Designing
Conversational User Interface
for commercial purposes

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Designing Conversation User Interface for Commercial Purposes

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Preface

In this paper, you can read my final thesis "Designing Conversation User Interface for Commercial Purposes". It has been written to fulfil the graduation requirements of the Creative Media and Game Technologies course at the Saxion University of Applied Sciences. I was engaged in working for this research project and writing this thesis from February to June 2019.

This research was conducted at the request of Sticky Bandits, where I completed my internship. I want to thank Thijs Mensink and Chris Hudepohl for proving me the guidance and support to make this project possible. Within this project I could truly explore myself as professional in a real working environment.

I sincerely thank Mark Melenhorst, my graduation coach, for his patient guidance, constant feedback and advice. I consider myself exceptionally lucky that I had an opportunity to receive so much support and encouragement from Mark during my research. I would also like to thank my team that I had the pleasure to work with during my internship. They gave me so much motivation and support during this project.

As with this thesis, my CMGT phase will come to an end, I want to thank all my dear friends for always being there for me when I needed it the most. Eliz Fikret, Anca Axinte, Meda Moisa and Ugne Silgalyte, you have become my second family. Thank you so much for sharing these wonderful years with me and making this experience truly magical.

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Camilla Carmack

Enschede, June 2019

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Abstract

Conversational User Interface (CUI) is an interface that interacts with users by the means of a human conversation and is increasingly being adopted in different industries every day. Today, businesses use CUI for various commercial purposes. This digital trend was noticed by Sticky Bandits, a marketing agency located in Enschede, the Netherlands. Sticky Bandits requested the researcher to explore commercial opportunities of deploying a CUI solution.

The aim of this study is to research the benefits of the conversational commerce, create reusable guidelines for creating a commercial CUI for Sticky Bandits and to design and assess a CUI made for Cooper Tires, a client of Sticky Bandits. To this end, the following research questions was composed: "How effective is the Conversational User Interface designed for Cooper Tires in stimulating purchase intention?".

The main research question was answered by resolving a number of sub-questions. Firstly, the main problem was discussed with the stakeholders and objectives were set. Then desk research was conducted to create an overview of the current state of CUI in the world of commerce. Based on the theoretical framework, concept guidelines were created. These guidelines were used to design a commercial CUI for Cooper Tires. In order to design the CUI, market and target audience research was performed by the means of analysing the analytics of the current customer base and interviews with the potential customers. Furthermore, conversational flows were created based on the needs of the customers. During the experimental design phase, multiple versions of the CUI prototype were designed and tested. Iterative design approach allowed to improve the quality of the user interface with every iteration based on the user test results. The CUI prototype was evaluated with the objective to measure the efficiency of the interface in stimulating purchase intention. Moreover, this test measured the influence of the CUI to important outcomes, such as website quality, customer satisfaction, customer engagement and service quality.

The findings showed that the CUI had a positive influence on the purchase intention of the customer. This suggests that guidelines were functional. Moreover, Sticky Bandits can reuse the guidelines and Cooper Tires received a sufficient conversational solution

Additionally, more research is needed to provide more insight into the effect of the CUI on the purchase intention. The results and products of this research project can offer the guidelines to design better commercial CUI.

Keywords: conversational user interface, chatbot, purchase intention, automotive tire market.

What's inside

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Introduction

There has been an enormous increase of conversational user interfaces in the past years (Mindbowser, 2017). Conversational User Interface (CUI) is an interface that is designed to imitate a conversation with a real human (Shevat, 2017). CUI is used to make chatbots, virtual and voice assistants. CUI has emerged as a way for businesses to engage with their customers, provide with relevant content, answer questions and help customers completing various tasks. According to Aspect (2016), 45% of 10000 consumers would prefer customer service communications to be conducted via a conversational user interface. Currently, big brands such as Google, Amazon, Spotify implementing CUI to interact with their customers to increase customer satisfaction and to reduce the costs (Gartner, 2018). CUI allows users to complete various tasks via a familiar interface. Airlines offer their customers the ability to search for flights, buy tickets and check in using a conversational interface. Clothing brands give their clients fashion advice based on prior purchases or personal preferences with the use of virtual assistants. Chatbots are gaining popularity in the Netherlands as well. Some major brands like KLM, ASR, and Bol.com started to use chatbots for commercial and customer support purposes. (Boeve, 2018).

This research project is performed on behalf of Sticky Bandits, a marketing agency located in Enschede, the Netherlands. Sticky Bandits noticed the trend of businesses deploying CUI for commercial purposes. Therefore, Sticky Bandits wants to explore the possibilities and benefits of the CUI and how it can fulfil the needs of their clients.

This study aims to provide more insights into the commercial use of conversational user interface, create guidelines that can be reused by Sticky Bandits and create a prototype of CUI solution for one the clients, a tire manufacture company called Cooper Tire & Rubber Company.

Company Outline

Sticky Bandits is an innovative consultancy agency focusing on business-to-business (B2B) advertising and marketing. The agency was established in 2017 by creative strategist Thijs Mensink and digital strategist Chris Hudepohl. The team of nine members also includes activation strategists and communication specialists and visual designers. Sticky Bandits specialises in services for businesses that are primarily globally oriented in the business-to-business -to-consumer (B2B2C) industry, where the objective is digital transformation. This is accomplished by applying a fresh vision, including setting and tracking strategic objectives and applying innovation online.

Client Outline

Cooper Tire & Rubber Company is an American company that specialises in the design, manufacture, marketing and sales of replacement automobile and truck tires, and subsidiaries that specialise in medium truck, motorcycle, and racing tires. Cooper Tire, headquartered in Findlay, Ohio, has 60 manufacturing, sales, distribution, technical and design facilities within its subsidiary family globally. In July 1960, the company became a publicly held corporation and was listed on the New York Stock Exchange. Cooper owns the UK-based Avon Tyres brand, which produces tires for motorcycles, road cars and for motor racing. Today, Cooper Tires is the 13th largest global tire manufacturer (Cooper Tire & Rubber Company, n.d.).

Problem Indication

Sticky Bandits sees big potential in the conversational user interfaces. They believe that conversational commerce is the next big trend in the digital world that will change the way brands interact with their customers. By this time, some clients already ask for new solutions for their businesses that include conversational commerce. Therefore, Sticky Bandits wants to be able to fulfil the needs of their clients.

Cooper Tires wants to be the top of the mind when it comes to buying new tires. Since tires are a low-interest product it can be quite challenging. That is the reason why Cooper wants to build a strong brand and be recognisable among potential customers. Cooper wants to find new ways to engage with their customers, improve the brand image in order to reach their goal.

Problem Statement and research questions

Over the last years, Sticky Bandits noticed that the rise of virtual assistants caused the use of text or voice assistants a fixed habit for a lot of people. Therefore, people expect the same level of engagement with every brand. This makes the competition harder for businesses that use traditional websites as the only medium. Sticky Bandits wants to address this issue and explore the potential of conversational solutions for their clients.

Cooper Tires wants to be the first choice when it comes to buying tires. In order to reach that goal, they have to offer customers the best purchase experience from the beginning to the end. Tires are classified as a low-interest product. As the result, Cooper has a problem attracting their customers to buy tires.

Deriving out of the problem statement, the following research questions were formulated.

The main of the research:
How effective is the Conversational User Interface designed for Cooper Tires in stimulating purchase intention?

Sub-questions:
1. How to stimulate purchasing intention by the use of a conversational experience?
2. Which guidelines can support the development of commercial CUIs?
3. How to apply these guidelines in the case of Cooper Tires?

Scope and limitation of the study

This research will focus on developing guidelines for commercial CUI and designing a CUI for Cooper Tires. The guidelines were based on the literature review and revised during the designing process. Considering the problem of the client, this study will primarily explore the commercial features and benefits of the conversational solutions. Due to time constraints, the software for the product will not be developed. The clickable prototype will be used to test the usability of the interface and purchase intention of the customer.

Theoretical Framework

In this chapter, the theoretical framework will be presented. First of all, the automotive tires market was researched to analyse the industry of the Cooper Tires. Secondly, conversation user interface and it's commercial features were explained. Thirdly, the design processes of CUI were examined. The best cases of using CUI for commercial purposes were identified. Furthermore, purchase intention online and it's drivers were investigated.

Automotive tires market

A market analysis was performed in order to understand Cooper Tires' target market. Information about the customers, the competition and the industry was gathered and analysed. This analysis will provide the necessary data for conceptualising and design decisions.

During the 2019-2024 forecast period, the global automotive tire industry is expected to grow rapidly (Research and Markets, 2017). The tire is one of the vehicle's most crucial part. Tire supports the vehicle's weight, transmits vehicle propulsion and braking, and reduces the impact of road conditions while helping to maintain the direction of the vehicle. Tire companies need to constantly upgrade their manufacturing technology and launch new products in the marketplace to support growing demands, particularly from original equipment manufacturers (OEM) and consumers. Over the next decade, the global automotive tire market is set to grow at a Compound Annual Growth Rate (CAGR) of around 6.1%, reaching around $ 410.3 billion by 2025 (Research and Markets, 2017). Key players of this marker are Bridgestone Group (Japan), Continental Group (Germany), Goodyear Tire & Rubber Company (U.S.), Michelin Group (France), and Pirelli & C. S.p.A (Italy) (MarketsandMarkets, 2017). According to Mordor Intelligence (2018), the global automotive tire market is divided into three major segments (Figure 1): by tire type, by end channel and, by vehicle type.

Figure 1. Global Automotive Tires Market. Adapted from Mordor Intelligence (2018).

According to the research done by Google (2012) on the path of purchase in the tire industry, the main reason people buy new tires is routine replacement. As tires are a low-interest product, consumers more likely to purchase only when they need to replace worn out tires or they were reminded from their retailer. However, recently the tire industry is seeing steady growth as the number of drivers who look for tires online increased. Potential consumers are more likely to search only for the reasons of better prices, faster process and better selection (Google, 2012). Online customers spend more time searching for tires year to year. During the searching process customer can consider 3 and more brands (Compete/Google , 2013). Brand and reputation are increasingly important in the buying decision. Digital is also a significant drive of the purchase decision since the percentage of people who researched online before buying in person is growing rapidly (Compete/Google , 2013). 73% of consumers visited multiple websites prior to purchase (Compete/Google , 2013). Video is one of the key content when it comes to deep engagement since half of the tire purchasers used online video when researching tires (Compete/Google , 2013). Tire buyers are usually themselves the decision-makers. They are married, have at least one child, more educated, skewed only slightly male.

Competitor website analysis

Performing competitive analysis is essential before starting the development process in order to review and analyse industry trends and identify current solutions of rival companies. Since this study focuses on search tool for tires, competitive research was conducted on the way other companies offer service of searching tires for their customers. The majority of websites have a classic layout with a homepage, about page, search tool, and promotions. It was identified that the most common ways to search for tires are by vehicle and by tire size. Therefore, search interfaces of competitor companies and other tires websites were compared. As can be seen in the (Figure 2), companies offer search functions in different ways: input fields, buttons and drop downs. Continental, Bridgestone and Good Year offer an illustrated explanation next to the search field to make it easier for the user to understand what data they have to input.
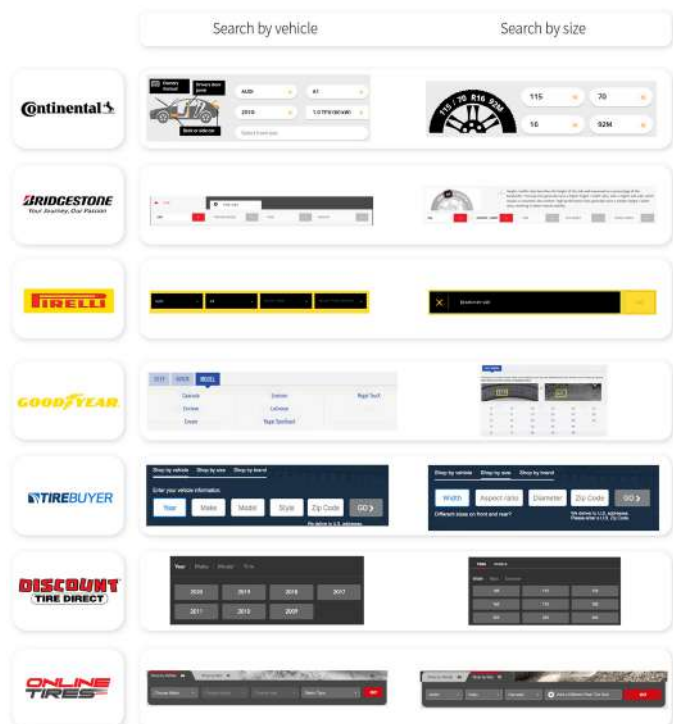

Figure 2. Competitor interface comparison.

Sub-conclusions

Automotive tires market rapidly grows in the past time. Due to this fact, competing in this market becomes harder each year. Cooper Tires is simultaneously involved in multiple segments of the market. Based on the analytics, tire buyers online have certain preferences and purchasing patterns. The competitor analysis showed how different companies approach similar problems and what are the results. This information is used later in the design process in order to make decisions based on the market and the targeted consumers.

Conversational User Interface

Conversational User Interface is an interface that lets users interact with brands and services by the means of a human conversation (Shevat, 2017). CUI is used to make chatbots and voice assistants. Traditionally, softwares used Graphical User Interface (GUI) to allow users to complete their tasks through windows, icons and menus (Shevat, 2017). CUI is not a new concept, in 1950s computer scientist Alan Turing introduced the idea of machines communicating like humans. During his study Turing developed a "Turing Test" that allowed to test machine's capability to present intelligent behaviour while holding a conversation (Copeland, 2004). The user has to be able to distinguish between a human conversation and a computer conversation, and if they failed to do so, the Turing Test would have been passed by the computer (Copeland, 2004). The first program that is considered as a prototype for today's chatbot was created by Joseph Weizenbaum and called Eliza. Eliza could communicate with humans and pretend to be one (Weizenbaum, 1966). Furthermore, in 1995 Richard Wallace developed an artificial linguistic internet computer entity called A.L.I.C.E. (Wallace, 2009). Currently, the most advanced digital assistants are Alexa by Amazon, Cortana by Microsoft, Sifi by Apple and Google Assistant by Google (Butt, 2018). A timeline of significant events in the history of chatbots can be seen in Figure 3.

The Turing Test
A test developed by Alan Turing. An introduction to a concept "Can machines think?".

PARRY
Parry was a simulation of a person with paranoid schizophrenia created by Kenneth Colby. It was more advanced that ELIZA

IBM Watson
Watson was developed to compete on the tv show "Jeopardy" in whitch he beat two competitors. Later IBM announced to utilize Watson for other purposes

ALEXA
Amazon created an intellegent personal assistant Alexa. It is capable of voice interaction though Amazon Echo

1966   1995   2010   2016

1950   1972   2006   2015

ELIZA
A computer program created by Joseph Weizenbaum at the MIT AI Laboratory. It is considered as a prototype for today's chatbot

A.L.I.C.E
The "Artificial Linguistic Internet Computer Entity" is a natural language processing bot created by Richard Wallace

SIRI
Apple's virtual operating assistant that lets users give voice commands. It uses "natural language user interface" to help users with their questions.

Messenger Bots
Facebook launches a messaging platform and became the leading chatbot program.It have opportunity to talk with chatbos through Facebook Messenger app
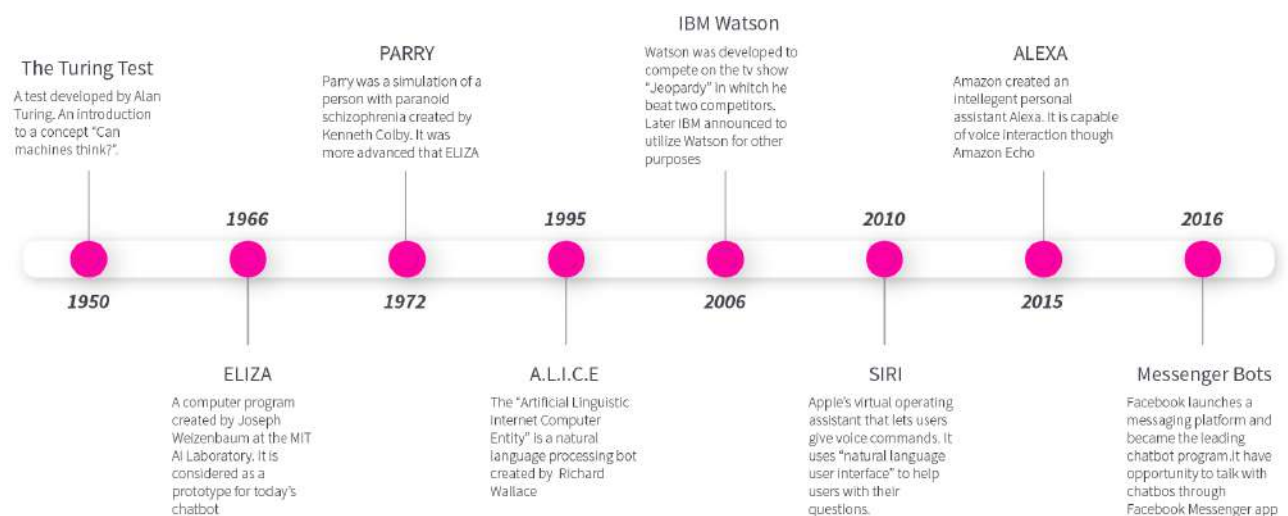
Figure 3. History of Chatbots (Vadlamani 2017).

CUI is the next major trend in the software industry after the world wide web and smartphone technologies (Shevat, 2017). CUI is a focal point in the tech world as major companies like Facebook, Microsoft and Google are making substantial investments in this new technology (D'Alfonso, et al., 2017). Today, chatbots are widely used in different ways from ordering a pizza to making bank transactions. Bots can also be found in common messaging apps like Slack, Kik or Facebook Messenger. And the other type of bots is embedded into webpages or apps. Usually their task is to provide information or service via a conversation.

