied how experience using chatbot affected to answerers customer experience. There were five different options and it was possible to choose only one. These options were based on user experience questionnaire. First one was “extremely positive” and only 5% chose this. However, 44% chose “positively” and 39% chose “no effect”. Only 15% chose “negatively” and nobody chose “extremely negative”.

In the next question answerers were asked if they have used business-to-business chatbots. First option was “constantly”, and nobody chose this. Next was “often” and only 2% had chosen this. Next option was “occasionally” and 29% chose this. Next option was “seldom” and 17% chose. Most answers chose “never” since 51% chose this. This implicated that chatbots are quite new in the business-to-business environment and especially in the technology industry. Based on the results answerers from Asia have used business-to-business chatbot slightly more often than answerers from Europe. In a group of European answerers 26% chose option “occasionally” and in the group of Asian answerers 60% chose “occasionally”. In addition, there was only one answers “often”, and it was from Asian answerer. However, these results are calculated based on how many answers from different groups chose some certain option and number of answerers weren’t same, so it is difficult to compare results equally.

Next question studied what thoughts answerers have about the future of the chatbots. Most answerers saw the future of the chatbot positive since 65% saw future extremely positive or positive. Neutral was chosen by 29% and only 6% chose negative or extremely negative. This implicates that there is positive environment for chatbot publishing and people are most likely willing to use it.

Next question was open question about thoughts of the future of the chatbots. This question was optional, and 36 responses were received. Most people saw future bright if artificial intelligent will be developed enough. Also, chatbot should feel human and be smarter. One answer mentioned that right know chatbots are “brainless robots” and answer can be anything. In addition, it was often mentioned that right now chatbots are just another search engine and more artificial intelligence was hoped. Some answerer mentioned that chatbot is excellent tool to find answer for simple questions since database is growing all the time and customer could get benefit from this. It was also mentioned that chatbot is low-cost tool for helping customer. In addition, one answerer mentioned that chatbot should be enough mature before publishing to it be a powerful tool. All in all, chatbots future was seen positive but there is still long way to go to replace human contact and need of more advanced artificial intelligence was acknowledged. In addition, chatbot was seen good tool to help in the emergency because it is available all the time.

Next question was studying how chatbot should present answer to an asked question. There were five pre-determined answers and “other field”. It was possible to choose multiple answers. Results can be seen in figure 15. There weren’t big differences how people from different continents answered. Most answerers wanted that chatbot would give specific answer to question. However, also link to page where solution can be found was common answer.

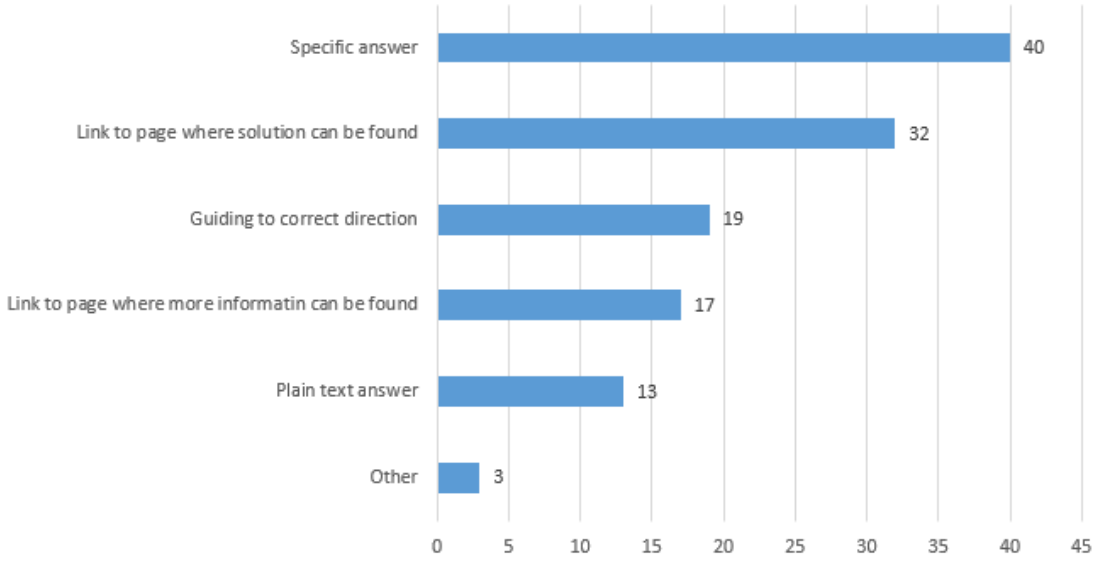

Figure 15. Preferred response type.

Next question was open question and it was optional to answer and 58 answers were received. Question was “What expectations you have when using chatbot (for example, easy to use)?” Most of the answer underlined fast response and ease of use. It was also mentioned that chatbot should have good knowledge and answers should be more personalized and more accurate than Google search. Also, good artificial intelligence was hoped. It is not surprise that answerers required detailed and accurate response from the chatbot. In addition, chatbot should understand questions well and be able to find answer even though there is something written wrong in the question. Few answers also underlined that chatbot should be easy to find and easy to access overall not to forget helping to navigate in the web page. In addition, it was also mentioned that chatbot should be able to understand users’ mother tongue and answer with it. One answerer mentioned that chatbot should recommend similar questions and answers to them based on users writing.

Next question studied how often answerers would like to use chatbot in the case company web page. In this question answers were distributed quite equally between positive and negative. It is worth to mention that in Asian answerers attitude towards using chatbot in the case company website was mostly negative and in Europe most common answers was occasionally which implicates that European answerers attitude is more positive. Overall answerers outside Asia were more positive towards using chatbot in the case company webpage. Results can be seen in figure 16.

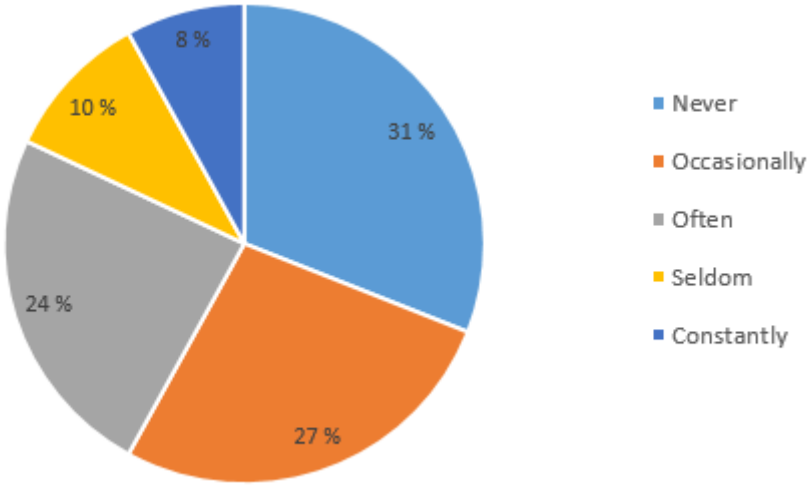

Figure 16. How often you would use chatbot in the company web page.

Next question studied what content chatbot should have and it was possible to choose multiple answers. Different areas of information were created based on different functions in the company. Results can be seen in figure 17. Based on figure we can see that 90% or more chose at least first three: technical support, product information and customer support. There weren't big differences between continents.

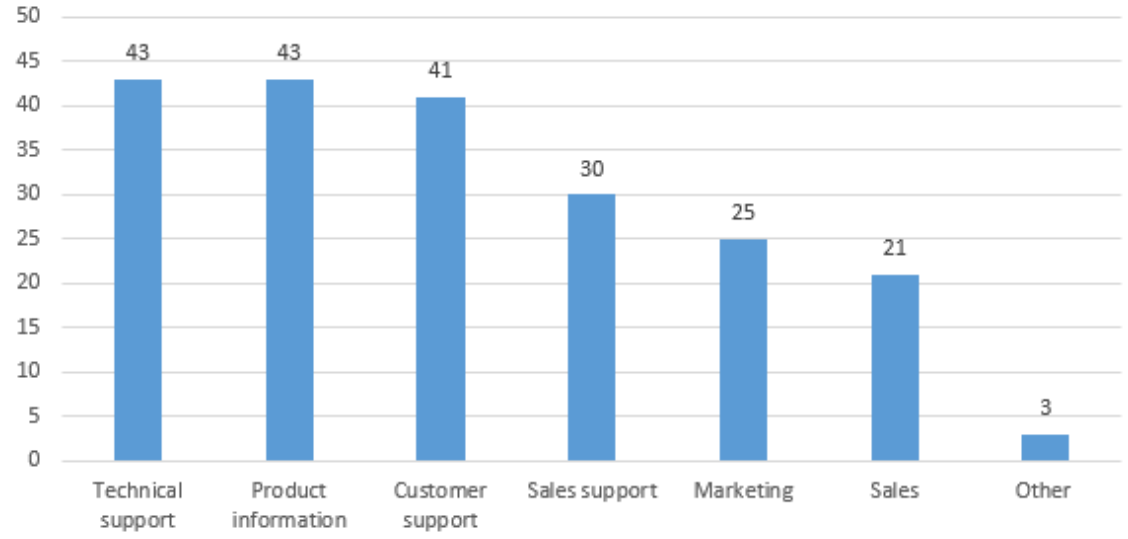

Figure 17. What information chatbot should include.

Final question studied areas mentioned in former question more depth. It was open answers and answerers were able to write more specific information. Most common answers were technical information and technical support. Also, product information was common answer. Other answers were for example: availability of products and spare parts, delivery time, frequently asked questions, product operation and safety, product functionality, manuals, guidelines, sales contacts, price lists, fault and warning codes, warranty info, schematics, troubleshooting and possibility to submit support request. In addition, there was also more advance requirements like possibility to submit quotation and guidelines how to set protection parameters to a certain product. It was also hoped more comprehensive list of fault codes compared to manual. Also search function for products were mentioned.

In the end of the survey there was free text field were answerers could write anything they want about the survey or chatbots overall. It was hoped that chatbot could inform user to what kind of questions it is able to answer. If solution can't be found from the knowledge base it would be important to send message forwards as a ticket. In addition, one person mentioned that best way to create chatbot is to make it more intelligent search engine than Google search. According answerer it is difficult to create chatbot

human-like so it's best to focus on creating better search engine. Also, it was mentioned that it should be clear that user is talking with a chatbot. In addition, chatbot was expected to be great tool for customer to access quickly to product portfolio. One answerers had a bad experience with the chatbot when he was cancelling some contract in chatbot but cancellation information never went forward to a person so it is important to ensure that everything goes as expected and also human should be checking if problem is truly solved. There was also experience where in-house chatbot did not give answer that user required and that created more work.

5.5 Question category mapping

Questionnaire survey questions were created mostly from the perspective of user experience, customer experience and content strategy. However, in some cases questions were created because case company wanted to study some specific topic. These 11 different areas were user background, expectations of information search, reasons to use chatbot, feelings and attitudes towards chatbot, past experience, future expectations about chatbots, information presentation, expectations, interest and will to use, fields of information and field specific content. Next step was to map the questions under categories mentioned in the beginning of this chapter. Mapping was done by using content analysis tool which is also used in the literature review in the content strategy chapter when technical communication body of knowledge is represented. With the help of this different steps for guidelines were created. Question mapping can be seen in the figure 18.

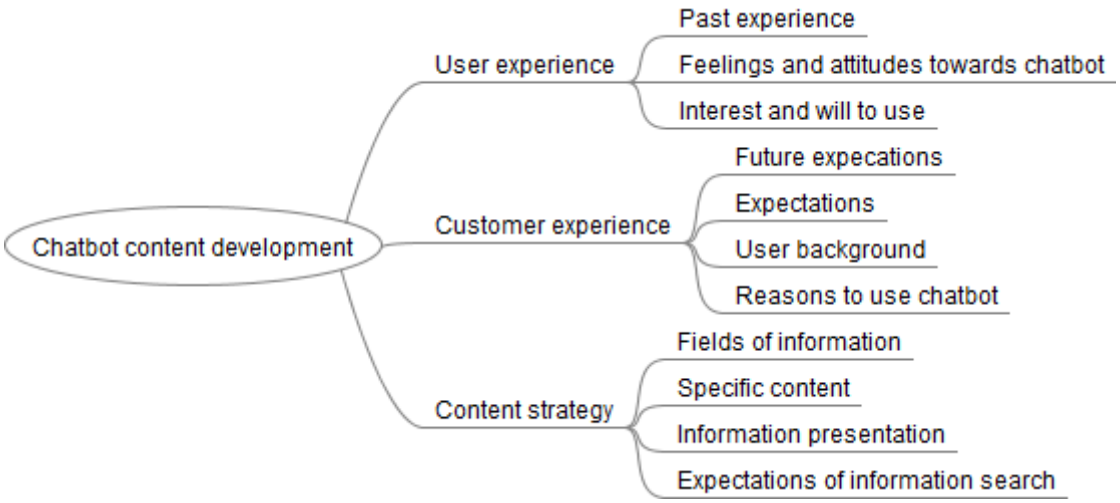

Figure 18. Questions category mapping.