Different types of chatbots

Botscrew (2018) sort modern chatbots in three categories:
- Rule-based chatbots
- Intellectually independent chatbots
- Artificial intelligent powered chatbots

Rule based chatbots are the most simple type of chatbots. The interaction between a user and the chatbot happens though buttons and predefined answers. For example, a fashion retail bot can ask a customer in which collections they are interested and give two options "spring" and "summer". After receiving the answers the bot will analyse collected data and give relevant content.

Intellectually independent chatbots are based on machine learning technology. These bots understand certain keywords that will trigger a relevant response. Over a period of time, they can process more information and answer a larger variety of questions. For example, if user will write "I need to book tickets to London" to the bot. The bot will recognise "book", "tickets" and "London" and provide with a booking solution.

Artificial intelligent powered chatbots are the most sophisticated chatbot solutions. Artificial intelligence (AI) is the simulation of human intelligence (Rouse, 2018). AI bots can interpret human language unlike rule-based and intellectually independent chatbots. However, they also can follow a conversational flow in order to guide the user to a suitable solution. These chatbots use AI, machine learning and Natural Language Processing. Natural Language Processing (NPL) is an artificial intelligence sub-field that focuses on allowing computers to interpret and process human languages, bringing computers closer to understanding language at the human level (Seif, 2018). NLP is used in order to make the interaction with the bot feel like a conversation between two people.

Due to the scope of this study the CUI won't go through the development phase. Nevertheless, understanding the capabilities of the technology is important to make conceptual decisions. Since the main goal of the CUI for Cooper is searching for tires, a simple rule-based chatbot would be sufficient for the minimum viable product. However, in the future, AI would be implemented in order for the customers to be able to hold a conversation with the bot.

CUI in commerce

This section reviews recent literature on the use of CUI for commercial purposes. Since this study focuses on the conversational solutions in commerce is it critical to examine the current use of commercial CUI. The rise of the world wide web and smartphones forever changed the way humans interact between each other and with the businesses. This lead to a transformation of the retail industry. Electronic commerce (e-commerce) became possible with the emergence of the internet. Later the growth of mobile technologies led to the creation of mobile commerce (m-commerce) (Ngai & Gunasekaran, 2007). The rapid development of CUI gave birth to conversational commerce. Conversational commerce is e-commerce that is handled via conversation with a chatbot. (Messina, 2015). Due to the ease of implementation more businesses use chatbots for commerce purposes every year. Right now there over 30,000 text chatbots running on Facebook Messenger (Constine, 2016).

Chatbots' commercial applications range from online customer service to conversation-based product searches and event organisation (D'Alfonso, Santesteban- Echarri, Rice, Wadley, Lederman, Miles, Alvarez-Jimenez, 2017). Chatbots let businesses interact with their customers via text messages like they would with their friends. A well developed bot can imitate the real consultant experience. During the conversation chatbots can respond with recommendations, links, updates, call-to-action buttons. Customers can shop for products using the customised product carousel provided by the bot (Constine, 2016). Chatbots can provide 24/7 service to the customers which makes them a good cost-efficient customer service solution. For example, today airlines provide a service of searching for flights and checking in with a Facebook messenger chatbot. Customers can save time by using the chatbot, which has become a faster alternative to calling, emailing or using an application.

Mott, Lester and Branting (2004) classified conversational solutions into five major categories of business applications:
- Customer service. Replying to customer's questions and solving other issues.
- Help desk. Internal communication with employees.
- Website navigation. Guiding users to relevant content on the website.

- Guided selling. Providing information and guidance to customers during the sales process, specifically when complex products are being sold.
- Technical support. Responding to technical issues, as analysing a problem with a device.

Advantages

According to a research done by Babich (2018), CUI has a big advantage over traditional user interfaces. As CUI uses natural text communication it feels more instinctive than classic applications. Users don't need to learn new skills in order to successfully interact with the majority of chatbots. CUI can adapt to different types of customers during the conversation and deliver personalised content. Therefore it is possible to control the way individuals consume content. The fact that the majority of users don't want to install a separate app from the business on their smart phone makes chatbot solution more convenient for them. Babich (2018) argues that in some cases users feel more comfortable to interact with a chatbot instead of a real human because the chatbot won't judge them. Another benefit of CUI is that it helps businesses to build strong emotional connections with their customers. According to Zainol, Omar, Osman & Habidin (2016), customers are willing to engage with brands that they have an emotional connection with.

Disadvantages

Despite the advantages, chatbots like any new technology face a consumer resistance, the main reason for market failure of innovations. Moreover, making a flawless interaction between humans and computers is a very complicated task that requires a large database in order for a bot to give reasonable answers to all the questions (Abdul-Kader & Woods, 2015). Right now bots can perform simple actions and commands. However, automating a long conversation can be a very difficult task (Britz, 2016). Thus the chatbot can respond incorrectly or with irrelevant content. This can cause frustration and decrease customer satisfaction of the experience. Another issue is privacy as users are concerned what can happen with the data they are sharing during the conversation with the bot since most of the conversations are built based on past conversations (Müller, 2016). Furthermore, as mobile marketing is growing there is a possibility that chatbots will send out spam though the messaging apps (Müller, 2016).

Designing a conversational solution practices

According to McLaughlin (n.d) the first step of designing a conversation solution is to define the core purpose and the viewport. The purpose of conversational interaction is job description of the bot. To define the purpose of the bot at the beginning of the designing process is very important for the future steps. The viewport is about the relationship between the user and the bot McLaughlin (n.d). Defining a viewport is giving the bot an identity. The bot can be the representation of the organisation itself or a completely independent entity. The viewport supports the core purpose of the solution. For instance, if the purpose is to actively generate revenue, the bot should speak as a salesperson of the organisation. Having a well defined viewport will provide a consistent user experience McLaughlin (n.d).

Shevat (2017) states that there are several components that need to be thoughtfully designed in order to create an effective CUI.

- Branding, personality and human take-over.
    1. Personality. Personality is a key aspect when it comes to creating social interactive bots (Lee, Peng, Jin & Yan, 2006). Chatbot's personality is the way it expresses itself trough tone of voice and graphical appearance. Bot's personality should be build based on the needs of the target audience, the type of tasks it executes and the brand of the business.
    2. Visuals. Items like logos, icons, and other visuals can make the bot more recognisable by the customers. The bot's profile image can translate it's gender, age and type of character.
    3. Name. The name can contribute to the brand recognition. Also, having a human name can help build a stronger connection with the human.
    4. Human-takeover. Having an immediate human intervention is crucial when the bot can't handle the conversation.
- Conversation.
    1. Onboarding. Onboarding is the user's first step when using your product (Connolly, 2018). First of all, the bot should introduce itself and let the user know what kind of service it can provide.
    2. Flow script. In order for the user to have a flawless conversation with the bot, the conversation flow should be carefully scripted.
    3. Feedback and error handling. It has to be clear for the user what action has been taken and what has been accomplished (Norman, 1990).
    4. Support. The bot should be able to provide support if the user needs help.
- Interactions.
    1. Images, charts, audio and video. Different media can enrich the conversation and make it more engaging.

2. Buttons. Buttons will help users to answer with predefined responses, therefore, reach their goal faster.
3. Links and formatting. Formatting the style of the message can help to improve the engagement with the user. For example, the colour of the text or different font can be an indication of an important factor.
4. Webview. In the case when some information can't be viewed in the conversation, the bot can open an additional web view to show the applicable content.

Sub-conclusions

Currently, the conversational user interface is big movement is the digital world. Conversational commerce is becoming a trend among businesses as a tool to increase revenue. Companies explore different ways to deploy CUI to interact with their customers. There are certain practices of making a successful CUI.

Current use of commercial CUI in different industries

Today, businesses from different industries choose to use conversation solution for various purposes (Chatdesk, 2018). Desk research of current usage examples was conducted in order to determine how CUI can be beneficial for companies in different sectors. The major priority of any brand is to satisfy its customers during the experience. Every customer has a specific task they need to accomplish during the customer's experience. Identifying them can help offer customers personalised content. These cases are established as the best examples in their industry based on the report done by Chatdesk (2018).

Travel industry

Although the travel industry is only starting with chatbot technology, there are a number of impressive use cases. Example: KLM Facebook Messenger bot.
KLM Royal Dutch Airlines is based in Amsterdam and is one of the oldest global airlines in the world. KLM launched their fist bot called 'BB' in September 2017. BB can book flights, send confirmations and handle payments. As a result of deploying CUI, KLM is able to handle 15,000 conversations per week (Chatdesk, 2018). In addition, KLM improved engagement with their customers as people love to chat with BB . If the request can't be handled by a chatbot, a human agent can take over the conversation (Diaglowflow, 2018). The user interface of the bot is easy to use and consists of components like buttons, widgets and carousels (Figure 4).
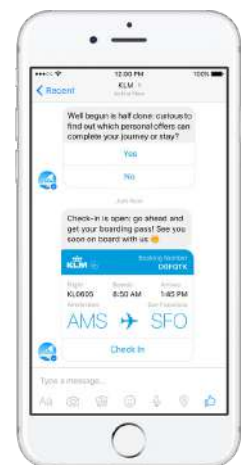
Figure 4. Image Source: Dialogflow 2018.

Retail industry

CUI becoming a trend in the retail industry, 30+ leading brands have now launched chatbots (Chatdesk, 2018). One of the standout examples of CUI the in retail segment is eBay Facebook Messenger ShopBot. eBay ShopBot is a personal shopping assistant that helps customers find products based on their preferences and price range, provide advices through past purchases. eBay's goal is to make the bot as close to a human salesperson as possible using NLP (eBay, 2018) ShopBot also has image recognition function. Users can upload a picture of a desired product and bot will find it. During the conversation user can navigate with buttons, predefined answers and carousels (Figure 5).
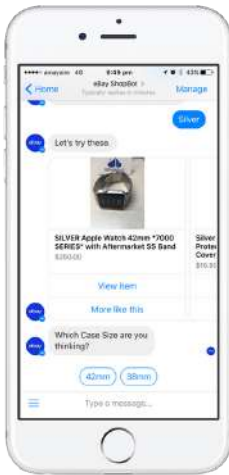
Figure 5. Image Source: eBay 2018.

Food industry

Brands of food industry also starting to use conversational solutions to engage with their customers. Top use cases of bots in these industries include placing orders, finding nearby restaurants and exploring recipes (Chatdesk, 2018). A market leader like Starbucks launched a chatbot within a mobile app called My Starbucks Barista. This bot supports NLP and voice recognition. Therefore users can order customised beverages in the same way as with a real barista. Later the order can be picked up in the nearest location (Bishop, 2016). The CUI also includes suggestions based on previous orders, order widgets and predefined answers (Figure 6).
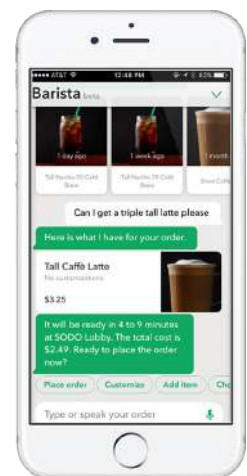
Figure 6. Image Source: Bishop 2016.

Sub-conclusions

Conversational solutions became popular among different industries. Implementation of CUI can be beneficial for the business with various objectives. Looking at these examples it can be concluded that a well made chatbot can become a great way to for a brand to communicate with their customers on a personal level. These chatbots have different goals that they need to achieve, such as booking a flight or helping to shop. However, the underlying purpose of using these chatbots is commercial. On this basis, we conclude that there are different ways to deploy a commercial CUI depending on the needs of the company and their customers.

Commercial CUI and purchase intention online

Purchase intention online

The internet had a significant effect on the commerce as it became one of the main distribution channel in every industry. Since the invention of the internet, businesses had to shift from traditional brick-and-mortal approach to web strategy to provoke customer purchase intention in order to increase sales. From a business perspective, e-commerce decreased operating and salary costs; as there is no longer a need in a physical location in order to sell goods and services. From a consumer's perspective, the biggest advantage is being able to purchase products online without any geographical restrictions. Moreover, customers can access more information online while searching for a product and it can help them to make a purchase decision.

Since the purpose of commercial CUI is to increase the revenue, businesses are interested in purchase intention in order to forecast upcoming sales. Purchase intention of the customers is a complex process. Purchase decision can be influenced by a number of aspects like customer behaviour, perceptions and the attitudes of the consumers (Mirabi, Akbariyeh, Tahmasebifard, 2015).

Grewal, Monroe and Krishna (1998) described purchase intention as "a probability that lies in the hands of the customers who intend to purchase a particular product".

Many studies were done in order to find out what causes purchase intention online. According to a study of Ganguly, Dash, Cyr and Head (2010) identified that trust is the key aspect when it comes to successful online shopping. Based on studies (Roudposhti, Nilashi, Mardani, Streimikiene, Samad, Ibrahim, 2018; Hsu, Kuo-Chien, Chen, 2012; Jarvenpaa & Todd, 1997) the major drivers of trust that can lead to a purchase intention online are: website quality, customer satisfaction, customer engagement and service quality. Further in this chapter, these drivers will be analysed and explored within the context of CUI.

Website Quality

Website quality is a key concept in online shopping as the perception of the website quality by the customers has a direct relation to their purchase intention (Bai, Law, Wen, 2008). They argued that website quality has a direct affect on customer satisfaction. Poor quality of an e-commerce website can lead to bad press, customer dissatisfaction, and customer loss (Gruman, 1999). The WebQual model was developed to measure e-commerce website's quality from the customer's perception. WebQual was firstly introduced by Barnes and Vidgen in 1998 and later went through several iterative refinements (Barnes & Vidgen, 2002). The latest version is developed by Loiacono and was based on information system theories: theory of reasoned action (TRA) and technology acceptance model (TAM) (Loiocono, 2000). Four dimensions and twelve constructs were generated. The dimensions and constructs are summarised in Table 1.

Dimension	Constructs
Usefulness	**Informational fit-to-task.** Undertake market research to determine what information consumers want on the Web site. **Tailored Communications.** Support consumer interaction via the Web site and the capability to receive tailored information. **Trust.** Adopt and promote security and privacy policies and procedures that make customers feel secure in dealing with the company. **Response time.** Have sufficient hardware and communications capacity to meet peak demand and avoid large graphics.
Ease of Use	**Ease of understanding.** Design the pages that are easy to read and understand. **Intuitive operations.** Develop an intuitive navigation system that is easy to learn and master.
Entertainment	**Visual appeal.** Use colors, graphics, and text that are pleasing to the consumer's eye and avoid cluttered pages. **Emotional appeal.** Design the Web site to provoke a positive customer experience. **Innovativeness.** Use a creative and differentiating approach to the Web site.
Complementary Relationship	**Consistent image.** Design the Web site to reflect the company's image.. **Online completeness.** Allow customers to conduct important business functions over the Web. **Relative Advantage.** Make the Web site just as easy, if not easier, for customers to use than other forms of interacting with the company.

Table 1. Summary of dimensions and constructs of WebQual Model(adapted from Loiacono, 2000).

1.   Usefulness: informational fit-to-task, tailored information, trust and response time.

Usually, the customer has two purposes when he comes to the website, either to find information on a specific product they intent to buy or as an ongoing search with no certain purchase target (Bloch, Sherrell & Ridgway, 1986). The user needs relevant information during the shopping process (Loiacono, 2000). Regardless of the search activity, the user needs relevant information to his search. Moreover, the ability to provide specific information and tailored communications will make a website more useful.

2.   Ease of use: ease of understanding and intuitive operators.

For e-commerce, customers want to find desired product as fast as possible. It means the website should take them to the relevant page with fewer clicks as possible. Users value an effective information search and easy access to the content they are looking for (Rezende, Moura, Vasconcelos, Cunha, 2017). Loiacono (2000) emphasises on two aspects of the ease of use dimension: ease of understanding and intuitive operators since website could be easy to read and understand, however hand to navigate between pages.

3.   Entertainment: visual appeal, emotional appeal and innovativeness.

Entertainment can be achieved by visual and emotional appeal, and innovativeness (Curi, Dias & Filho, 2006). Entertainment dimension focuses on giving the "full experience" to the consumers. These consumers seek to be entertained by the process of searching (Loiacono, 2000). For those customers website have to be able to offer a pleasant experience in order to provoke emotional connection. Visual appeal refers to the website's aesthetic aspect such as the use of right colours, graphics and fonts. The sense of innovation can be achieved with the originality and uniqueness of the website.

4. Complementary Relationship: consistent image, online completeness and relative advantage. The website should translate the image of the company is in order to provide a consistent experience to the customer. A consistent experience is an important aspect of the customer's perception (Loiacono, 2000). Relative advantage refers to the advantage of searching via website, compared to alternative options such as phone or email (Loiacono, 2000).

Customer Satisfaction

Hult, Morgeson, Morgan, Mithas & Fornell (2017) defined customer satisfaction as an overall customer assessment of the products and service offerings of the company.

Satisfaction is one of the major conditions in business-to-consumer online environments (Cheung & Lee, 2005). Bhattacherjee (2010) stated that satisfaction is the primary drive for the purchasing intention online and the key to building and maintaining a long-term relationship with the customer. Engagement behaviours cause higher satisfaction and satisfied and loyal customers tend to take part in more engagement behaviours (Brodie et al., 2013). Many studies proved that customer satisfaction leads to customer loyalty (Anderson & Srinivasan, 2003), creates an intention for repurchase (Kim, 2010) and increases revenue (Reichheld & Schefter 2000). Consequently, companies with high levels of satisfaction will benefit from this reputation in the future. In the relation to CUI, according to De Lannoy (2017) and De Haan (2018), customer satisfaction can be reached through high social presence during the conversational experience and emotional connection with the chatbot. In this case social presence refers to the extent to which online users perceive one as being present via the conversational interface (Gunawardena & Zittle, 1997). For instance, chatbot's appearance and personality can give a feeling of social presence to the customer. Chatbot with extrovert linguistics can be more satisfying to the customer than the chatbot with introvert linguistics (De Lannoy, 2017).