5.6 Presentation and evaluation of the artifact

Guidelines for case company chatbot were developed based on survey results. Survey acknowledged 11 different areas of content strategy and they are presented in the figure 18 under categories. With the help of category mapping design science artifact was created. Figure 19 represents overall picture of the guidelines and it can be used as a check list when creating content and developing chatbot further. Model can be also seen as one part of overall content strategy for the chatbot. These steps are important when creating first chatbot. However, it is also important to iterate trough these steps all the time to find out new trends and environment changes. Arrows around model are representing these iterations and arrows were added to second version of the artifact. Iteration starts from the top of left column and after this it moves to right column starting from the top. These 11 steps are described more depth after presented model. Step descriptions are based on results of the study.

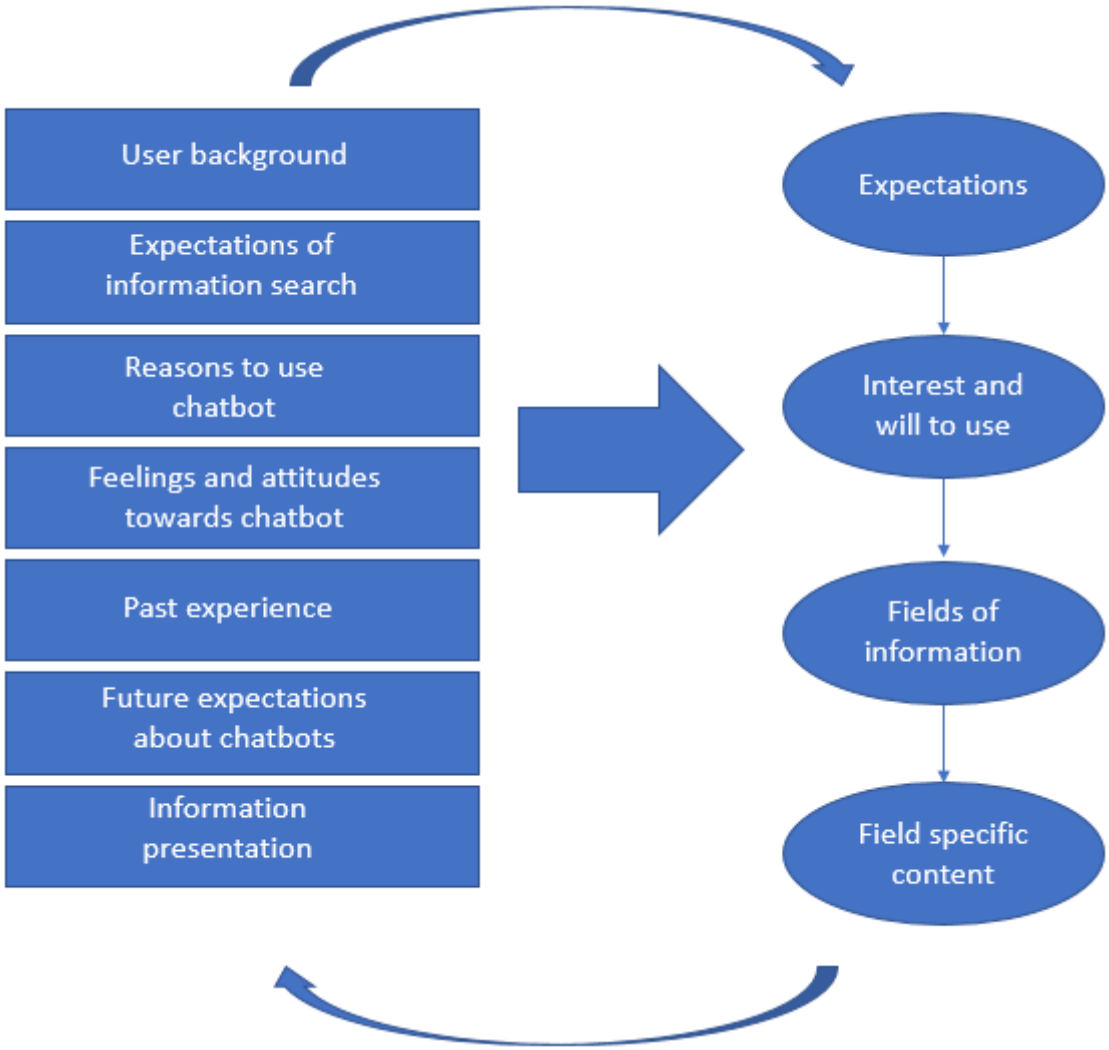

Figure 19. Content development model.

1 User Background

It is important to know the background of the user. Acknowledging this helps with content creation and development. When you know who your user's are it is easier define content and focus on most important aspects. In this case most of the answerers were from Europe and from sales and marketing department. However, there were also many answerers from Asia and from the management department.

2 Expectations of information search

It is important to acknowledge what people appreciate when searching information online. This helps to create content what users appreciate. Currently users appreciate ease of finding information and accuracy information not forgetting fast finding of information. In addition, information should be easy to understand.

3 Reasons to use chatbot

It is good to acknowledge reasons why people are using chatbot instead of other options available. This helps defining user cases and situations where people are using chatbot. Users are often choosing chatbot because there isn't any other option available. In addition, easy access and ease of use are well appreciated.

4 Feelings and attitudes towards chatbot

It is important to understand what people think of chatbots based on their own experience and how they are feeling using the chatbot. This helps to get overall picture about current environment for chatbot. Currently people attitude is mostly neutral towards chatbot so there is room for positive development.

5 Past experience

It is good idea to look in the past and find out what how use of chatbot has affected on customer experience of people. Effect on customer experience is mostly seen neutral or positive. In addition, it is important to study what experiences people have concerning chatbot and would they recommend using it. People are seeing chatbot as an interesting idea and most would recommend using it occasionally but it is not a tool for everything. Common reasons why people are recommending chatbot are easiness to find information. Chatbot is also seen as fast way to find answer for a simple question. Chatbot

has to be more effective than common search engine and it should have advanced artificial intelligence. However, it is good to acknowledge that currently people haven't been using chatbot in the business-to-business environment in technology industry and it is quite new approach and there is room for positive development.

6 Future expectations of chatbot

At times it is good idea study how people are seeing the future of the chatbots. Most people are seeing future bright for the chatbots and this justifies need of chatbot. It is good to acknowledge that artificial intelligence should be more developed in the chatbots in the future if people are going to use it. However, it is good to acknowledge that chatbot is low cost tool and excellent application for searching answers to a simple question since database is growing all the time and customer can get benefit from this.

7 Information presentation

When creating content for chatbot it is important to know how users would like to receive answer from the chatbot. Best option is to present specific answer to a question. However, answer could also be a link to page where answer for the question is. In some cases, guiding user to correct direction is viable option.

8 Expectations

One of the most important steps creating content for the chatbot is to know user expectations. Customers are expecting fast response and accurate information. Chatbot should at least be more efficient search engine than for example google when it comes to company products and services. In addition, artificial intelligence is expected and chatbot should also understand question if it is not written precisely and it should recommend similar answers and questions based on what user is writing.

9 Interest and will to use

It is important to find out if people are interested to use chatbot and currently people are interested to use it. In addition, before creating chatbot it is important to find out if people are willing to use chatbot in problem solving in company web page. This helps to figure out if it is time to publish chatbot. If chatbot is already existing and people are not willing to use it, then it is time to study why people are not willing to use and how to improve chatbot. Currently more than half is willing to use chatbot at least occasionally.

Step 10 Fields of information

Since content creation takes time it is important to narrow down the content that will published at first. At least 90% of users want to see three topics in the chatbot. These topics are technical support, product information and customer support. However, also sales support is important to implement at some point. Sales and marketing are not currently crucial topics in the chatbot.

Step 11 Field specific information

It is important to study more depth what topics such as customer support and technical support should include. Studying this gives new ideas and helps to create more supportive questions and answers to customer. In this case technical information and technical support are most common topics. In addition, product information is important topic to cover. Specific information such as availability of products and spare parts, delivery time, frequently asked questions, product operation and safety, product functionality, manuals, guidelines, sales contacts, price lists, fault and warning codes, warranty info, schematics, troubleshooting and possibility to submit support request are important to add into chatbot. Also chance to submit quotation was mentioned.

5.7 Artifact evaluation

This study aimed to design instructions and model what are expectations for technology industry chatbot and how chatbot content and information should be presented. In addition, it aimed to study the content of chatbot knowledge base in the case company web portal and also what are people expectations and requirements. Outcome was guidelines for the new chatbot information and content development in the technology industry.

Guidelines are intended for people who create and maintain content in the chatbot. It helps them to understand how people are searching information and how information should be presented to user to ensure best possible user experience and customer experience. In addition, it gives ideas what content chatbot should have. What is more, guidelines are helping content creators and managers to offer most demanded data to be available immediately from the publishing of the chatbot. Chatbot will be available in customer portal so it is possible that users are requiring same information that customer portal is offering but finding it should be faster and easier with the help of the chatbot. This is significant problem since before this study case company didn't have any researched information about expectations, attitudes and search of information or content of the chatbot. There were only assumptions. This study helped in the collecting of information and guidelines provided answers for these problems.

Case company representative has been part of the survey creation and requirement was that study outcome needs to introduce chatbot technology used in the company. In addition, study should develop and define guidelines and model to a chatbot and this model should support cyclic manner development to develop, test and publish content to the chatbot. Addition to this, artifact should validate content of the chatbot service and it should take into account customer reference group who will be using this chatbot and it should support different customer journeys. Iterative manner of development was already included in the artifact but it wasn't drawn to it. This was added to second version of the artifact since case company underlined this requirement and wanted it to be

clear. This iterative process is described with arrows around the artifact. Overall, goal was to help creating even better customer experience with the help of chatbot.

Existing literature hasn't been concentrating to this problem and they are mostly concentrating on the consumer and not the businesses. In addition, existing literature is not studying information content of the chatbot but more to user experience and how existing chatbots are affecting on customer experience. In this study, it was possible to re-use content strategy research methods by using data map. In addition, survey was possible to build with the help of existing user experience and customer experience research. These new guidelines was built from the beginning based on requirements of the case company. This study was not concentrating on technology but more to the user experience, customer experience and content. There are many different technologies for chatbot development and in this case company tools are provided by Microsoft Azure. Since this study focused on creating guidelines for chatbot development and content strategy demonstration was carried out by presenting the results of study and developed artifact to representatives of the case company. Outcome was evaluated twice. First evaluation is based on design science principles and it is in a concept level. Second evaluation was professional review and it was carried out by marketing and communication professional in the case company. Addition to this, feasibility of artifact was ensured by the same professional. At first artifact was evaluated from the overall perspective and after that from the perspectives of the case company marketing and communication environment. These evaluations ensure that artifact can be used in the case company and also in the other technology companies. In addition, evaluation ensured that created artifact meets expectations and requirements of the case company and that it solves problem as design science artifact should.