Customer Engagement

In 2008 Forrester Consulting defined customer engagement as "creating deep connections with customers that drive purchase decisions, interaction, and participation over time." In the past, businesses used to market and advertise their products though mass media. Today companies focus on creating an emotional bond between consumers and brand for more targeted segments. According to Gallup (2014), customer engagement has a major impact on the income and profitability of companies. Higher customer engagement lead to an increase in the revenue. In order

to achieve high customer engagement company has to make the customer experience seem personalised. The system should be able to deliver unique requests of the customer to reach efficient customer-centric results (Trefler, 2014). Today, companies use new technologies to create strong customer engagement. According to a study done by Ojapuska (2018), chatbots have the potential to become the next best channel for engagement. In the research, Ojapuska investigates companies that improved customer engagement by deploying a conversational solution. For example, the ability of a chatbot to send relevant content in a specific time was a significant driver of customer engagement.

Service Quality

Customer service plays a crucial role in the ability to generate income and revenue of an organisation. Jarvenpaa and Todd (1997) emphasised that the quality of the service was most important in e-commerce websites. Often customer service department requires a significant amount of resources, spending millions of dollars each year to offer better support to their customers (Cui, Huang, Wei, Chuanqi, Duan, Zhou, 2017). Today, customer service faces two major problems: customers ask repetitive questions and inability to provide 24/7 service (Cui et al., 2017). Therefore, chatbots can be a solution to these problems since they are more cost-effective, comparing to real human support, and indefatigable. According to a research done by Reddy (2017), up to 80% of regular customer support questions can be answered by a chatbot. Chatbots can speed up response time, which will lead to higher customer satisfaction. By letting a chatbot answer easy questions, real agents can invest time in solving more challenging problems. Successful e-commerce must reduce consumer's doubts, instantly answer questions to establish enough trust to convince the customer to purchase a product (Brown, n.d).

Sub-conclusions

Since current research on the topic of the direct relation between CUI and purchase intention is scarce, the theory study was mostly conducted on the individual drivers of purchase intention. The relation between these drivers and chatbots was reviewed in order to define what features of chatbot will lead to purchase intention. The review leads to a number of criteria that a commercial web CUI must have in order to be successful. Aspects like a high website quality, easy to use interface, providing relevant content, constant customer support are essential when it comes to provoking purchase intention. In conclusion, these criteria are important to consider when designing a CUI for commercial purposes.

Guidelines

In this phase of the study, the guidelines were created. These guidelines will be used to create the CUI for Cooper Tires. The desk research on CUI and purchase intention was the basis of creating these guidelines. During the design process of Cooper Tires CUI, the guidelines were reviewed and upgraded. The assets of the guidelines include a "Designing a commercial CUI" workflow, a Conversational Solution Canvas and a "Drivers of Purchase Intention" model.

1	2	3	4	5
· Define the problem · Identify the target group · Identify the bot's purpose · Define user journey	· Define user objectives · Set bot's goals · Determine bot's actions · Define bot's personality	· Create a list of must have · Create conversational flows	· Create UI based on the flows · Create low fidelity prototype · Test and iterate	· Develop · Test and iterate
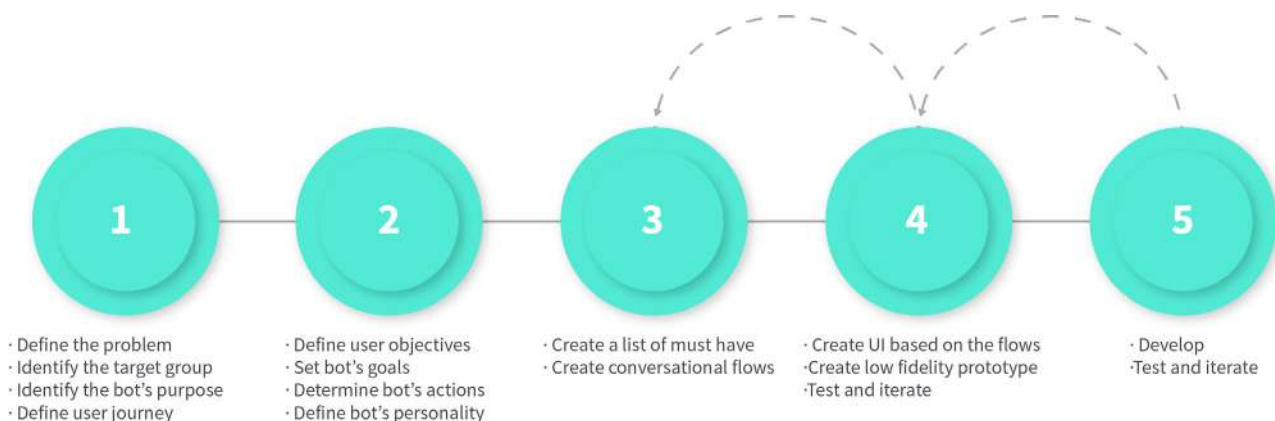
Figure 7. Designing a commercial CUI workflow.

Firstly, a workflow was created based on the exiting practices from the theoretical framework. The workflow (Figure 6) consists of five stages and defines whats steps have to be taken in each phase. Furthermore, a Conversational Solution Canvas (Figure 8) was created in order to define the purpose and objectives of the conversational solution.

Figure 8. Conversational Solution Canvas.

The canvas was updated a number of times during the designing process (Appendix A) to be more efficient and useful. Chatbot canvas consists of multiple parts that has to be filled in in the second

stage of the workflow. The main goal of the canvas is to determine bot's purpose, personality traits, translate objectives of the user, and the company into goals and goals into bot's actions.
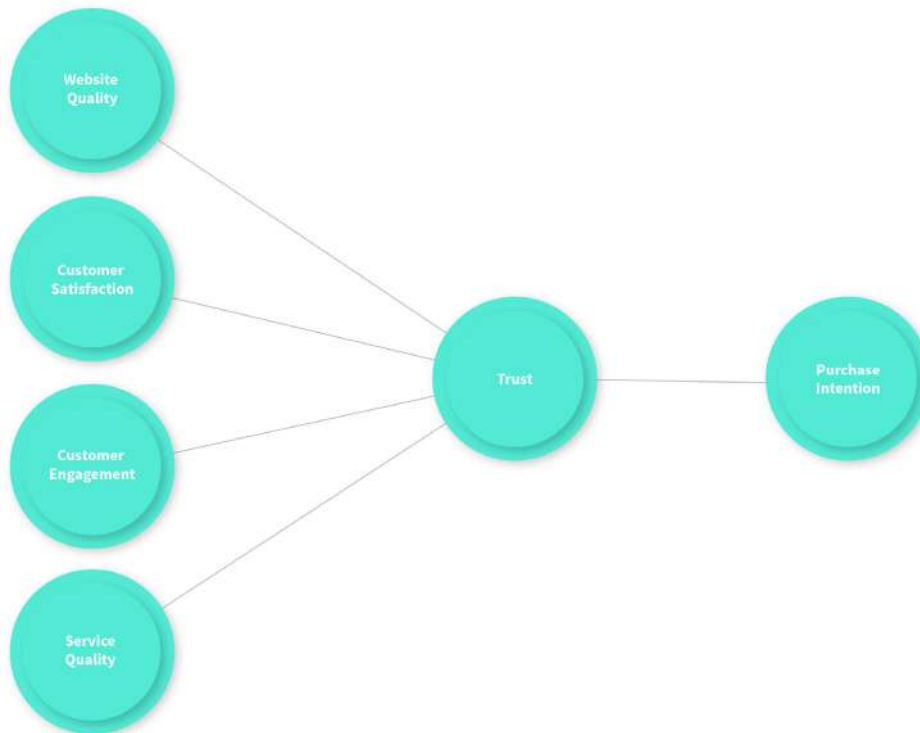
Figure 9. Drivers of Purchase Intention.

The core purpose of a commercial CUI is to create a purchase intention of the customer. Therefore, a "Drivers of Purchase Intention" model (Figure 9) was created based on the literature review that defines the main drivers of trust that lead to purchase intention online. This model should be used during the design and development processes in order for CUI to stimulate purchase intention by the means of website quality, customer satisfaction, customer engagement, and service quality.

Methods

A number of research methods were used during the prototype development of this study. The desk research was used to create concept guidelines that are described in the previous chapter. The product development follows the "Designing commercial CUI" workflow. In Stage 1 of the workflow a target group analysis was performed by the means of analysing the analytics of the current customer base and interviewing the potential customers. Multiple usability tests were conducted during the cyclic design process. Test users were given a task they had to accomplish using the prototype. The participants were observed and recorded during the test for the evaluation. Participants had to speak out loud their thought and actions during the test. These usability testing allowed to iterate the prototype in order to reach a higher level of usability. Due to the fact that this study focuses on the commercial benefits of the conversational interface, the final evaluation was focused on purchase intention. The evaluation was a combination of a prototype testing and a survey. In the final test, a number of 20 respondents have completed the survey. This assessment was executed to evaluate the purchase intention of the user after experiencing a commercial conversation solution. Further details about the methods and their execution are discussed later in the "Experimental Design" chapter.
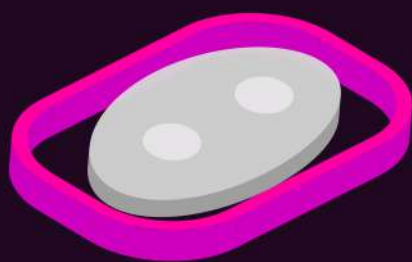
Experimental Design

This chapter will describe the process of designing the CUI for Cooper Tires. The structure of the process is based on the "Designing commercial CUI" workflow. This chapter contains stages from 1 to 4. Each stage describes the steps that had to undertaken during the process to fulfil the requirements of the workflow. Due to the scope of this study the fifth state of the workflow is not executed.

Stage 1

Problem and purpose

The main problem is that searching for tires can be a monotonous process full of frustrations. Therefore, people choose to purchase tires from the dealer instead of searching online. The purpose of the bot is to turn this tedious process into a pleasurable experience by guiding the searching process.

Target Audience

The intended audience of the products and services of a business is called the target audience. It is a specific group of consumers within the predetermined target market, determined as the targets for a particular product (Armstrong & Kotler, 2007). Defining a target audience is essential, from the development of the product to advertising and selling it (Newberry, 2018).
The target audience was defined based on desk research of the market, analytics (Appendix B) of the current customer base of Cooper Tires and interviews. Interviews were performed to get a deeper understanding of the target audience. Questions and the summary of the interviews can be found in the Appendix C. The purpose of the interviews was to determine:

- Age, job title, favourite brands.
- If they own a car.
- How do they usually purchase tires.
- Do they care about the quality of the tires.
- How much knowledge they have about tires.
- What frustrations they have during the process of purchasing tires.
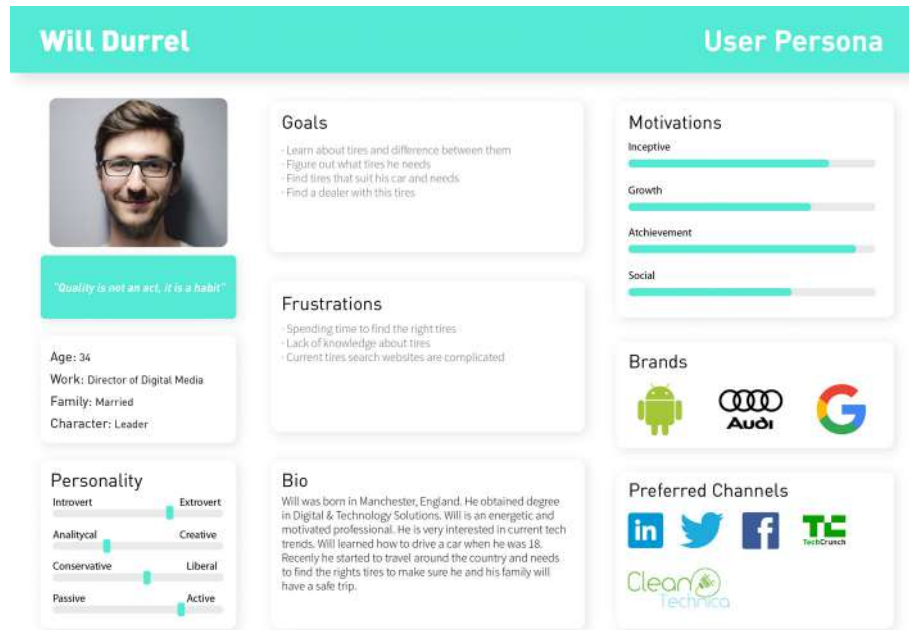
Figure 10. User Persona.

User Persona was built in order to represent the target audience. User Persona represents a group of users with analogous behaviour in purchasing intentions, using technology or products, preferences for customer service and a lifestyle (O'Connor, 2011).

The main target audience is represented as Will Durrel, a person who is not an expert in tires and possibly getting tires by himself for the first time (Figure 10). His goals are to learn about tires in order to have an understanding of his needs and what tires he needs in order to fulfil them. As the process of getting tires can involve knowledge and tires and differences about them it can be a frustrating experience that Will wants to eliminate.

Empathy Map was created (Appendix E) based on the the interviews, the user persona canvas and Google search analytics (Appendix D). Creating an empathy map helped to get an overview of user experience by focusing on the feelings and perception of the user. As can be concluded from the map, the user can feel overwhelmed and anxious during the searching process as there a lot of information about tires that he didn't know. The main pains of the customer are lack of knowledge about tires and spending too much time on figuring out what tires they need.

Customer journey Map

A customer journey map is a visual representation of the process a customer or prospect goes through to achieve a goal with your company (Agius, 2018). Creating the customer journey map will make it possible to get a sense of customer's motivations, needs and pains they experience. Determining these motivations can make it clear how to structure brand touchpoint and built an efficient process (Agius, 2018).

Customer journey map (Figure 11) was created for this study to visualise the process of the target audience experience the conversation solution. In the first "Aware" phase the main user goal is to find out how to get new tires. At that phase the customer will use internet to research, ask friends, see different advertising through media channels. After having an overview on the ways to purchase new tires the customer will move to the "Research" phase where they will research where they can get tires, consider multiple brands. The next phase takes place on the Cooper website where the consumer will go through the search process with the help of the chatbot. In the next phase, the customer will be offered a set of tires that fit their needs and as a result their satisfaction will increase. The last phase of the journey is "Locate Dealer" where the customer can find the nearest dealer in order to purchase tires.

	AWARE	RESEARCH	SEARCH	FIND	LOCATE DEALER
USER GOALS	Find out how to get new tires	Find out different ways to search for tires	Search for tires in an easy and efficient way	Find the right tires that will fit his needs	Find the nearest store
TOUCHPOINTS	· Internet · Friends · Ads on google/facebook etc · Campaigns · Banner	· Searching on google · Asking friends	· Website · Bot	· Website · Bot	· Website · Bot
CHANNELS					
PROBLEMS	Ads don't show the new way of searching	A lot of competitor solutions	Negativity towards chatbots	Lack of knowledge about tires	Troubles to locate the store
EXPERIENCE					
IDEAS	Focus ads on the unique point	Make better user experience	Respectful chatbot	Chatbot provides information	Chatbot sends directions

Figure 11. Customer journey map.

Stage 2
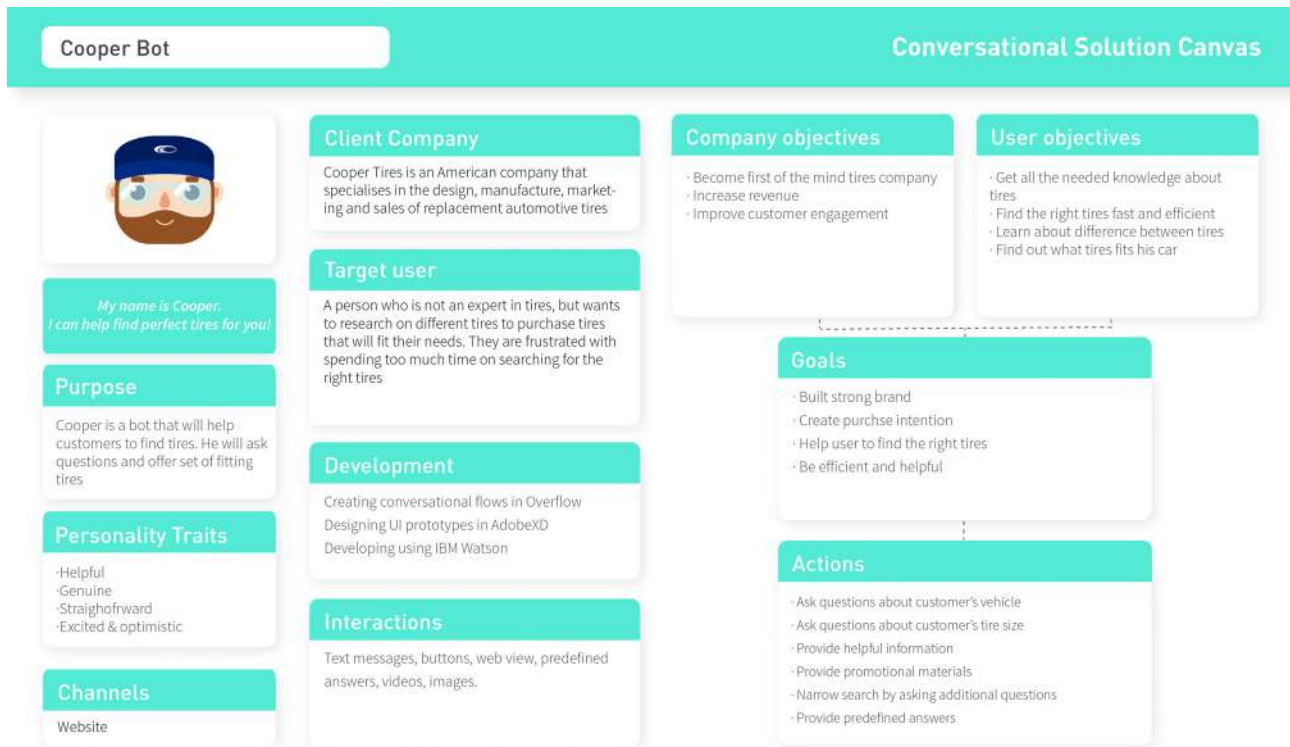
Figure 12. Conversational Solution Canvas for Cooper.