First evaluation was conducted in the concept level and it was based on certain evaluation criteria which was introduced in the study conducted by the Prat, Comyn-Wattiau & Akoka (2014). Criteria's are divided into five different dimensions. These dimensions are

goal, environment, structure, activity and evolution. These different categories are described on the figure 20. Different dimension are explained in the evaluation phase,

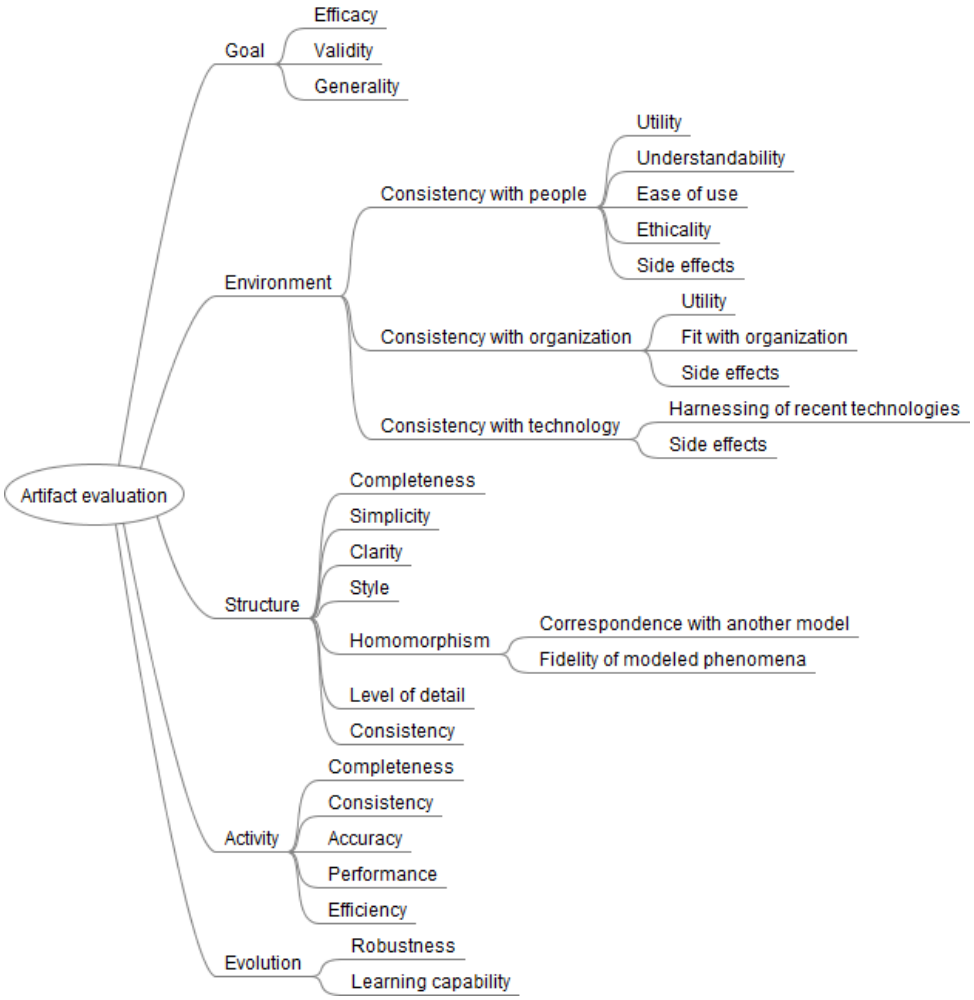

Figure 20. Adaption of evaluation hierarchy (Prat & others 2014).

Second evaluation was based on the value artifact gives to case company. Evaluation was conducted by doing professional review to the thesis and to the artifact.

5.7.1 Proof of concept

First evaluation goal was to find out if artifact answers to research question and solves the problem it was supposed to. Evaluation was carried out by using criteria provided by Prat & others (2014). Artifact was evaluated from the overall perspective on a concept level. When artifact is evaluated first step is to evaluate was the goal of the artifact achieved. This part considers three steps: efficacy, validity and generality. Artifact efficacy is achieved. Study found out how chatbot can improve customer experience in the technology company. It takes into account different aspects of user experience, customer experience and content strategy and combines them into guidelines for chatbot content development which can be easily used in the development and reviewing existing chatbot. Artifact validity is good since population that answered to survey is enough versatile to draw conclusions how chatbot can be used to improve customer experience in the several aspects. This artifact generality is achieved since it can be also used in the different technology and industry companies since there isn't any case company specific aspects.

Next step is to evaluate environment where artifact is used. Artifact utility is good since it can be easily used in the development and it gives ideas and make people think different aspects. Artifact model is easy to understand by just looking artifact and addition to this, all steps are also explained more depth. It is easy to use in the development. Artifact ethicality is considered since it acknowledges all the people in the organization and it does not exclude any people or any department in the organization. Addition to this, there isn't any negative side effects of using the artifact. This artifact consistency with the organization good since outcome is based on company employees who are working in the company and in the technology industry. Consistency with the technology is existing since chatbot technology is already existing and this artifact is easy to use in the development of the chatbot. However, it is important to knowledge that outcome of this study was not technological but guidelines for chatbot and chatbot content development.

It also important to evaluate structure of the artifact. Artifact is complete in its own field and its clarity is good. Survey questions were mostly based on different aspects of user experience, customer experience and content strategy and this artifact takes into account all these aspects. Addition to this, artifact is simple enough to understand for anybody who has some knowledge about user experience and customer experience. Content strategy itself is easy to understand for everybody since it is very practical way of approach. Artifact style is understandable and model itself is well explained. Way how model is presented is common in academic and professional environments which makes it easier to understand. Homomorphism is not that well presents since similar models doesn't exists. However, artifact is build based on survey which was based on user experience, customer experience and content strategy and it is corresponding to existing theory. Level of detail and consistency is good and it is important that all steps are explained separately.

Completeness and consistency of the artifact is important to evaluate. Completeness of the activity includes functionality of the artifact. Artifact can be used in the development of the chatbot and also in reviewing existing chatbot which also leads to good consistency of the activity. Accuracy and performance are good since artifact can be used in the tasks it is developed and it also increased performance of the development since these aspects of the artifact are already considered before development. Artifact efficiency is good since it brings more to development but doesn't take anything out of it.

Artifact evolution includes robustness and learning capability. Currently artifact is performing well since it offers framework for chatbot content development and also to reviewing it. Artifact can be easily developed since aspects presented in the artifact are based on how people think and since people thinking is evolving all the time also artifact can evolve if there is need of it.

5.7.2 Proof of value

Second evaluation was a professional review. Case company marketing and communications expert evaluated artifact from the company perspectives based on the company requirements and what value it gives. Addition to this, this expert worked as a supervisor of the thesis. This ensured that evaluator has wide understanding of the thesis topic and artifact evaluated.