The second stage of the flow focuses on the bot. Conversational Solution Canvas was used in order to determine certain aspects of the CUI for Cooper. Conversational Solution Canvas for Cooper can be seen in Figure 12.

Core purpose. The bot services the role of an employee of a tire store. He will help customers find the right tires and sell them. During the process, Cooper will help customers with different problems.

Personality Traits. The personality traits are based on the Cooper Tire's guidelines of Cooper's identity and on the effect of chatbot personality on emotional connection and customer satisfaction of a research done by De Lannoy (2017). To conclude, the Cooper Bot should be helpful, genuine, straightforward, excited and optimistic.

Channels. The main channel of deployment is the Cooper Tires website.

Company objectives. Company objectives were determined based on the problem identification.

User objectives. Based on the pains and gains that were found during the user research, objectives were determined. These objectives include getting needed knowledge about tires, finding tires, learning about different tires, finding out what tires fit car.

Goals. Company and user objectives were translated into goals, which are built a strong brand, increase purchase intention, help the user find the right tires, be efficient and helpful.

Actions. Actions are the operations the bot has to execute in order to achieve the goals. The actions of the Cooper Bot include asking questions about customer's vehicle and tire size in order to find

suitable tires, provide helpful relevant information when needed, send promotional materials to increase purchase intention.

Interactions. Interactions are the elements that bot will use in order to communicate with the user. In this case the main elements will be text content, buttons, web views and predefined answers.

Development. What software and tools will be needed to create the bot. During developing this bot a number of software will be used. To create the conversations flows a software called Overflow will be used. AdobeXD will be used as a tool to design prototypes. IBM Watson is the recommended tool for the development part.

Stage 3

The Must-Have Features

The Must-haves are the features that the user will need from the chatbot in order to be satisfied with the result. First of all of, the user should be able to search for the right tires with the bot. The search process has to be effective and efficient, the user should get relevant information if needed. After getting enough information, the bot has to offer a set of suitable tires. The user should be able to navigate through tires, get extra information on each tire. If the user would like to purchase a tire they should be able to find the nearest dealer.

Conversational Flows

Conversational flows were developed based on the customer journey, Conversational Solution Canvas and the must-have features. A final version of the flow was developed after a number of iterations (Appendix F). It is important to establish a clear flow before starting the design process in order to have a clear vision of how the conversation will go and what elements it will require. The detailed description of the conversational flow is explained below.

A colour legend was created for the necessary conversational element. The bot will interact with the user through text messages, choice and help buttons, pop-ups, web view, and visual content. Due to the fact that the main application of this conversional solution is guided selling, the conversation flow will cover the process from searching for the right tire to getting the dealer location.

First of all, the bot will initiate the conversation with a welcome message as the on-boarding component (Shevat, 2017). In the message it will introduce himself and let the user know that it can help with searching for tires. As well as text, the bot will display buttons to provoke users to interact with it
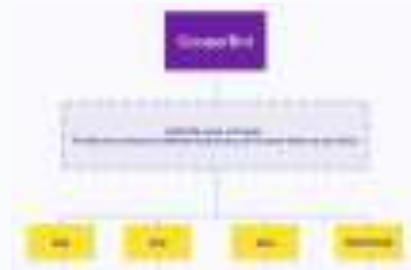
Cooper Bot will provide extra information if needed in cases where the user might have a lack of knowledge about certain topic. The information will be displayed in the pop-up page. According to the literature review, providing relevant content in a specific time can increase customer engagement which is one of the drivers of the purchase intention.

Bot will ask for a tire size or a car model in order to find the right tires. When the bot will have enough information to offer a set of fitting tires the screen will split in two: the chatbot box and a web-view with offered tires

The bot will continue to ask questions about user's preferences in order to narrow the search. When the user will view a certain tire the bot will send promotional materials (images, videos) and the product.

The last instance in the user journey is the "Find a store" page where the user can locate the nearest dealer.

Stage 4

Iteratively creating and testing User Interface (UI) of Cooper CUI were carried out in the fourth stage of the process. The initial design decisions that were taken during the process are based on (1) the desk research of UX design, (2) the research about the automotive tire market and (3) the findings on the main target audience. Existing brand guidelines were influencing the design in order to keep a consistent experience within a brand. A number of iterations were made in order to achieve high quality results. This cyclic process of prototyping and testing was chosen to improve the quality of the UI every iteration based on the user test results. The UI design and the prototype was created in Adobe XD, a tool developed specifically for designing and prototyping user experiences for web. This stage of the process required gaining and applying knowledge of User Experience (UX) and User Interface (UI) disciplines and learning necessary software. The design process (Figure 13) of four main prototype versions and notable iterations are described later in this chapter.

Figure 13. Iterative design process of prototyping and testing.

Usability Testing

Usability testing was performed three times in order to improve upcoming versions based on the results from the tests. Test users were selected based on the target group to have applicable results. Examined users were given a task that they had to perform using the CUI prototype while the research was watching and taking notes. All sessions were screen and voice recorded with the consent of the participants. The user testings (Appendix G) contained a main task, introductory questions, questions about the process and general questions when the main task is complete. The scenario of the user test was that the participants had to search for a specific tire. The details of their hypothetical vehicle were given in the beginning of the test. The usability testings were performed in order to find out:

- How well users can navigate with the interface.
- Will they be able to perform the given task without any issues.
- What problems can occur during the process.
- Can the bot satisfy the needs of the user.
- What suggestions users have after performing the task.

The results were documented (Appendix G) and evaluated. The influence of these results on the design decisions is described in detail later in the chapter. Below the detailed process of creating the UI elements is described.

Bot Avatar

Figure 14. Avatar Bot iterations.

The first element that was designed was the avatar of the bot. An avatar is a custom graphic icon representing a user or alter ego representing that user (Techopedia, n.d.). When designing a CUI, the bot's avatar can be an important addition. An avatar image can increase trustworthiness, likelihood, social presence and user satisfaction (Nowak & Biocca, 2003). Consequently, a visual representation of the bot can help user to make assumptions on how that chatbot is likely to behave based on the external cues (Laurel, 1997). There three most common types of avatars for the bots: organisational logo, an illustration of a bot and a real human photo. According to a recent study done by Schurink (2019), an avatar with a photo of a real human can lead to a higher social presence and increase purchase intention compared to other types of avatars. Although this may be true, several studies suggest that human-like bot sets higher expectations and when does not respond as expected causes customers being disappointed (Mimoun, Poncin & Garnier, 2012; Bryant, 2018). Therefore, it was decided to have an illustrated avatar with semi-anthropomorphic characteristics that will resemble a Cooper Tire employee. After a number of iterations (Appendix H), a final avatar was chosen after consulting with the graphic designer of the team (Figure 14).

Introduction screen

Figure 15. Introduction screen.

The first screen that was designed was the introduction UI (Figure 15). It was decided that the chat box will take 70% of the screen in order to make it easier for the user to focus only on the conversation in the first part of the experience. The first interaction includes welcome message and four choice buttons.

Buttons

Figure 16. Button design.

The stying of the buttons went through a number of iterations based on the feedback (Appendix X) from the first user testing and principles of design. The feedback was that the buttons were not "visual enough". Indeed, according to MotoCMS (2017), visual content can be processed 60,000 times faster than text. Moreover, according to the Consistency Principle by Norman (2013), elements that perform similar tasks should have a consistent style. Consistency can improve usability, reduce the learning time during the experience and increase the overall quality of the website. Therefore, one consistent style was applied to all choice buttons that includes an image item (Figure 16).

Figure 17. User's message.

According to Norman (2013), feedback is one of the key aspects of a good user experience. Feedback is about making it clear to the user what action has been performed. In this case, one of the ways of giving feedback thought out the experience is chat bubbles of user inputs. Familiarity principle was used to design the user input chat bubble. Familiarity principle is about the ability of the user to recognise the user interface components based on the previous experiences. Most common used messengers as WhatsApp and Facebook Messenger use different, more colourful, background for the chat bubbles of sending messages. Therefore, chat bubbles of the user input will be different colour that the bot's (Figure 17).

Helpful Pop-Up screen
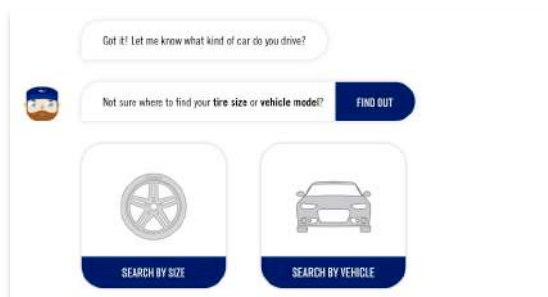
Figure 18. "Find Out" option.

Figure 19. Helpful Pop-Up.

Once the bot receives the answer on the first question, it will ask if the user wants to search for tires by tire size or by vehicle. Bot will also offer a help information in the case if the user doesn't know how to search for the tire size or vehicle model (Figure 18). Clicking the help button will open a pop-up page with the relevant information (Figure 19). Based on the theory review, offering relevant information in a specific time can increase customer engagement.

Search by size option

Figure 20. By size. Version 1

Figure 21. By size. Version 2

If the user chooses to search by size the bot will answer with an input field. This input went though an iteration in order to make it more user friendly using the Mapping Principe. Mapping Principe is about a relationship between digital interface and the real world (Norman, 2013). In this case the user may understand faster where to fill in the tire width, aspect ratio and rim size using the second version of the input (Figure 21) rather than the first version (Figure 20) since the input field is designed to resemble the position of these details on the real tire. As can be seen in the Figures 20 and 21 the continue button is dimmed. This means the button is not active since the details are not filled it yet. Once the user fills in all the input fiends the button will get activated.

Search by vehicle option

Figure 22. By vehicle. Version 1

Figure 23. By size. Version 2

In the case of user choosing to find tired based on the vehicle model the bot will offer a set of drop-down inputs. In the first version (Figure 22) the input was an text holder where the user could fill in the details. In the final version (Figure 23) the input field was divided into four drop down inputs. This will help user navigate through the make, model, engine and year inputs and will cause less confusion.

Split screen

Figure 24. Tire set. Version 1

Figure 25. Tire set. Version 2

Once the bot has received enough information it will offer a set of tires. In **Cooper Bot 1.0** version the bot offered tires inside of the chat box (Figure 24). However, after the first usability test, it was found out that this layout was confusing for the user and it was hard to navigate through the tires.

Therefore a "split screen" was introduced in **Cooper Bot 3.0** version of the prototype (Figure 25). Thus instead of showcasing tires in the chat, the screen would split in two adding an extra web view with the tires. Based on the eye tracking studies done by Jacob Nielsen (2006), users tend to focus their attention from the left to right in the "F" shaped pattern. Therefore, the chatbot box was positioned in the left side of the page in order to keep the attention of the user and continue be a significant part of the experience. The new screen consists of the tire catalog and filters. Some filters are filled in based on the previous answers as the car type or tire size. The split screen in the version **Cooper Bot 2.0** wasn't user-friendly since during the user test we received feedback that the moment the screen split it was not clear what exactly happened. As a consequence, it was decided to animate the split of the screen. Thus in the version **Cooper Bot 3.0** the chat box is gradually decreasing in size and moving to the right where the web view with tires is easing in.

Chat top bar

Figure 26. Chat box top. Version 1

Figure 27. Chat box top. Version 2

Some test users had a hard time to navigate the chat box since it changed the appearance. Using the Familiarity principle the top part of the chat box of **Cooper Bot 3.0** was redesigned in order to have a feeling of a common chat pop up as on Facebook. The first and the last versions can seen in Figures 26 and 27.

Figure 29. Filters. Version 1

Figure 30. Filters. Version 1

Figure 31. Filters. Version 1
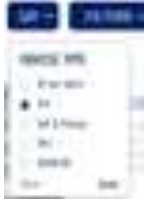
Figure 28. Filters. Version 1

The filters were redesigned three times based on the user tests. The purpose of the filters is to give the ability to the users to see an overview of did they already chose and what else can be defined in order to find the right tires. When the user clicks on the filter a small menu pops up with filter inputs (Figure 28). In the same time, everything else except the menu has a white overlay in order to focus the attention of the user only on the filter options. In the version **Cooper Bot 2.0** the filters were all grey with an 'X' sign (Figure 29). During the user test some users had problems with understanding the possibilities of the filters. Some of the test users thought they could only clear the filter clicking the 'X'. Therefore in the version **Cooper Bot 3.0** the filters were designed to look and feel more "clickable" (Figure 30). Also, to distinguish what filters are already defined, for example a vehicle type: car, it was decided to make them with a different background (Figure 30). In spite of the design changes, during the next testing some users weren't able to tell what a would happen if they click on the filter. Thus in the next iteration for **Cooper Bot 4.0** a small down arrow icon was added (Figure 31).

New messages

Figure 32. New messages.

During the the user test it was noted that test users do not notice new incoming messages from the bot. In order to resolve this issue it was decided to highlight new messages as in the common messengers like Whatsapp (Figure 32).

Tires search list

Figure 33. Card design

Figure 34. Final card design

The web view with offered tires went through a number of iterations. It was decided to use the card UI design as a pattern method to present the set of tires. Cards UI design is used when multiple modules need to be displayed as entry points for the user to learn more information. Cards can help segment data to content that can be easily processed (Mockplus, 2018). Multiple versions of the card design were created (Figure 33). The designs were discussed with the lead designer and a final version was chosen (Figure 34).
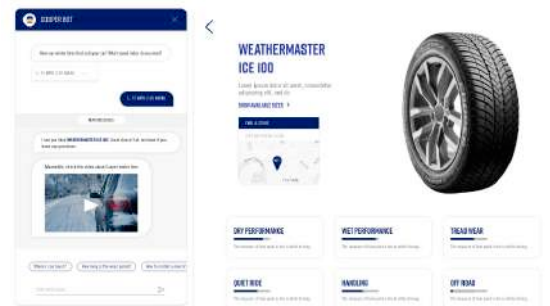
Figure 35. Tire Overview

When the user needs more information about a tire they can click on one of the cards. Once the "view tire" button is clicked an overview is displayed on the screen. At this point the task of the bot is to promote the current time. Based on the theoretical framework, video is a significant decision driver when it comes to purchasing tires (Compete/Google , 2013). Therefore, the bot will send an encouraging message about the current tire and attaching a video content if available as a promotional material. During the second user testing, we got feedback that users would not know what kind of questions they can ask the bot due to lack of knowledge about tires. Therefore, in the version **Cooper Bot 3.0** (Figure 35) a number of predefined questions were added inside on the chat box. The map with the current location (if available) was added after the first iteration for the **Cooper Bot 2.0** since some users did not notice the "Find Store" widget and scrolled down the page to find dealer's location. Displaying map in the beginning of the page made more accessible for the users. Once customers fill in the city or the postal code they will be redirected to the "Find your dealer page" where they can get the exact address of the nearest dealer. Finding the dealer is the last desired stage in the customer journey.

carmack

Evaluation and Results

Since this study focuses on the commercial use of the conversational solutions, the final version of the Cooper Tire Bot was evaluated with an objective to measure the purchase intention. An evaluation test was created based on the "Purchase intention drivers" model that was described in the "Guidelines" chapter. Four drivers and the purchase intention will be evaluated during the evaluation test (Figure 36).

Website Quality	Customer Satisfaction	Customer Engagement	Service Quality	Purchase Intention
Was the user able to find desired information? Was it easy for the user to navigate with this interface? Was the user entertained during the experice by the means of visual or emotional appeal? Was the interface consistent?	Were the users satisfied with the experience? Did the bot contribute to the satisfaction? Did the users perceive the bot as being socially present?	Did the users feel engaged during the experience? Did the users find the content provided the by bot relevant?	Was the bot able to provide a good serive for the users? Was the bot helpful during the experience?	How likely the users will buy a Cooper tire after the experience?

Figure 36. Evaluation measures.

The evaluation test consists of the main task (as in the usability test) and the follow-up questions about the experience. The follow-up questions were created to examine if the four drivers of purchase intention were satisfied and if there a purchase intention after the conversational experience.

Procedure

The survey was created in English, because the prototype is in English and all of the responders are able to understand English well. The survey was created in the online tool called Google Forms and send out to the responders. Before the responders started the test, they had to read the information about the study and the instructions. Firstly, the test users will have to answer general questions about age, gender and the sector they are working in. Then the responders were given an online version of the prototype where they had to complete the task. Upon the completion of the task, the responders were asked to answer the follow-up questions.

Measures

The survey mainly consists of 5-point Likert scale questions. In total, there were 21 questions in the questionnaire. The complete questionnaire can be found in the Appendix I.

Website quality

The website quality was measured based on the dimensions and constructs of WebQual Model by Loiacono (2000) and the Post-Study System Usability Questionnaire (PSSUQ). PSSUQ is a research tool created for scenario-based usability assessment at IBM (Rautela, 2018). The adapted usability characteristics were measured in a 5-point Likert scale ranging from "5" being "Strongly agree" to "1" being "Strongly disagree". These characteristics include the ease of use, usefulness, entertainment and the complementary relationship. The constructs of the measures can be seen in the Appendix J.

Customer Satisfaction

According to the literature review, customer satisfaction can be reached through the feel of social presence of the bot. Therefore, questions about the overall satisfaction and the social presence of the bot were added to the survey. These factors of satisfaction were measured with the Likert scale ranging from "Strongly agree" to "Strongly disagree". The constructs of the measures can be found in the Appendix J.

Customer Engagement

Ojapuska (2018) states that customer engagement within the conversational environment can be reached though providing relevant content in the specific time to help the user complete the task. Due to this fact, questions and usefulness and relevance of the provided information were asked in the questionnaire. The constructs of the measures can be seen in the Appendix J.

Service Quality

The service quality was measured in order to find out if users were satisfied with the quality of the bot's service. A number of questions were asked about the service and the level of assistance of the bot. The constructs can be seen in the Appendix J.

Purchase Intention

In a two-item 5-point Likert scale, the variable purchase intention was examined to assess to what extent participants are prepared to purchase a product after the chatbot interface from Cooper Tires. It was also measures the will of the responders to recommend the bot to a friend that wants to purchase tires. The constructs can be found in the Appendix J.

Results

The results of the main study are described below. The central objective of the evaluation was to determine whether Cooper Tires CUI has a positive influence on the customer experience and can increase purchase intention. Five different measures were used to examine the effect of CUI on the customer: website quality, customer engagement, customer satisfaction, service quality and purchase intention. The results were determined by calculating the mean of questions per each of the measures. The table with results can be found in the Appendix K.

Perceived website quality

The website quality scores 4 out of 5. 19 out of 20 responders could complete the task. Most of the responders found it the task easy to complete the task and navigate the interface. The majority found the information provided by the bot clear and helpful. The organisation on the screen scored evenly from 3 to 5. Some of the responders had confusion with the split screen.

Perceived customer satisfaction

The satisfaction of the customer scored 3.4 out of 5. The lowest scores were given to the questions about the social presence of the bot. Most of the test users did not feel that they are interacting with an intelligent being. However, 60% of the responders answered that they felt that the bot was a social being. Nevertheless, the fact that the bot seemed social it could not pass as being intelligent.

Perceived customer engagement

Customer engagement scored 4 out of 5. The majority found the information provided by chatbot helpful. The feedback was given by one of the responders that they would prefer the bot and the icons to be animated to feel more engaged.

Perceived service quality

The quality of the service scored 3.9 out of 5. The responders found the provided service by the bot to be useful and helpful.

Purchase intention

The purchase intention scored 3.9 out of 5. The responders replied that they would likely purchase a tire from Cooper Tires. However, they would more likely suggest Cooper Tires to a friend than purchasing it themselves.

Discussion

The aim of this study was to find out how to design a conversational user interface to increase the purchase intention. The research this objective, a main question of the study was constructed "How effective is the Conversational User Interface designed for Cooper Tires in stimulating purchase intention?". To answer this question, the following three sub questions have been proposed: (1) "How to stimulate purchasing intention by the use of a conversational experience?"; (2) "Which guidelines can support the development of commercial CUIs?"; and (3) "How to apply these guidelines in the case of Cooper Tires?". In order to answer these questions, a prototype CUI for Cooper Tires was designed based on the developed guidelines. The prototype was evaluated based on the drivers of the purchase intention and the intention itself. In this chapter, the subquestions are reviewed, the results are explained and the limitations of this study are discussed.

Discussion of the research questions

In order to answer the "Which guidelines can support the development of commercial CUIs?" question, a set of guidelines was developed after conducting the literature review in the "Guidelines" chapter. The set consists of a "Designing a commercial CUI" workflow, a Conversational Solution Canvas and a "Drivers of Purchase Intention" model.

Certain preparations have to be made before starting the process of designing the conversational experience. One should study the company, the market and the target audience. The need for a conversational solution should be determined. It is important to identify the objectives of the company and the needs of the customers. The "Designing a commercial CUI" workflow should be followed with the fulfilment of each step. Conversational Solution Canvas should be completed to have a clear overview of the desired CUI. Company and user objective have to be translated into goals and actions of the chatbot.

Four drivers of the purchase intention have to be taken into the account when making the conversational flows and designing the interface.

Website Quality. Website quality is a key aspect in any online experience. The users should find the website useful by being able to find the relevant information they need. The interface should be easy to use to provide a flawless experience. The overall appearance of the website should be visually pleasant and provoke emotional connection.

Customer Satisfaction. According to the literature review, customer satisfaction leads to customer loyalty, creates an intention for repurchase and increases revenue. This can be reached through the high social presence and the well-developed personality of the chatbot. One should carefully create a friendly and helpful personality for the bot that can satisfy a customer.

Customer Engagement. The chatbot should provide relevant content in a specific time to stimulate the engagement of the customer. An emotional bond should be created between the bot and the customer to increase the customer engagement by the means making the customer's experience seem personalised.

Service Quality. The chatbot should provide a high-quality service. This can be achieved by providing helpful and relevant content. If the bot is powered by the AI, it should be able to instantly answer various questions.

To answer the question "How to apply these guidelines in the case of Cooper Tires?" these guidelines were applied to design a prototype CUI for Cooper Tires. Each step of the workflow was fulfilled, canvas and the model were used in the process. The detailed description of the process is described in the chapter "Experimental Design". The final prototype (Appendix L) was tested with an objective to measure the purchase intention. Below the results of the final test are explained and evaluated.

Discussion of the results

Website quality
The high score of the website quality is caused by the use of the usability design principles and the iterative design approach. Since three usability tests were conducted during the design process, the design errors were eliminated. However, feedback about the inconsistency of UI elements was received. Further design iterations should be made in the future development.

Customer satisfaction
Customer satisfaction scored the lowest. This is caused by the fact that the responders did not find the bot being socially present and intelligent. Based on the theoretical framework, perceived intelligence of the bot can be achieved thought the implementation of the AI. However, in this level of the prototype, the bot was not powered by the AI. This could cause the low level of social presence and intelligence.

Customer engagement
A sufficient score of customer engagement is the result of the bot being helpful thought out the searching process. Users found the "Find out" button with a helpful pop-up screen very useful. The lead to high scores on the relevance of the provided information. The feedback about the animation of the bot and the icons can be implemented in the future versions.

Service quality

Responders assessed the service quality high due to the overall level of the service provided by the bot. However, it could also be improved with the implementation of the AI. At this stage of the prototype it was not possible to ask various questions to the bot.

Purchase intention

The purchase intention score was 3.9. The majority agreed that they would likely to purchase a tire from Cooper Tires and would suggest using the Cooper Bot to a friend that is looking for the tires. However, the fact that this score is lower than the scores of other measures is that it is possible that the responders were not looking for tires in the moment of taking the test. Therefore, even though they were satisfied with the experience they would not purchase tires in the near future. A comment was made by of the responders "The chatbot system makes a boring task like picking a tire more engaging and enjoyable". This feedback is very valuable since one of the objectives of this study was to create an engaging experience for a low-interest product.

These results can indicate whether the developed guidelines provide a good guidance and answer the main question "How effective is the Conversational User Interface designed for Cooper Tires in stimulating purchase intention?". Overall, the users had a positive attitude on the website quality, customer satisfaction, customer engagement and service quality with an average score of 3.85. This lead to a positive score of the purchase intention. Thus it can be concluded that the guidelines developed in this study were functional. As the result, the prototype that was based on these guidelines was effective in stimulating purchase intention. The final prototype can be found in Appendix L.

Limitations and recommendations for further research

This study can be improved by further research and reduce the limitation this research has. target group. The main limitations and suggestions for future studies are discussed below.

Firstly, not all the responders of the final survey fitted the target group criteria. Some of them weren't interested in buying tires online. So the purchase intention could not be influenced by the CUI. The non-probability sample of the researcher's family and friends could have an impact on the study results. The validity of the results could be influenced because not all of the participants may be a representation of the target audience. Further research could test the conversational solution with a bigger and more targeted sample.

Secondly, due to the scope of the study, the tested product was a clickable prototype. Therefore, the prototype had limited functionalities. Consequently, the users were not able to talk to the chatbot.

This could heavily affect the perception of social presence of the bot. As a result, it could influence customer satisfaction and engagement. Further research could test an intellectually independent chatbot that is powered by artificial intelligence, machine learning, and natural language processing.

Conclusion

The aim of this study was to define the guidelines for creating a commercial CUI and to assess whether a CUI solution for Cooper Tires can be effective in stimulating purchase intention. In order to do so, first a literature review was performed after which a concept guidelines were made. These guidelines were used to design a CUI. Later, the guidelines were upgraded based on the outcomes of the designing process. The final prototype of the CUI was tested with an objective to measure the effect of conversational interface on purchase intention.

The results showed that the CUI had a beneficial impact on the customer's purchasing intention. This indicates that the guidelines are valid. From a practical perspective, Sticky Bandits can reuse these guidelines to develop CUI solutions for their clients. Cooper Tires can use the developed CUI design to increase purchase intention of their customers. The final prototype can be found in Appendix L.

Future studies should make an attempt to examine how purchase intention is exactly being influenced by the CUI solutions. The results and products of this research can provide a good base for the further research on the topic of commercial conversational user interfaces. The detailed reflection of the researcher can be found in Appendix M.

References

Abdul-Kader, S. A., & Woods, J. (2015). Survey on chatbot design techniques in speech conversation systems. International Journal Advanced Computer Science and Applications (IJACSA), 6(7).

Anderson RE, Srinivasan SS. (2003). E-satisfaction and e-loyalty: a contingent framework. Psychol Mark 20(2):123–138

Aspect. (2016). 2016 Aspect consumer experience index. Retrieved March 12, 2019, from: https://www.aspect.com/globalassets/2016-aspect-consumer-experience-index-survey_index- results-final.pdf

Babich, N. B. (2018, February 13). UI of the Future: Conversational Interfaces – Shopify. Retrieved March 12, 2019, from https://www.shopify.com/partners/blog/conversational-interfaces

Bai B, Law R, Wen I. (2008). The impact of website quality on customer satisfaction and purchase intentions: evidence from Chinese online visitors. Int J Hosp Manag 27(3):391–402

Barnes, S. J., & Vidgen, R. T. (2001b). Assessing the effect of a web site redesign initiative: An SME case study. International Journal of Management Literature, 1, 113-126.

Bhattacherjee A (2001). An empirical analysis of the antecedents of electronic commerce service continuance. Decis Support Syst 32(2):201–214

Bishop, T. (2016, December 8). Coffee from a chatbot: Starbucks unveils 'My Starbucks Barista' AI technology for mobile orders. Retrieved May 15,209, from https://www.geekwire.com/2016/coffee-chatbot-starbucks-unveil-starbucks-barista-ai-technology-placing-mobile-orders/

Mordor Intelligence (2018). GLOBAL AUTOMOTIVE TIRES MARKET Analysis of Growth, Trends, and Forecast (2019 - 2024). Retrieved May 15,209, from https://www.mordorintelligence.com/industry-reports

Bloch, P. H., Sherrell, D. L., and Ridgway, N. M. (1986, June). "Consumer search: An extended framework." Journal of Consumer Research, pp 119-126.

Boeve, E. (2018, October 10). Battle Of The Bots: What is the Best Chatbot in the Netherlands? Retrieved April 30, 2019, from https://kennis.booming.nl/beste-chatbot

Botscrew. (2019, March 28). What Are Bots? How Do Chatbots Work? . Retrieved April 26, 2019, from https://botscrew.com/what-are-bots/

Britz, D. (2016, April 6). Deep Learning for Chatbots, Part 1 – Introduction – WildML. Retrieved April 26, 2019, from http://www.wildml.com/2016/04/deep-learning-for- chatbots- part-1- introduction/

Brodie, R. J., Hollebeek, L. D., Juric, B., & Ilic, A. (2013). Customer engagement: conceptual domain, fundamental propositions, and implications for research. Journal of Service Research, 14(3): 252–271

Brown, E. (n.d.). 8 reasons why customer support is your most valuable ecommerce service. Retrieved May 1, 2019, from https://www.gorilla360.com.au/blog/ecommerce-service-customer-support

Bryant, L. (2018, April 25). The Uncanny Chatbots: How Human Should They Get? Retrieved May 28, 2019, from https://medium.com/myplanet-musings/the-uncanny-chatbots-how-human-should-they-get-c3e1af19f730

Butt, A. (2018, November 21). Are You Ready For Voice Search? 75 Vital Statistics And Trends For SEO And Future Marketing. Retrieved April 29, 2019, from https://quoracreative.com/article/voice-search-statistics-trends

Chatdesk (2018). Chatbots: Best practices across industries. Retrieved May 14, 2019, from https://www.chatbotguide.org/best-practices

Cheung CMK, Lee MKO (2005). The asymmetric effect of web site attribute performance on web satisfaction: an empirical study. e-Serv J 3(3):65–86

Connolly, A. (2018, September 25). How to onboard your users faster and more efficiently. Retrieved April 30, 2019, from https://uxdesign.cc/how-to-on-board-your-users-faster-and-more-efficiently-9c064196517f?gi=16732708cd22

Constine, J. (2016, April 12). Facebook launches Messenger platform with chatbots | TechCrunch. Retrieved April 26, 2019, from https://techcrunch.com/2016/04/12/agents-on- messenger/

Copeland, B. (2004, November 11). The Essential Turing: The Ideas that Gift Birth to the Computer Age | Mathematical Association of America. Consulted on April 8, 2019, from https://www.maa.org/press/maa-reviews/the-essential-turing-the-ideas-that-gave-birth-to-the-computer-age

Cooper Tire & Rubber Company. (n.d.). Cooper Tire & Rubber Company - Cooper Tire Company Overview. Retrieved June 16, 2019, from http://coopertire.com/About/Company-Overview.aspx

Cui L., Huang S., Wei F., Chuanqi T., Duan C., Zhou M. (2017). SuperAgent: A Customer Service Chatbot for E-commerce Websites. 97-102. 10.18653/v1/P17-4017.

Curi, W. R., Dias, A. T., & Filho, C. G. (2006). A percepção dos clientes quanto à qualidade dos sites na Internet: Aplicação e validação do modelo WebQual. In Proceedings XXX ENANPAD. Associação Nacional de Pós-Graduação em Administração. Retrieved April 26, 2019, from http://www.anpad.org.br/enanpad/2006/dwn/enanpad2006-mkta-2971-resumo.html

D'Alfonso, S., Santesteban-Echarri, O., Rice, S., Wadley, G., Lederman, R., Miles, C., ... & Alvarez-Jimenez, M. (2017). Artificial Intelligence-Assisted Online Social Therapy for Youth Mental Health. Frontiers in Psychology, 8

De Haan, H. (2018, February). Chatbot Personality and Customer Satisfaction. Bachelor thesis, Utrecht University, Utrecht, Netherlands.

De Lannoy, J (2017, November 2017). The effect of chatbot personality on emotional connection and customer satisfaction. Retrieved April 26, 2019, from University of Twente Theses.

Dialogflow (2018). KLM builds booking and packing bot 'BB' with Dialogflow. Retrieved May 14, 2019, from https://dialogflow.com/case-studies/klm/KLM.pdf

eBay. (2018, December 5). The eBay App for Google Assistant: Graph-Powered Conversational Commerce. Retrieved June 14, 2019, from https://neo4j.com/blog/ebay-shopbot-graph-powered-conversational-commerce/

Følstad A, Skjuve M, Brandtzaeg P. (2019). Different Chatbots for Different Purposes: Towards a Typology of Chatbots to Understand Interaction Design. 10.1007/978-3-030-17705-8_13. Retrieved April 30, 2019, from https://www.researchgate.net/publication/332487001_Different_Chatbots_for_Different_Purposes_Towards_a_Typology_of_Chatbots_to_Understand_Interaction_Design

Gartner. (2018). Gartner says 25 percent of customer service operations will use virtual customer assistants by 2020. Retrieved April 30, 2019, from https://www.gartner.com/en/newsroom/press-releases/2018-02-19-gartner-says-25-percent-of- customer-service-operations-will-use-virtual-customer-assistants-by-2020

Ganguly B., Dash S., Cyr D., Head M. (2010). The effects of website design on purchase intention in online shopping: The mediating role of trust and the moderating role of culture. IJEB. 8. 302-330. 10.1504/IJEB.2010.035289.

Grewal, D., Monroe, K. B., & Krishnan, R. (1998). The effects of price-comparison advertising on buyers' perceptions of acquisition value, transaction value, and behavioral intentions. Journal of Marketing, 62, 46–59.

Gruman, G. (1999). E-Commerce blurs lines of integrity, but they still exist. Computerworld (33:8),p 37.

Gunawardena, C. N., & Zittle, F. J. (1997). Social presence as a predictor of satisfaction within a computer mediated conferencing environment. American Journal of Distance Education, 11(3), 8-26.

Haddad Rezende N. E., Cunha Moura L. R., Wasner Vasconcelos, F. C., & Silveira Cunha, N. R. da. (2017, January). Proposition and Test of a Quality Assessment Extension WebQual Model in Brazil. Review of European Studies, 9(2), 74. https://doi.org/10.5539/res.v9n2p74

Hassanein, K., & Head, M. (2007). Manipulating perceived social presence through the web interface and its impact on attitude towards online shopping. International Journal of Human- Computer Studies, 65, 689-708.

Hsu C., Kuo-Chien C., Chen M. (2012). The impact of website quality on customer satisfaction and purchase intention: Perceived playfulness and perceived flow as mediators. Information Systems and e-Business Management. 10. 10.1007/s10257-011-0181-5.

https://www.maa.org/press/maa-reviews/the-essential-turing-the-ideas-that-gave-birth-to-the-computer-age

Hult, G. T. M., Morgeson, F. V., Morgan, N. A., Mithas, S., & Fornell, C. (2016). Do managers know what their customers think and why? Journal of the Academy of Marketing Science, 45(1), 37–54. https://doi.org/10.1007/s11747-016-0487-4

Jarvenpaa, S. L., & Todd, P. A. (1997). Is there a future for retailing on the Internet? Consumer reactions to electronic shopping on the World Wide Web. Electronic Commerce, 1(2), 59-88.