Company is in contact with the customers in a multiple ways. Company purpose was to find out, if chatbot could be one of those customer support channels to improve customer experience. Goal was also to find out what expertise areas chatbot would fit best. Company is now fully aware what it takes from the technical aspect to publish chatbot. Addition to this, study find out different steps that can be iterated through constantly to improve chatbot and customer experience. These steps were clearly introduced in the study in the form of content development model. Steps are easy to follow and easy to understand and they can be used in the development and reviewing process. Addition to this, model stated clearly enough that these steps should be iterated all the time. Company has now taken clear actions to publish chatbot in the future by gathering project group which members are responsible for chatbot development and publishing. Study find out valuable information of customer expectations of chatbot. This information will greatly help in the planning and development of the chatbot. Addition to this, outcome includes expertise areas that chatbot should include when publishing and it also states how customers are willing to use chatbot. Artifact includes lot of useful information to launch chatbot by the end of 2020. In addition, co-operation and communication outcome to different parties has been excellent. All in all, artifact solves addressed problem and it gives clear guidelines how chatbot content should be build and what needs to be developed further all the time.

Addition to expert evaluation, study outcome was presented to stake holders of the company in the online meeting. Meeting had 15 participants and all of them were working in the company as an experts or managers. This group of participants were people who

were working with the information systems development, customer support, marketing, quality tasks and also in the customer experience development projects. Presentation included going through goals of the study and reasons why this is important area to study. Addition to this, results of the study were presented to these people. Feedback was positive and they saw that this study has value to a company and it will be used in the chatbot development.

6 Discussion

This study aim was to find how chatbot can be used to improve customer experience in the technology company and based on the outcome goal was to build design science artifact. Reason to study this topic was that until now, there haven't been any model or guidelines which is focusing on this topic since most of the studies have been concentrating on business-to-customer environment and for example to usability of the web page or application which is also important part of customer experience, but more narrow than outcome of this study. In addition, studies haven't been focusing on content and content strategy. Moreover, other studies have been focusing on already existing chatbot and not to a non-existing one or to the chatbot which is in development. To study this it was important to go through customer experience, user experience and content strategy and based on these topics survey was created.

Customer experience refers to quality of customer interactions with company and relationships to company services and products. It includes pre-sales and post-sales and it can be direct or indirect. Direct interaction would be when customer buys company products and indirect when customer reads articles or reviews from social media about the company (Batra 2017). According Meyer & Schwager (2007) customer experience is subjective response of customer indirect or direct contact to company. In addition, it includes quality of offering, quality of customer service, product packaging, products, and ease of use, features and reliability. Digital customer experience includes also ease of use but also customization and connectedness. Still, ease of use remains most important part of digital user experience (Rose & others 2012). Since chatbot are commonly used in the web page or in an application also user experience is important thing to acknowledge when talking about customer experience. User experience emerges from user or customer interacting with product, service, system, or object. (Effie & others 2009). Moreover, content strategy is combination of knowledge management, content modeling and even user experience (Baehr 2013) and this important part of the study. This study focused on chatbot aspect and that is reason why it was important to

explain shortly what cloud computing is since chatbots are working in the cloud. In addition, since this study was made for the case company it was important to go through what technologies they are using to clarify the context of study.

In this study customer experience and user experience were studied by researching what people appreciate when searching information, what are their expectations about chatbot and also what attitudes towards chatbot are. In addition, study went through how people are seeing the future of the chatbot and would they recommend it and why they would recommend. Moreover, study wanted to find out how use of chatbot have affected on user customer experience about the company. One of the most important part of the study was to find out what content users would like to see in the chatbot and how this content should be presented. Survey was created based on existing research and descriptions of customer experience, user experience and content strategy. In addition, some questions were clearly based on requirements of the case company. However, these particular questions didn't include any specific information and they can be seen as part of the customer experience and user experience since they are helping the development of the chatbot which aim is to increase positive customer experience.

Study results are implicating that users have different preferences about what they appreciate in information search and content and all preferences should be acknowledged when creating chatbot to ensure best possible customer experience and user experience. Users are wanting that chatbot is easily accessible and it should be fast and easy way to search information and it should be good tool to navigate in the web page. In addition, some user are curious about new technologies like chatbot and this can be seen as positive impact on the use of chatbot. Currently attitude towards chatbot is mostly neutral and there is chance to impress customer and create even better customer experience. Moreover, people are also recommending the chatbot for problem solving at least occasionally but it is not tool for everything. Based on results chatbots have positive effect on customer experience and it is seen as a good tool for finding simple answers to simple questions and since knowledge base is growing all the time customer will get benefit

from this. To keep chatbot content simple and useful at first it is important to focus on technical support, product information and customer support. Content from sales and marketing is not crucial at first but it can be added later to improve customer experience even more and to enhance and optimize processes in the company. By adding this chatbot might become even more comprehensive tool in the company. All in all, future of the chatbots is seen bright and there is positive customer environment for the chatbots. However, chatbots should have good artificial intelligence and good performance to become more common. On the other hand, since technology is developing all the time there is no doubt that chatbot will not become smarter and better over time.

Based on the outcome of the survey, design science artifact was created. This artifact is guidelines for the chatbot development and for the content development. It can be seen as a short check list for the chatbot development. Outcome is not complete content strategy for chatbot but part of it. Outcome can be used in the chatbot creation and when guidelines are acknowledge in the development and followed correctly it is possible to create best first version of the chatbot. In addition, these guidelines can be also used for reviewing existing chatbot with minor adjustments. Concepts are still staying same but how they are researched will change. Even though this study was made for the case company, guidelines are built that they can be used in any technology industry chatbot. Guidelines are the frame for the development and their idea is to remind developers what should be taken into account when developing or building chatbot. These guidelines give ideas to developers and content developers and they can be adjusted to company requirements since there isn't any specific or unique guidelines for the case company.

Study met expectations of the case company and outcome will be used in the chatbot development. Goal is to publish chatbot by the end of year 2020. Addition to this, artifact can be also used elsewhere and it is not limited to this specific company.

7 Conclusion

This research wanted to find out how chatbot can be used to improve customer experience in the technology company. In this study focus was on customer experience, user experience and content strategy. Research were carried out by sending an online survey to group of people inside case company. This group consisted of different nationalities and experts.

This study was limited to certain group of people and most answerers were from Europe and they were working in the sales and marketing or management. This might have minor effect on results. In addition, since there was only 59 answers the results are slightly limited. However, certain points and aspects were present constantly when going through results and this implicates that people are agreeing most of the results even though they answered as an individual. In addition, design science artifact was possible to build based on results and it can be easily used when developing chatbot or reviewing existing one. It covers most important aspects and it is working as a short check list.