Kim DJ. (2010). An investigation of the effect of online consumer trust on expectation, satisfaction, and post-expectation. Inf Syst E-Bus Manag. doi:10.1007/s10257-010-0136-2

Laurel, B. (1997). Interface agents: metaphors with character. In Software agents, Jeffrey M. Bradshaw (Ed.). MIT Press, Cambridge, MA, USA, 1, 67-77.

Lee, K. M., Peng, W., Jin, S. A., & Yan, C. (2006). Can robots manifest personality? An empirical test of personality recognition, social responses, and social presence in human–robot interaction. Journal of communication, 56(4), 754-772.

Loiacono, E. T. (2000). Webqual: A Web Site Quality Instrument (Unpublished doctoral dissertation). University of Georgia, Athens, GA.

MarketsandMarkets (2017). Automotive Tire Market by Type, Section Width, Aspect Ratio, and by Aftermarket - Global Trends and Forecast to 2019. Retrieved May 15,209, from https://slideplayer.com/slide/10481090/

Armstrong, G., & Kotler, P. (2007). Marketing: An introduction. Upper Saddle River, N.J: Pearson Prentice Hall.

McLaughlin G. (n.d.). IBM Training and Skills: Designing Conversational Solutions: Retrieved April 30, 2019, from https://www.onlinedigitallearning.com/course/view.php?id=4294&section=5

Messina, C. (2015, January 16). Conversational commerce. Retrieved from https://medium.com/chris-messina/conversational-commerce-92e0bccfc3ff

Mimoun, M. S. B., Poncin, I., & Garnier, M. (2012). Case study—Embodied virtual agents: An analysis on reasons for failure. Journal of Retailing and Consumer services, 19(6), 605-612. doi: https://doi.org/10.1016/j.jretconser.2012.07.006

Mindbowser (2017). Chatbot survey. Retrieved April 30, 2019, from http://mindbowser.com/chatbot-market-survey-2017/

Mirabi V., Akbariyeh H., Tahmasebifard H. (2015, January). A Study of Factors Affecting on Customers Purchase Intention. Retrieved April 30, 2019, from Journal of Multidisciplinary Engineering Science and Technology (JMEST) ISSN: 3159-0040

Mockplus. (2018, November). Best 15 Examples of Popular Card UI Design for Inspiration in 2018. Retrieved June 3, 2019, from https://www.mockplus.com/blog/post/card-ui-design

MotoCMS. (2017, November 2). Visual Content vs. Text Content - Epic Faceoff with Obvious Winner. Retrieved May 29, 2019, from https://www.motocms.com/blog/en/visual-content-vs-text-content/

Mott, B.W., Lester, J.C., & Branting, K. (2004). Conversational Agents. doi10.1201/9780203507223.ch10

Mrkalj, M. (2017, May). Building the Business Case for Chatbots. Retrieved May 14, 2019, from https://chatbotsmagazine.com/building-the-business-case-for-chatbots-40b0e8e0c157?gi=2767935a64cb

Newberry, C. (2018, October). How to Define Your Target Market: A Guide to Audience Research - Hootsuite Social Media Management. Retrieved May 20, 2019, from https://blog.hootsuite.com/target-market/

Ngai, E., & Gunasekaran, A. (2007). A review for mobile of adoption. Consumers' attitudes in mobile marketing. International Journal of Services Technology and Management, 8(2/3), 155. doi:10.1504/ijstm.2007.012866

Norman, D. A. (1990). The design of everyday things. New York: Doubleday.

Nowak, K. L., & Biocca, F. (2003). The effect of the agency and anthropomorphism on users' sense of telepresence, copresence, and social presence in virtual environments. Presence: Teleoperators & Virtual Environments, 12(5), 481-494. doi: 10.1162/105474603322761289.

O'Connor, K. (2011, October). Personas: The Foundation of a Great User Experience UX Magazine. Retrieved May 20, 2019, from http://uxmag.com/articles/personas-the-foundation-of-a-great-user-experience

Rautela, A. (2018, August 2). Post-Study System Usability Questionnaire (PSSUQ) - Cone Trees. Retrieved June 11, 2019, from https://www.conetrees.com/ux-glossary/post-study-system-usability-questionnaire-pssuq/

Reddy, T. (2017, October 17). How chatbots can help reduce customer service costs by 30%. Retrieved May 1, 2019, from https://www.ibm.com/blogs/watson/2017/10/how-chatbots-reduce-customer-service-costs-by-30-percent/

Reichheld FF, Schefter P (2000). E-loyalty: your secret weapon on the web. Harv Bus Rev 78(4):105–113 Sandelands LE, Ashford SJ, Dutton JE (1983) Reconceptualizing of the overjustification effect: a template-matching approach. Motiv Emot 7(3):229–255

Research and Markets (2017). Global Automotive Tire Market Analysis & Trends - Industry Forecast to 2025. Retrieved May 15,209, from https://www.researchandmarkets.com/research/qb3pk3/global_automotive

Roudposhti, V.M., Nilashi, M., Mardani, A., Streimikiene, D., Samad, S., & Ibrahim, O. (2018). A new model for customer purchase intention in ecommerce recommendation agents. Journal of International Studies, 11(4), 237-253. doi:10.14254/2071-8330.2018/11-4/17

Rouse, M. (2018, August). What is AI (artificial intelligence)? - Definition from WhatIs.com. Retrieved April 26, 2019, from https://searchenterpriseai.techtarget.com/definition/AI-Artificial-Intelligence

Schurink E. (2019). The role of perceived social presence in online shopping. Retrieved April 26, 2019, from University of Twente Theses.

Seif, G. (2018, October 1). An easy introduction to Natural Language Processing. Retrieved April 26, 2019, from https://towardsdatascience.com/an-easy-introduction-to-natural-language-processing-b1e2801291c1?gi=d47b8fbeef69

Shawar, Bayan & Atwell, Eric. (2007). Chatbots: Are they Really Useful?. LDV Forum. 22. 29-49. Shevat, A. (2017, May). Designing Bots. O'Reilly Media, Inc., Usa

Techopedia. (n.d.). What is an Avatar? - Definition from Techopedia. Retrieved May 27, 2019, from https://www.techopedia.com/definition/4624/avatar

Trefler, A. (2014). Build For Change: Revolutionizing Customer Engagement Through Continues Digital Innovation amazon.

Ojapuska E. (2018). The Impact of Chatbots in Customer Engagement. Vaasa University of Applied Sciences, Vassa, Finland.

Turing, Alan (1948), "Machine Intelligence", in Copeland, B. Jack, The Essential Turing: The ideas that gave birth to the computer age, Oxford: Oxford University Press, ISBN 978-0-19-825080-7

Vadlamani, Ravi & Sk, Kamaruddin. (2017, November). Big Data Analytics Enabled Smart Financial Services: Opportunities and Challenges. 15-39. 10.1007/978-3-319-72413-3_2.

Wallace R.S. (2009) The Anatomy of A.L.I.C.E.. In: Epstein R., Roberts G., Beber G. (eds) Parsing the Turing Test. Springer, Dordrecht

Weizenbaum, J. (1966). ELIZA – A computer program for the study of natural language communication between man and machine. Communications of the ACM, 10(8):36–45.

Xu, X. (2017). "The effects of website quality on customer satisfaction, use intention, and purchase intention: A comparison among three types of booking channels". Graduate Theses and Dissertations. 15467.

Yu, D., Harter, J., Fleming, J. (2014). The Relationship between Customer Engagement and Organizational Outcomes in the Business-to-consumer Context – Customer En- gagement Meta-analysis. Gallup. Retrieved April 26, 2019, from http://news.gallup.com/ reports/195521/b2c-customer-engagement-meta-analysis-2014.aspx?ays=n#aspnetForm

Zainol, Z., Omar, N. A., Osman, J., & Habidin, N. F. (2016). The Effect of Customer–Brand Relationship Investments' Dimensions on Customer Engagement in Emerging Markets. Journal of Relationship Marketing, 15(3), 172-199.

Appendices

Appendix A

Conversational Solution Canvas: Earlier versions.

Appendix B

Google Analytics of Cooper Tires website (www.coopertire.co.uk).

Country	Sessions ▼		Sessions	contribution to total: Sessions ▼
		3,710 % of Total: 100.00% (3,710)	**3,710** % of Total: 100.00% (3,710)	
1. ■ United Kingdom		**746**	20.11%	
2. ■ Germany		**713**	19.22%	
3. ■ Spain		**533**	14.37%	
4. ■ Italy		**287**	7.74%	
5. ■ France		**252**	6.79%	
6. ■ Switzerland		**157**	4.23%	
7. ■ United States		**138**	3.72%	
8. ■ Austria		**82**	2.21%	

Key Metric:

Age — 42.80% of Total sessions

Gender — 43.42% of Total sessions

■ male ■ female

13.8%
86.2%

● Sessions
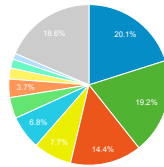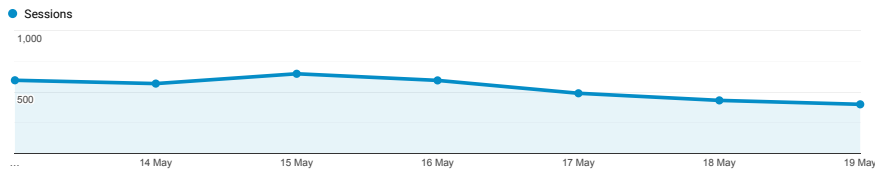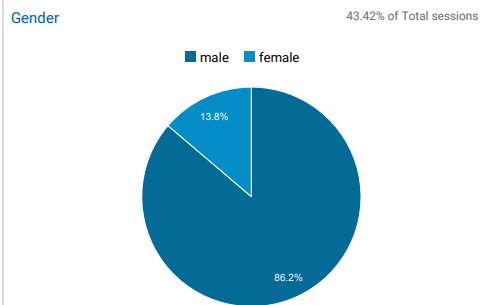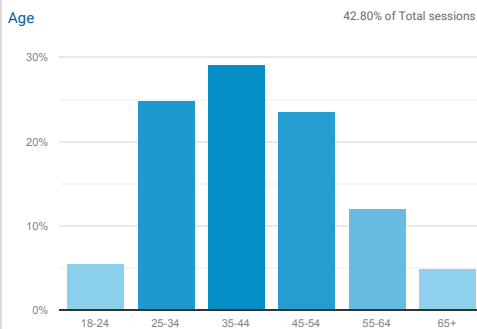
Browser	Acquisition			Behaviour			Conversions Goal 2: Dealer locator		
	Sessions	% New Sessions	New Users	Bounce Rate	Pages/Session	Avg. Session Duration	Dealer locator (Goal 2 Conversion Rate)	Dealer locator (Goal 2 Completions)	Dealer locator (Goal 2 Value)
	3,710 % of Total: 100.00% (3,710)	**72.24%** Avg for View: 72.08% (0.22%)	**2,680** % of Total: 100.22% (2,674)	**29.27%** Avg for View: 29.27% (0.00%)	**3.51** Avg for View: 3.51 (0.00%)	**00:02:47** Avg for View: 00:02:47 (0.00%)	**0.05%** Avg for View: 0.05% (0.00%)	**2** % of Total: 100.00% (2)	**US$0.00** % of Total: 0.00% (US$0.00)
1. Chrome	**1,772** (47.76%)	71.50%	**1,267** (47.28%)	29.46%	3.54	00:02:40	0.00%	0 (0.00%)	US$0.00 (0.00%)
2. Safari	**887** (23.91%)	72.15%	**640** (23.88%)	24.24%	3.64	00:03:06	0.11%	1 (50.00%)	US$0.00 (0.00%)
3. Firefox	**330** (8.89%)	72.73%	**240** (8.96%)	30.61%	3.21	00:02:42	0.00%	0 (0.00%)	US$0.00 (0.00%)
4. Internet Explorer	**250** (6.74%)	74.80%	**187** (6.98%)	23.60%	3.82	00:02:58	0.40%	1 (50.00%)	US$0.00 (0.00%)
5. Samsung Internet	**161** (4.34%)	73.29%	**118** (4.40%)	29.81%	3.88	00:02:52	0.00%	0 (0.00%)	US$0.00 (0.00%)
6. Edge	**159** (4.29%)	62.89%	**100** (3.73%)	39.62%	2.91	00:02:12	0.00%	0 (0.00%)	US$0.00 (0.00%)
7. 'Mozilla	**52** (1.40%)	100.00%	**52** (1.94%)	92.31%	1.00	00:00:00	0.00%	0 (0.00%)	US$0.00 (0.00%)
8. Opera	**49** (1.32%)	69.39%	**34** (1.27%)	12.24%	4.92	00:06:54	0.00%	0 (0.00%)	US$0.00 (0.00%)
9. Android Webview	**31** (0.84%)	80.65%	**25** (0.93%)	41.94%	2.71	00:01:26	0.00%	0 (0.00%)	US$0.00 (0.00%)
10. Safari (in-app)	**6** (0.16%)	100.00%	**6** (0.22%)	83.33%	1.67	00:00:28	0.00%	0 (0.00%)	US$0.00 (0.00%)

Rows 1 - 10 of 16

Appendix C

Interview questions and the summary.

Questions

`Defining the target group: interview`

```
1. How old are you?
2. What sector do you work in?
3. What are your favourite brands?
4. Do you own a car?
5. What kind of a car?
6. When was the last time you changed your tires?
7. How do you usually get new tires? Online/offline?
8. What kind of tires you have right now?
9. How do you know when you need new tires?
10. Do you usually go to the same dealer?
11. What criterias of the tires matters to you the most?
12. From 1 to 10 how much do you care about the quality of your tires?
13. Do you change tires every season?
14. Do you know what kind of tires you need?
15. Do you use internet to find information about tires before purchasing?
16. What is your main frustration during purchasing new tires?
```

Summary

8 people were interviewed in order to get insights about the target audience. The responders were different ages from 19-40. All of them had or were pursuing a higher education. Most of the responders were working in tech, marketing or business. They all owned a car. Some of them had troubles answering what kind of tires they currently had. 40% replied that usually they get notified from their dealer when they need to change the tires. 30% answered they look online for tires before a purchase. Other 70% said they let the dealer choose the right tires because they don't know anything about tires. The criteria that matters the most is the wear period. People who owned a more expensive car cared about the quality of their tires more than people with a car of a cheaper brand. The main tire purchasing frustration of the responders was the lack of knowledge about the tires and from where to start the process.

Appendix D

The auto suggest results based on Google search queries
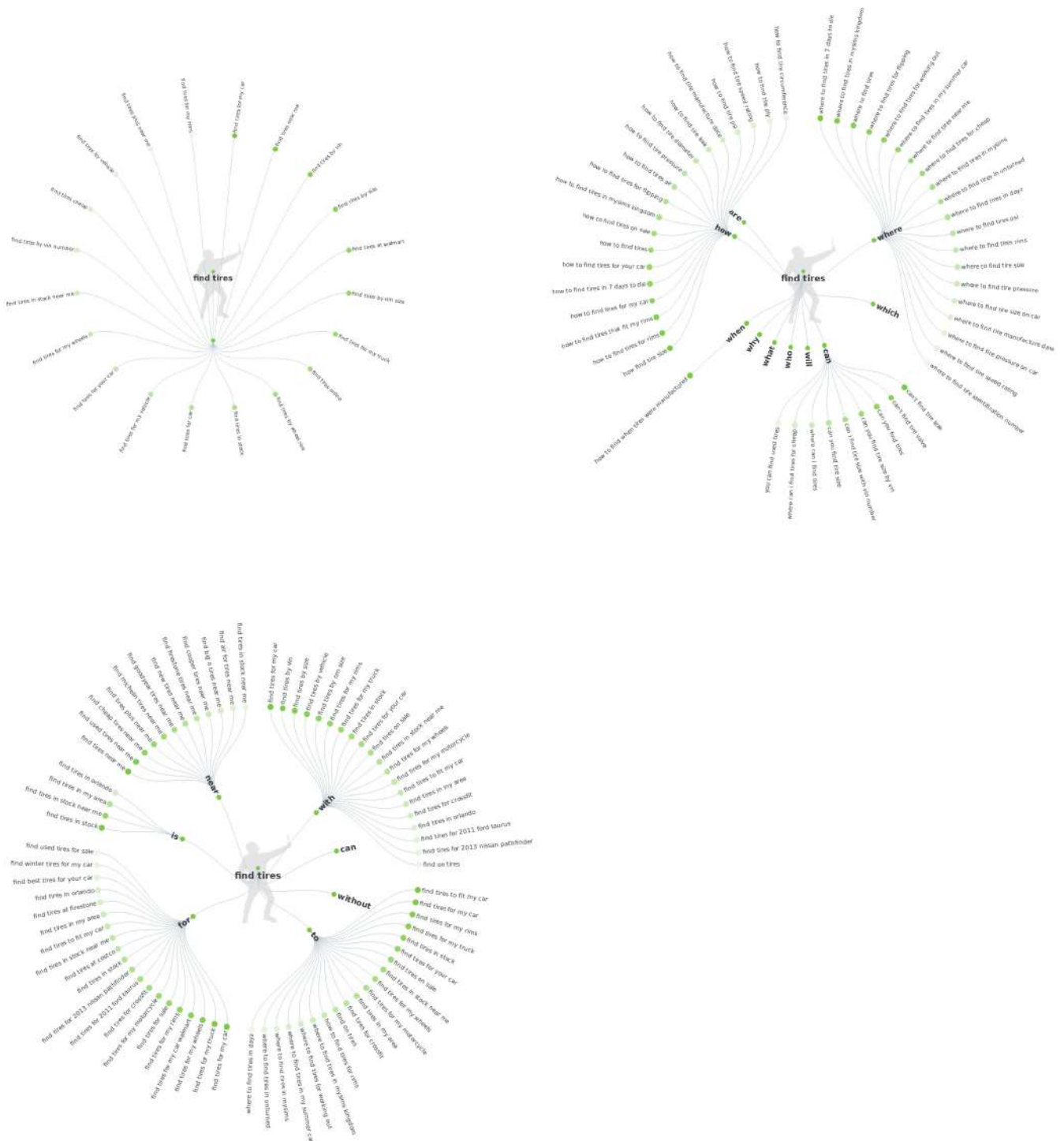
Appendix E

Customer Empathy Map

Will Durrel — Empathy Map

SAYS
Where should I start?
What tires fits my car?
What is the difference between tires?
Why I need winter tires?
Does the brand matter?
What RIM size I have?
What is a RIM size?
I want somehting reliable
What do you think?

THINKS
What is the best for me?
Maybe there another way
What else am I missing?
Why is this so hard?
Am I the only one confused?
Maybe this isn't the best
Will it gurantee my safety?

DOES
Compare tires
Check web-sites
Tries different search tools
Asks friends
More research
Asks support team

FEELS
Overwhelmed
Excited
Tired
Fear
Anxious
Indecisive

Pains
· Lack of knowledge about tires
· Spending a lot of time to figure out what tires he needs
· Inability to locate tires that fit his needs
· Unawared about the tire difference

Gains
· Get all the needed knowledge about tires
· Find the right tires fast and efficient
· Learn about difference between tires
· Find out what tires fits his car

Appendix F

The final conversational flow
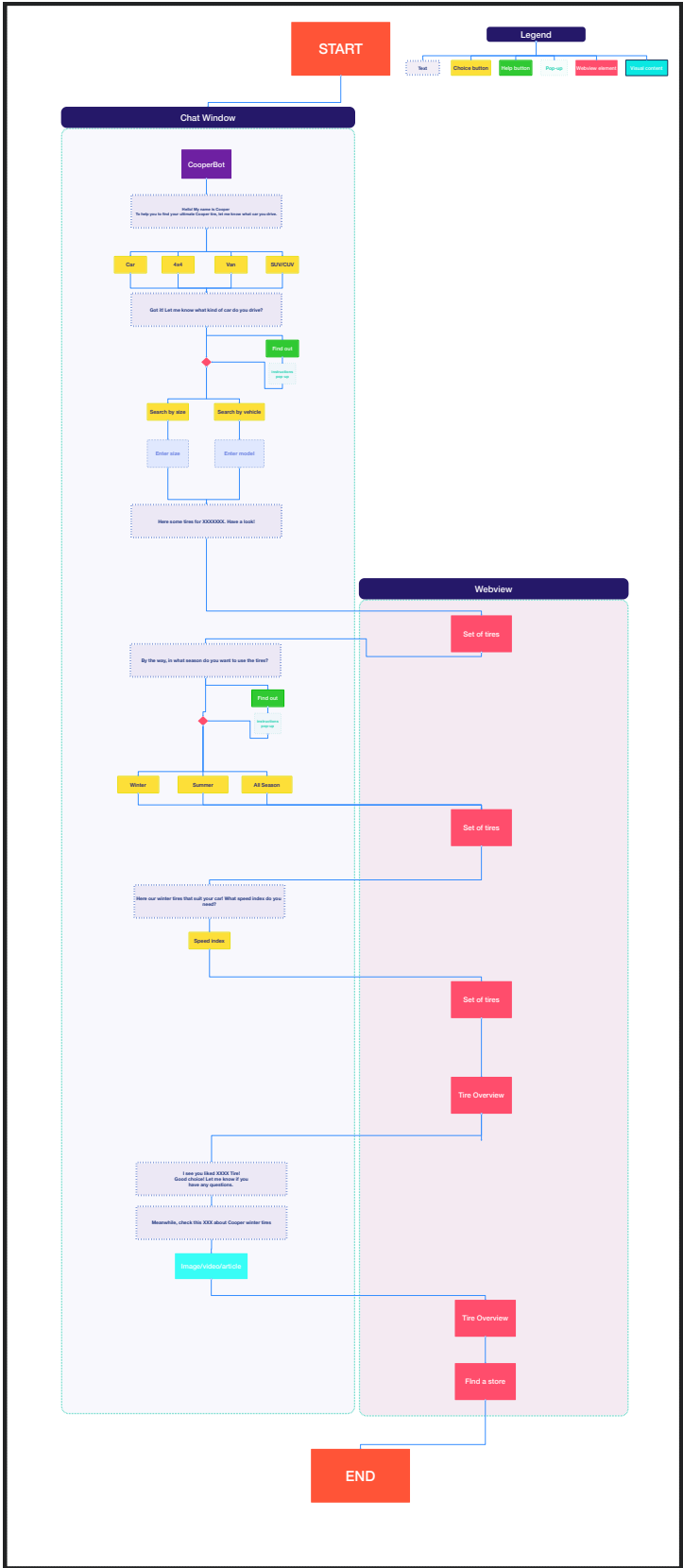
Earlier versions of the conversational flow
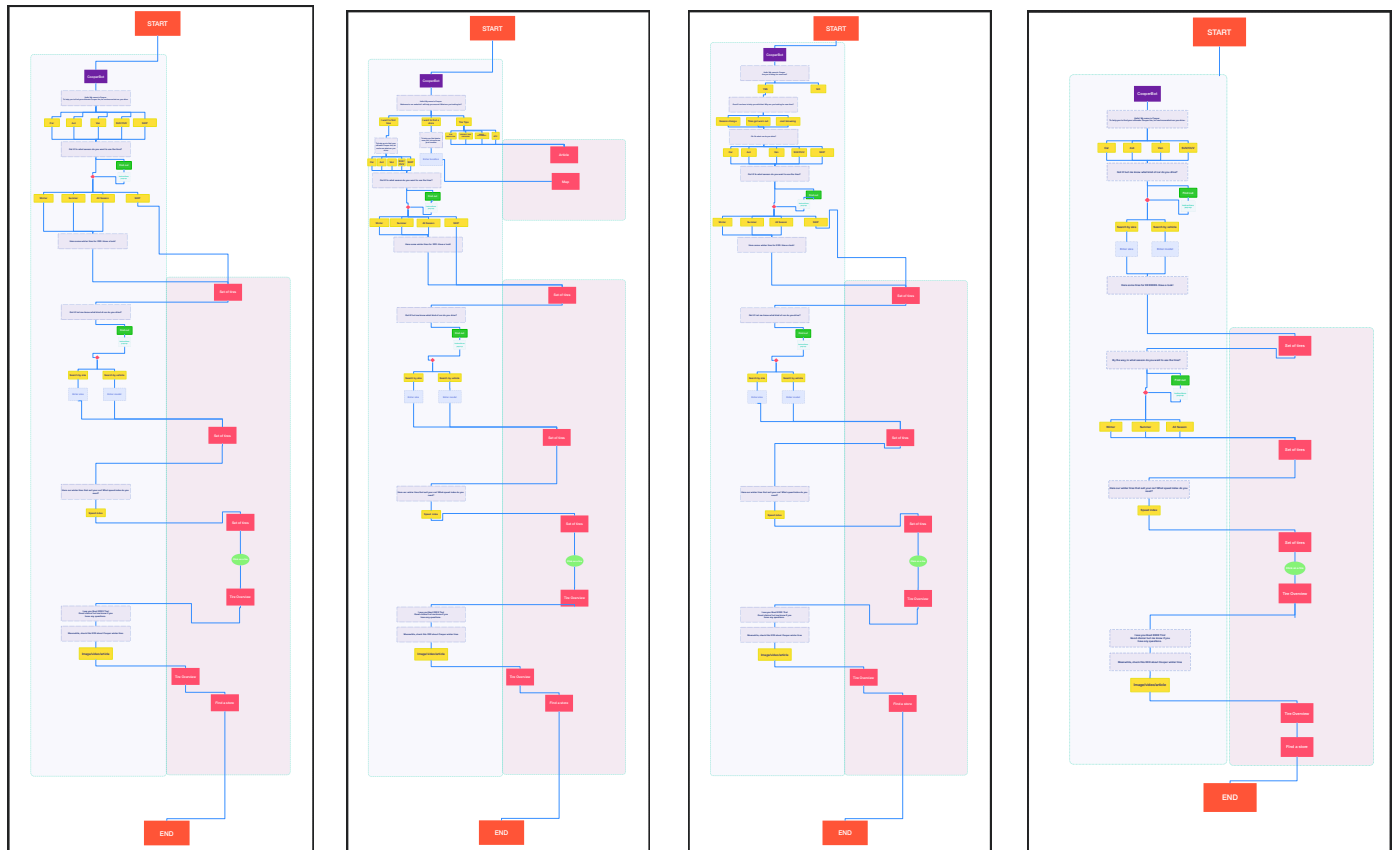
Appendix G

Usability Test 1

Cooper Tires Bot User Interface Test 1

This survey is a part of a study that focuses on the commercial conversational user interfaces (CUI).

Conversational User Interface is an interface that lets users interact with brands and services by the means of a human conversation.

Within this test you will have to perform a task that involves CUI and answer some follow-up questions.

Thank you for the contribution!

You task

You are looking for a winter tire for your car.
The tire size of you car is 215/70R15 with a speed index of L: 75MPH (120 KM/H)
Locate: WEATHERMASTER ICE 100
Important: Speak aloud your thoughts during the session, your feedback will help me improve the product

1. **Age**

_____

2. **Hours of computer usage per day:**

_____

3. **Applications used for computer:**

_____
_____
_____
_____

4. **Hours of smartphone usage per day:**

_____

5. **Applications used for smartphone:**

_____
_____
_____
_____

6. **Web and web application experience on a scale of 1 to 10:**
   Mark only one oval.

	1	2	3	4	5	6	7	8	9	10
	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

7. **Do you own a car?**
   Mark only one oval.
   - ◯ Yes
   - ◯ No
   - ◯ Other: _____

8. **How do you usually purchase new tires?**
   Mark only one oval.
   - ◯ Store/dealer
   - ◯ Second hand
   - ◯ Online
   - ◯ Other: _____

9. **How much do you care about the tires of your car?**
   Mark only one oval.

	1	2	3	4	5	
Not at all	◯	◯	◯	◯	◯	A lot

10. **Did you ever experience a chatbot online?**
    Mark only one oval.
    - ◯ Yes
    - ◯ No

11. **How would you describe your experiences with chatbots from 0 (very negative) to 10 (very positive)?**
    Mark only one oval.

	1	2	3	4	5	6	7	8	9	10
	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

First part

Selecting vehicle, entering size details

12. **Was it clear how to fill in the tire size details?**
    Mark only one oval.

	1	2	3	4	5	
Very easy	◯	◯	◯	◯	◯	Very hard

Second part

Choosing a tire

13. **Do you find it easy to choose a desired tire?**
    Mark only one oval.

	1	2	3	4	5	
Very easy	◯	◯	◯	◯	◯	Very hard

Selecting a tire

14. **Would you ask bot questions about this tire?**

_____

General questions

15. **How easy was it to perform this task?**
    Mark only one oval.

	1	2	3	4	5	
Very easy	◯	◯	◯	◯	◯	Very complex

16. **Did you run into trouble?**

_____

17. **If so, what caused this problem?**

_____

18. **How did you find the language used?**

_____

19. **What do you think of the chatbot? Was it helpful or not?**

_____

20. **What would you change about the interface?**

_____
_____
_____
_____
_____

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Usability Test 1 Results
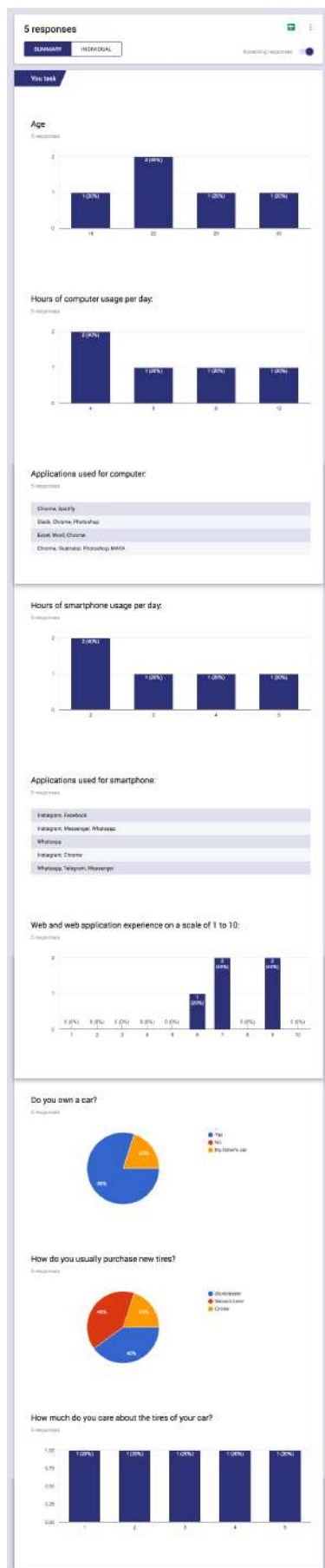
Usability Test 2

Cooper Tires Bot User Interface Test 2

This survey is a part of a study that focuses on the commercial conversational user interfaces (CUI).

Conversational User Interface is an interface that lets users interact with brands and services by the means of a human conversation.

Within this test you will have to perform a task that involves CUI and answer some follow-up questions.

Thank you for the contribution!

You task

You are looking for a winter tire for your car.
The tire size of you car is 215/70R15 with a speed index of L: 75MPH (120 KM/H)
Locate: WEATHERMASTER ICE 100
Important: Speak aloud your thoughts during the session, your feedback will help me improve the product

Untitled section

1. **Age**
   Tick all that apply.
   - [ ] <18 years old
   - [ ] 18-24 years old.
   - [ ] 25-34 years old.
   - [ ] 35-44 years old.
   - [ ] 45-54 years old.
   - [ ] >54 years old.

2. **Web and web application experience on a scale of 1 to 10:**
   Mark only one oval.

	1	2	3	4	5	6	7	8	9	10
	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

3. **Do you own a car?**
   Mark only one oval.
   - ◯ Yes
   - ◯ No
   - ◯ Other:

4. **How do you usually purchase new tires?**
   Mark only one oval.
   - ◯ Store/dealer
   - ◯ Second hand
   - ◯ Online
   - ◯ Other:

5. **How much do you care about the tires of your car?**
   Mark only one oval.

	1	2	3	4	5	
Not at all	◯	◯	◯	◯	◯	A lot

6. **Did you ever experience a chatbot online?**
   Mark only one oval.
   - ◯ Yes
   - ◯ No

7. **How would you describe your experiences with chatbots from 0 (very negative) to 10 (very positive)?**
   Mark only one oval.

1	2	3	4	5	6	7	8	9	10
◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

First part

Selecting vehicle, entering size details

TASK: find the instructions on how to look for the RIM size?

8. **Do the instructions make it clear how to find your tire size?**
   Mark only one oval.
   - ◯ Yes
   - ◯ No
   - ◯ Other:

Second part

Screen split, adding filters

9. **How do you feel about the changed interface?**
   _____
   _____
   _____
   _____

10. **Do you want to close the chatbot or continue the talk?**
    Mark only one oval.
    - ◯ Yes
    - ◯ No
    - ◯ Other:

TASK: Can you change the vehicle type to "Van"

Selecting a tire

11. **Would you ask bot questions about this tire?**
    _____

General questions

12. **How did you find the experience of using this interface to complete this task?**
    _____
    _____
    _____
    _____

13. **How easy was it to perform this task?**
    Mark only one oval.

	1	2	3	4	5	
Very easy	◯	◯	◯	◯	◯	Very complex

14. **Did you run into trouble?**
    _____

15. **If so, what caused this problem?**
    _____

16. **How did you find the language used?**
    _____

17. **How did you find the navigation (or search functionalities)?**
    _____

18. **What do you think of the chatbot? Was it helpful or not?**
    _____

19. **What would you change about the interface?**
    _____
    _____
    _____
    _____

20. **What does this experience page say about the brand of Cooper? Pick 3 adjectives**
    Tick all that apply.
    - [ ] Corporative
    - [ ] Boring
    - [ ] Complex
    - [ ] Technical
    - [ ] Modern
    - [ ] Helpful
    - [ ] Unique
    - [ ] Outdated
    - [ ] Friendly

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Usability Test 2 Results

Usability Test 3

Cooper Tires Bot User Interface Test 3

This survey is a part of a study that focuses on the commercial conversational user interfaces (CUI).

Conversational User Interface is an interface that lets users interact with brands and services by the means of a human conversation.

Within this test you will have to perform a task that involves CUI and answer some follow-up questions.

Thank you for the contribution!

You task

You are looking for a winter tire for your car.
The tire size of you car is 215/70R15 with a speed index of L: 75MPH (120 KM/H)
Locate: WEATHERMASTER ICE 100
Important: Speak aloud your thoughts during the session, your feedback will help me improve the product

Untitled section

1. **Age**
   Tick all that apply.
   - [ ] <18 years old
   - [ ] 18-24 years old.
   - [ ] 25-34 years old.
   - [ ] 35-44 years old.
   - [ ] 45-54 years old.
   - [ ] >54 years old.

2. **Web and web application experience on a scale of 1 to 10:**
   Mark only one oval.

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

3. **Do you own a car?**
   Mark only one oval.
   - ○ Yes
   - ○ No
   - ○ Other: _____

4. **How do you usually purchase new tires?**
   Mark only one oval.
   - ○ Store/dealer
   - ○ Second hand
   - ○ Online
   - ○ Other: _____

5. **How much do you care about the tires of your car?**
   Mark only one oval.

	1	2	3	4	5	
Not at all	○	○	○	○	○	A lot

6. **Did you ever experience a chatbot online?**
   Mark only one oval.
   - ○ Yes
   - ○ No

7. **How would you describe your experiences with chatbots from 0 (very negative) to 10 (very positive)?**
   Mark only one oval.