Future research could go deeper in the field of attitudes and expectations. In addition, one study field could be content strategy of a chatbot. This study is only part of content strategy and it does not cover everything that content strategy should have. Another good field of study would be to create new study with similar aspects and goal could be that as many nationalities as possible would answer to a survey. When there is different nationalities involved it would be interested to see how different answers are or would there be any big differences.

Study outcome showed that people are willing to use chatbot and there is positive environment for the chatbots. In addition, study found out that people would like to find information concerning technical support, product support and customer support and all information should easy and fast to find. However, artificial intelligence has a big role in the future of the chatbot and it is important that it will be developed enough so chatbots can become efficient tool.

References

Baehr, C. (2013). Developing a Sustainable Content Strategy for a Technical Communication Body of Knowledge. Technical Communication. Volume 60 (4). 293-306. Retrieved on 2020-02-16 from https://www-ingentaconnect-com.proxy.uwasa.fi/content/stc/tc/2013/00000060/00000004/art00004;jsessionid=3cntsmub2lhw0.x-ic-live-01#expand/collapse on 2020-03-10

Batra, M. M. (2017). Customer experience-an emerging frontier in customer service excellence. Competition Forum, 15 (1), 198-207. Retrieved on 2019-10-07 from https://search-proquest-com.proxy.uwasa.fi/docview/1960320371?accountid=14797

Blakiston, R. (2013). Developing a Content Strategy for an Academic Library Website. Journal of Electronic Resources Librarianship. Volume 25 (3). 175-191. https://www.doi.org/10.1080/1941126X.2013.813295

Boulton, C. (2017). What makes a great chatbot? Laser focus on customers. Computerworld Hong Kong, Retrieved on 2019-10-10 from https://search-proquest-com.proxy.uwasa.fi/docview/1933931016?accountid=14797

Bustamante, J., & Rubio, N. (2017). Measuring customer experience in physical retail environments. Journal of Service Marketing. Vol. 28(5). 884-913. https://doi.org/10.1108/JOSM-06-2016-0142

Detrol, B. Information management (2010). International Journal of Information Management. Volume 30 (2). 103-108. https://doi.org/10.1016/j.ijinfomgt.2009.12.001

Dong-Hee, S. (2015) Quality of experience: Beyond the user experience of smart services. Total Quality Management & Business Excellence. Issue 26 (7). 919-932. https://doi.org/10.1080/14783363.2014.912037

Edwards, J. (2015). The great oxymoron: B2B UX. Journal of Direct, Data and Digital Marketing Practice, 16(4), 266-269. Retrieved on 2019-09-10 from http://dx.doi.org.proxy.uwasa.fi/10.1057/dddmp.2015.22

Effie, L.C.L., Roto, V., Hassenzahl, M., Vermeeren, A., & Kort, J. (2009). Understanding, scoping and defining user experience: a survey approach. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. https://dl.acm.org/citation.cfm?id=1518813

Gentile, C., Spiller, N., & Noci, G. (2007). How to Sustain the Customer Experience: An Overview of Experience Components that Co-create Value With the Customer. European Management Journal. Vol. 25(5). 395-410. https://doi.org/10.1016/j.emj.2007.08.005

Hassenzahl, M., & Tractinsky, N. (2006). User experience – a research agenda. Behaviour & Information Technology. Vol. 25 (2). 91-97. https://doi.org/10.1080/01449290500330331

Hevner, A. R., March, Salvatore.T., Park, J., & Ram, S. (2004). Design science in information systems research. MIS Quarterly Vol. 28 (1). 75-105. https://doi.org/10.2307/25148625

Klaus, P. (2011). Customer Experience: Are we measuring the right things? International Market Research. Issue 53 (6). 115-122. https://doi.org/10.2501/IJMR-53-6-771-792

Kujala, S., Roto, V., Väänänen-Vainio-Mattila, K., Karapanos, E., & Sinnelä, A. (2011). UX Curve: A method for evaluating long-term user experience. Interacting with Computers. Volume 23 (5). 473–483. https://doi.org/10.1016/j.intcom.2011.06.005

Kumar, A., Steward, M. D., Morgan, F. N. (2018). Delivering a superior customer experience in solutions delivery processes: Seven factors for success. Business Horizons. Volume 61 (5). 775-782. https://doi.org/10.1016/j.bushor.2018.05.010

Lallemand, C., Gronier, G., & Koenig, V. (2014). User experience: A concept without consensus? Exploring practitioners' perspectives through an international survey. Computers in Human Behavior. Vol. 43. 35-48. https://doi.org/10.1016/j.chb.2014.10.048

Laugwitz, B., Schrepp, M., & Held, T. (2008). Construction and evaluation of a user experience questionnaire. Berlin. Springer-Verlag. https://doi.org/10.1007/978-3-540-89350-9_6

Lemon, K. N., & Verhoef, P.C. (2016). Understanding Customer Experience Throughout the Customer Journey. Journal of Marketing. Volume 80. 69-96. https://doi.org/10.1509/jm.15.0420

McLean, G., Al-Nabhani, K., & Wilson, A. (2018). Developing a Mobile Applications Customer Experience Model (MACE) - Implications for Retailers. Journal of Business Research. Vol.85. 325-336. https://doi.org/10.1016/j.jbusres.2018.01.018

McLean, G., & Wilson, A. (2016). Evolving the online customer experience. Is there a role for online customer support? Computer in Human Behavior. Volume 60. 602-610. https://doi.org/10.1016/j.chb.2016.02.084

Meyer, C., & Schwager, A. (2007). Understanding Customer Experience. Harvard Business Review, 85(2), 116–126. https://hbr.org/2007/02/understanding-customer-experience

Microsoft Corporation (2019). What is the QnA Maker service? Retrieved on 2020-02-10 from https://docs.microsoft.com/en-us/azure/cognitive-services/qnamaker/overview/overview

Microsoft Corporation (2019). What is Language Understanding (LUIS)? Retrieved on 2020-02-10 from https://docs.microsoft.com/en-us/azure/cognitive-services/luis/what-is-luis

Microsoft Corporation (2020). What is cloud computing? Beginners guide. Retrieved on 2020-02-11 from https://azure.microsoft.com/en-us/overview/what-is-cloud-computing/

Mithas, S., Ramasubbu, N., & Sambamurthy, V. (2011). How information management capability influences firm performance. MIS Quarterly. Volume 35(1). 237-256. http://doi.org/10.2307/23043496

Pappas, I. O. (2018). User experience in personalized online shopping: a fuzzy-set analysis. European Journal of Marketing. Vol 58(7). 1679-1703. https://www.emerald.com/insight/content/doi/10.1108/EJM-10-2017-0707/full/html

Peffers, K., Tuunanen, T., Rothenbergers, M. A., & Chatterjee, S. (2008). A Design Science Research Methodology for Information Systems Research. Journal of Management Information Systems. Vol. 24. (3), 45-77. https://doi.org/10.2753/MIS0742-1222240302

Petre, M., Minocha, S., & Roberts, D. (2006). Usability beyond the website: an empirically-grounded e-commerce evaluation instrument for total customer experience. Behaviour & Information Technology. Volume 25. (2), 189-203. https://doi.org/10.1080/01449290500331198

Rauschenberger, M., Schrepp, M., Cota, M-Perez., Olschner, S., & Thomaschewski, J. (2013). Efficient Measurement of the User Experience of Interactive Products. How to use the User Experience Questionnaire (UEQ). International Journal of Interactive Multimedia and Artificial Intelligence. Volume 2(1).39-45. https://doi.org/10.9781/ijimai.2013.215

Reshm, I.S., & Krishnan, K. (2016). Implementation of an inquisitive chatbot for database supported knowledge bases. Sadhana. Vol. 41. (10), 1173-1178. https://doi.org//10.1007/s12046-016-0544-1

Riikkinen, M., Saarijärvi, H., Sarlin, P., & Lähteenmäki, I. (2018). Using artificial intelligence to create value in insurance. The International Journal of Bank Marketing, 36(6), 1145-1168. http://dx.doi.org/10.1108/IJBM-01-2017-0015

Prat, N., Comyn-Wattiau, I., & Akoka, J. (2014). Artifact evaluation in information systems design-science research - a holistic view. Pacific Asia Conference on Information Systems (PACIS). https://pdfs.semanticscholar.org/b5a3/e84916cb217b33a04b584b91887f8fc92fa3.pdf

Rose, S., Clark, M., Samouel, P., & Hair, N. (2012). Online Customer Experience in e-Retailing: An empirical model of Antecedents and Outcomes. Journal of Retailing. Vol 88(2), 308-322. https://doi.org/10.1016/j.jretai.2012.03.001.

Schrepp, M., Hinderks, A., & Thomaschewski, J. (2017). Construction of a Benchmark for the User Experience Questionnaire (UEQ). International Journal of Interactive Multimedia and Artificial Intelligence. Volume 4(4). 40-44. https://doi.org/10.9781/ijimai.2017.445

Skjuve, M., Haugstvei, I.M., Følstad, A., & Brandtzaeg, P. (2019). Help! Is my chatbot falling into the uncanny valley? An empirical study of user experience in human-computer interaction. Human Technology. Vol.15 (1). 30-54. https://doi.org/10.17011/ht/urn.201902201607

Straker, K., & Wrigley, C. (2016). Emotionally engaging customers in the digital age: the case study of “Burberry love”. Marketing and Management. Vol 20(3). 276-299. https://doi.org/10.1108/JFMM-10-2015-0077

Stewart, T. (2015). User experience. Behaviour & Information Technology. Vol. 34 (10), 949-951. https://doi.org/10.1080/0144929X.2015.1077578

Appendix 1. Online survey questions

1. Your Continent
    - Africa
    - Asia
    - Australia and Oseania
    - Europe
    - North America
    - South America
2. Your country
3. Job function
    - Management
    - Finance and IT
    - Customer Care and Quality
    - Sales and Marketing
    - Solutions Center
    - Operations
    - R&D
    - Product Management
    - Service
4. What are the most important things for you when searching information online (choose one or more)?
    - Fast to find
    - Easy to find
    - Accuracy of information
    - Easy to understand
    - Other
5. Is chatbot interesting idea?
    - Extremely Interesting
    - Interesting
    - Partly interesting
    - Little interesting
    - Not interesting
6. How many times have you used a chatbot?
    - 16 or more
    - 11-15
    - 6-10
    - 1-5
    - 0
7. Why did you choose to use chatbot instead of other options available?
    - It was easy to access
    - It was easy to use
    - It was a fast way to find an answer
    - I didn't find solution by myself
    - There was no other solution available

Positive past experience using chatbot
I wanted to try chatbot
Other

8. How did it feel to use chatbot?
   Enjoyable
   Slightly enjoyable
   Neutral
   Annoying
   Extremely annoying
9. Was it difficult to use chatbot?
   Extremely easy
   Easy
   Average
   Difficult
   Extremely difficult
10. How fast did you find the answer?
   Extremely fast
   Fast
   Average
   Slow
   Extremely slow
11. How efficient it was to find the answer?
   Extremely efficient
   Efficient
   Average
   Inefficient
   Extremely inefficient
12. How motivating it was to use chatbot?
   Extremely motivating
   Motivating
   Slightly motivating
   Little motivating
   Not motivating
13. Would you recommend chatbot for finding an answer?
   Always
   Often
   Occasionally
   Seldom
   Never
14. Why would you recommend using chatbot?
15. How did use of chatbot affected to your experience about the company?
   Extremely positively
   Positively
   No effect
   Negatively

Extremely negatively

16. Have you used chatbot in business-to-business channel?
    Constantly
    Often
    Occasionally
    Seldom
    Never
17. How do you see the future of the chatbots?
    Extremely positive
    Positive
    Neutral
    Negative
    Extremely negative
18. What thoughts do you have about the future of chatbots?
19. What kind of response would you prefer from a chatbot?
    Plain text answer
    Specific answer
    Link to page where solution can be found
    Link to page where more information can be found
    Guiding to correct direction
    Other
20. What expectations you have when using chatbot (for example, easy to use)?

21. How often would you use chatbot to find answers concerning this company products and services?
    Constantly
    Often
    Occasionally
    Seldom
    Never
22. What functions chatbot for customers should cover?
    Customer Support
    Marketing
    Sales
    Sales Support
    Technical support
    Product information
    Other
23. Can you specify what information functions you chose in the previous question should include (for example "sales: price list")?
24. If you have any thoughts or experiences about chatbots you would like to share you can write them here.