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

First part

Selecting vehicle, entering size details

TASK: find the instructions on how to look for the RIM size?

8. **Do the instructions make it clear how to find your tire size?**
   Mark only one oval.
   - ○ Yes
   - ○ No
   - ○ Other: _____

Second part

Screen split, adding filters

9. **How do you feel about the changed interface?**
   _____
   _____
   _____
   _____

10. **Do you want to continue the talk to the chatbot?**
    Mark only one oval.
    - ○ Yes
    - ○ No
    - ○ Other: _____

TASK: Can you change the vehicle type to "Van"

Selecting a tire

11. **Would you ask bot questions about this tire?**
    _____

General questions

12. **How did you find the experience of using this interface to complete this task?**
    _____
    _____
    _____
    _____

13. **How easy was it to perform this task?**
    Mark only one oval.

	1	2	3	4	5	
Very easy	○	○	○	○	○	Very complex

14. **Did you run into trouble?**

15. **If so, what caused this problem?**

16. **How did you find the language used?**

17. **How did you find the navigation (or search functionalities)?**

18. **What do you think of the chatbot? Was it helpful or not?**

19. **What would you change about the interface?**
    _____
    _____
    _____
    _____

20. **What does this experience page say about the brand of Cooper? Pick 3 adjectives**
    Tick all that apply.
    - [ ] Corporative
    - [ ] Boring
    - [ ] Complex
    - [ ] Technical
    - [ ] Modern
    - [ ] Helpful
    - [ ] Unique
    - [ ] Outdated
    - [ ] Friendly

Appendix H

Earlier versions of the Bot avatar

Appendix I

Survey for the final evaluation

Conversational User Interface Survey

For my graduation thesis of the Creative Media and Game Technologies I research on the Conversational User Interfaces for commercial purposes. Conversational User Interface (CUI) is an interface that lets users interact with brands and services by the means of a human conversation.

In a collaboration with Cooper Tires I have developed a prototype of a conversational user interface that helps consumers to search for tires. I would like to investigate how users experience this kind of CUI. That is why I ask you to participate in my research.

The investigation takes approximately 15 minutes of your time. Your data will be treated reliably and the results will be processed completely anonymously

Within this test you will have to perform a task that involves CUI and answer some follow-up questions.

Thank you for the contribution!

General questions

1. **Age**
   Mark only one oval.

   ◯ <18 years old

   ◯ 18-24 years old.

   ◯ 25-34 years old.

   ◯ 35-44 years old.

   ◯ 45-54 years old.

   ◯ >54 years old.

2. **Gender**
   Mark only one oval.

   ◯ Female

   ◯ Male

   ◯ Prefer not to say

The task
Please, go to:

https://xd.adobe.com/view/d033ac28-b182-45da-7398-8f3b7929cc39-a602/?fullscreen

Your task:
You are looking for a winter tire for your car.
The tire size of you car is
215/70R15
with a speed index of
L: 75MPH (120 KM/H)

You have to locate the dealer location of the "WEATHERMASTER ICE 100" tire.

When you complete the task click "NEXT"

Questions

3. **Were you able to complete the task?**
   Mark only one oval.

   ◯ Yes

   ◯ No

   ◯ Other: _____

Please indicate how much you agree with the statements below from 1 to 5 when 1 is strongly disagree and 5 is strongly agree.

4. **The task I was doing with the chatbot was complex.**
   Mark only one oval.

	1	2	3	4	5	
Disagree	◯	◯	◯	◯	◯	Agree

5. **It was easy to navigate with this interface.**
Mark only one oval.

	1	2	3	4	5	
Disagree	( )	( )	( )	( )	( )	Agree

6. **It was easy to learn to use this interface.**
Mark only one oval.

	1	2	3	4	5	
Disagree	( )	( )	( )	( )	( )	Agree

7. **The information (such as online help, on-screen messages and other documentation) provided by the bot was clear.**
Mark only one oval.

	1	2	3	4	5	
Disagree	( )	( )	( )	( )	( )	Agree

8. **The information was effective in helping me to complete the task.**
Mark only one oval.

	1	2	3	4	5	
Disagree	( )	( )	( )	( )	( )	Agree

9. **The organisation of information on the screen was clear.**
Mark only one oval.

	1	2	3	4	5	
Disagree	( )	( )	( )	( )	( )	Agree

10. **The interface was visually pleasant.**
Mark only one oval.

	1	2	3	4	5	
Disagree	( )	( )	( )	( )	( )	Agree

11. **I thought there was too much inconsistency in this system**
Mark only one oval.

	1	2	3	4	5	
Disagree	( )	( )	( )	( )	( )	Agree

12. **I am satisfied with the chatbot interface.**
Mark only one oval.

	1	2	3	4	5	
Disagree	( )	( )	( )	( )	( )	Agree

13. **The bot helped me to accomplish my task**
Mark only one oval.

	1	2	3	4	5	
Disagree	( )	( )	( )	( )	( )	Agree

14. **I felt like the chatbot is an intelligent being.**
Mark only one oval.

	1	2	3	4	5	
Disagree	( )	( )	( )	( )	( )	Agree

15. **I felt like the chatbot is a social being.**
Mark only one oval.

	1	2	3	4	5	
Disagree	( )	( )	( )	( )	( )	Agree

16. **I feel like the chatbot was really communicating with me.**
Mark only one oval.

	1	2	3	4	5	
Disagree	◯	◯	◯	◯	◯	Agree

17. **I am satisfied with the way the bot helped me.**
Mark only one oval.

	1	2	3	4	5	
Disagree	◯	◯	◯	◯	◯	Agree

18. **I felt engaged with the bot throughout the experience.**
Mark only one oval.

	1	2	3	4	5	
Disagree	◯	◯	◯	◯	◯	Agree

19. **I am likely to purchase a tire from Cooper Tires.**
Mark only one oval.

	1	2	3	4	5	
Disagree	◯	◯	◯	◯	◯	Agree

20. **I would recommend to use this bot to my friend if they are looking for new tires**
Mark only one oval.

	1	2	3	4	5	
Disagree	◯	◯	◯	◯	◯	Agree

21. **Overall, I am satisfied with the experience.**
Mark only one oval.

	1	2	3	4	5	
Disagree	◯	◯	◯	◯	◯	Agree

Thank you!
Thank you so much for the contribution!

22. **If you have any other feedback or suggestions, please, let me know.**

_____
_____
_____
_____
_____

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Appendix J

Constructs of the measures

Website Quality

1. **Were you able to complete the task?**
Mark only one oval.
- ⭕ Yes
- ⭕ No
- ⭕ Other: _____

2. **The task I was doing with the chatbot was complex.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

3. **It was easy to navigate with this interface.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

4. **It was easy to learn to use this interface.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

5. **The information (such as online help, on-screen messages and other documentation) provided by the bot was clear.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

6. **The information was effective in helping me to complete the task.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

7. **The organisation of information on the screen was clear.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

8. **The interface was visually pleasant.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

9. **I thought there was too much inconsistency in this system**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

Service Quality

13. **I am satisfied with the way the bot helped me.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

14. **Overall, I am satisfied with the experience.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

Customer Satisfaction

10. **I am satisfied with the chatbot interface.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

11. **The bot helped me to accomplish my task**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

Customer Engagement

12. **I felt like the chatbot is an intelligent being.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

13. **I felt like the chatbot is a social being.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

14. **I feel like the chatbot was really communicating with me.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

15. **I felt engaged with the bot throughout the experience.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

Purchase intention

16. **I am likely to purchase a tire from Cooper Tires.**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

17. **I would recommend to use this bot to my friend if they are looking for new tires**
Mark only one oval.

	1	2	3	4	5	
Disagree	⭕	⭕	⭕	⭕	⭕	Agree

Appendix K

The results of the final evaluation survey

Age	Gender	Were you able to	The task I was d	It was easy to na	It was easy to le:	The information (	The information v	The organisation
18-24 years old.	Female	No	3	4	3	5	5	5
18-24 years old.	Female	Yes	4	2	3	2	3	3
18-24 years old.	Female	Yes	2	3	5	4	4	4
18-24 years old.	Female	Yes	2	5	2	4	5	2
18-24 years old.	Male	Yes	1	3	3	2	3	4
18-24 years old.	Prefer not to say	Yes	1	5	5	5	5	5
18-24 years old.	Female	Yes	2	4	5	5	5	4
18-24 years old.	Female	Yes, but with the	3	2	4	5	5	3
18-24 years old.	Female	Yes	4	4	4	5	5	5
25-34 years old.	Male	Yes	1	5	5	5	5	5
35-44 years old.	Female	Yes	1	2	5	5	2	3
35-44 years old.	Male	Yes	1	4	5	4	4	5
45-54 years old.	Male	Yes	2	4	5	4	4	5
25-34 years old.	Male	Yes	2	4	5	3	4	5
35-44 years old.	Male	Yes	1	4	4	5	4	4
18-24 years old.	Male	Yes	1	4	4	4	3	4
25-34 years old.	Female	Yes	3	4	4	3	4	3
35-44 years old.	Male	Yes	3	4	4	3	4	3
25-34 years old.	Male	Yes	1	4	3	4	4	3
18-24 years old.	Female	Yes	3	4	4	4	3	4

The interface wa:	I thought there w	I am satisfied wit	The bot helped n	I felt like the chat	I felt like the chat	I feel like the cha	I am satisfied wit	I felt engaged wit
5	2	3	4	2	3	3	3	3
4	2	3	4	2	4	2	4	3
4	2	4	4	2	2	2	5	4
4	4	4	5	3	4	4	4	4
4	3	4	4	1	3	3	4	3
5	1	5	5	4	3	4	5	5
5	1	5	3	2	4	3	4	4
5	3	4	4	5	5	5	4	4
5	2	4	5	4	4	5	5	5
5	1	5	5	4	5	4	5	5
5	4	4	3	2	2	1	4	2
5	5	4	5	4	4	5	4	4
4	1	5	4	5	4	3	4	5
4	3	4	3	3	4	3	3	4
4	2	5	4	5	4	3	4	5
4	4	4	4	2	3	1	3	4
4	3	4	3	4	4	3	4	4
4	2	3	4	2	4	4	4	3
4	1	4	4	3	4	4	4	3
4	1	4	4	3	4	4	3	4

I am likely to purc	I would recomme	Overall, I am satisfied with the experience.		
1	3	4		
3	5	4		
3	4	4		
2	5	4		
1	3	3		
3	5	5		
5	4	5		
4	5	4		
4	5	5		
5	5	5		
4	3	3		
5	5	5		
4	4	4		
3	4	4		
4	5	4		
4	4	4		
3	4	4		
4	4	3		
4	4	4		
3	4	4		

Appendix L

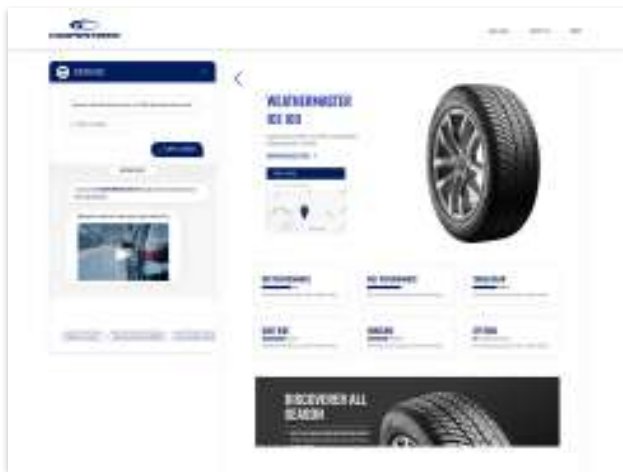The final prototype can be accessed here: https://xd.adobe.com/view/d033ac28-b182-45da-7398-8f3b7929cc39-a602/?fullscreen
High quality images of the UI design can be accessed here: https://drive.google.com/open?id=1TZvbpQQYNfm11AyIZkDjex8poO1DxBvR

Final CUI design
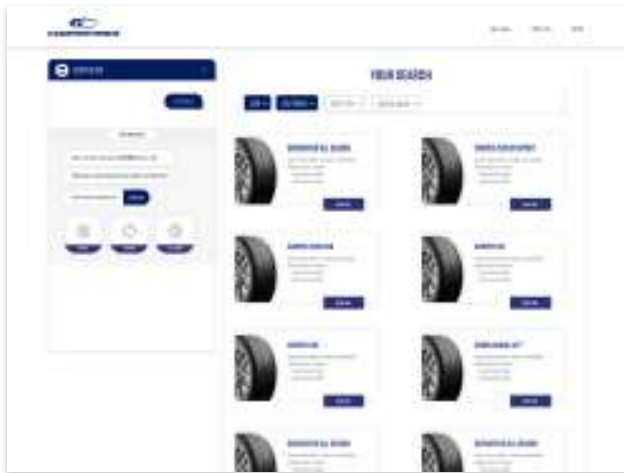
Appendix M

CMGT Reflection

Technological | 1. Technical research and analysis

This research project was heavily based on the exploration of the current digital trends. The main digital trend this study focus on was the Conversational User Interface (CUI). This topic was completely new for the researcher. Therefore, the researcher had gain the knowledge about CUI and it's implementations from the ground foundation. This obtained knowledge was the base of creating the CUI guidelines and the designing and prototyping processes. Since the concept of CUI was a completely new field to the client, this research project and its outcomes will help the client to understand this digital trend (CUI) and its benefits.

From the technical side, the researcher had to experiment a lot with new technologies such as Diaglowflow and IBM Watson to create virtual assistants. This was done is order to have a better understanding of the topic of CUI and what chatbots are capable of. In order to make these prototypes, the researcher was using JAVA and PHP. The outcomes of these experiments gave an understanding of which technologies are better to use in the context of commercial CUI. This outcomes were valuable to the client.

Technological | 2. Designing and prototyping

The researcher was using the cyclic process of designing and iterating the prototype to reach the best results. The project was focused on creating a conversational user interface, which is a current digital trend. To create the CUI, multiple versions were made and were iterated to achieve high quality design. Below you can see the iterative design process that was applied during the design and prototyping phase of this study. Usability tests were performed to gain the insights on how users perceive the developed solution and what can be improved.

The final products of this study are the guidelines for creating commercial CUI and a CUI for the Cooper Tires. Sticky Bandits will reuse the guidelines for the future projects. Cooper Tires can use the developed prototype to solve their underlying problem of purchase intention and customer engagement.

Technological | 3. Testing and rolling out

In order to complete this project, the research had to understand the underlying problems of the Sticky Bandits, Cooper Tires and the customers of Cooper Tires to create the final products.
The guidelines were made to be reusable for different clients. They were tested during the development of the Cooper Bot CUI and upgraded based on the outcomes.
The main purpose of the Cooper Bot was constructed both from the needs of the Cooper Tires (increase purchase intention, improve customer engagement, become a top of the mind company) and the needs of the customers (search for tires easily).
The CUI was based on the previously designed guidelines. During the designing and prototyping, multiple usability tests were executed in order to gather usability behaviour insights from the users and improve the design based on their feedback. In total, four version of the Cooper Bot were created. In order for the design fulfil the objective (stimulating purchase intention), it was designed based on multiple criteria (website quality, customer satisfaction, customer engagement, service quality). These aspects were measured and evaluated (see chapter Evaluation and Results for more details).

Designing | 4. Investigating and analysing

Different methodologies were applied in this research project. The researcher showed the capability to execute different methods of research, design and prototyping during this study.
Firstly, desk research was conducted in order to find information about the automotive tires market, the conversation user interface and it's commercial features, the best cases of using CUI for commercial purposes, and the purchase intention online. Desk research gave the base for creating the guidelines.
Analysing Google Analytics and interviewing helped to define the target audience. Multiple usability testings were conducted during the design and prototyping processes. During the process, the researcher was observing the behaviour of the test users. The results of the usability tests were implemented in the design (see Experimental Design chapter). This methods helped to create a high-quality prototype. Recommendation for the future development were provided.

Designing | 5. Conceptualising

Firstly, the problems of Sticky Bandits and Cooper Tires were translated into objectives. The researcher analysed the objectives and proposed to create solutions. The reusable guidelines was the product made for Sticky Bandits. The commercial CUI is the product for Cooper Tires. The researcher could help both parties within one study. Multiple sectors were involved during this project, a marketing sector, automotive tire market, e-commerce and the CUI industry.

Designing | 6. Designing

The researcher showed the capability to shape concepts by the means of graphical execution. The design process was done in an iterative way. Which means multiple versions were made and iterated to reach best design results. The designs were based on the needs of the client, needs and preferences of the target audience and the developed conversational flows (Appendix F). All this aspect were taken into account when the researcher was making the design decisions. Design principles and the results of the usability tests had a significant influence on the final design. In the chapter "Experimental Design", the research justifies the design choices and decisions.

Organising | 7-8. Enterprising attitude and Enterprising skills

Since the end goal of Sticky Bandits and Cooper tires is the create revenue, the researcher was taking in the account the commercial benefits the products can create. In the case of Cooper Tires, the researcher studied purchase intention and its drivers in order to make a product that will stimulate the purchase intention of the customer and, therefore, create more revenue for Cooper. The objective of the final product (commercial CUI) is to stimulate the purchase intention. A lot of decision that were made during the processed (defining the target group, finding out the needs of the target group, making customer journey, making conversational flow focused on purchase intention) had a business objective.

For the Sticky Bandits, the research was beneficial to explore the commercial advantages of the CUI and obtain the guidelines on how to make a successful CUI. A number of recommendations for the website quality, customer satisfaction, customer engagement, service quality were given in the research results.

Organising | 9. Working in a project-based way

During the internship, the researcher showed herself as a professional in the field. The researcher had meetings with the stakeholders to update on the process, to discuss important details and get feedback. The feedback was always implemented in the designs or prototypes.

During the project, the researcher was asking for help from the other team-members. For example, the the researcher asked the Digital strategist of the team to explain the insights of the Cooper customer base and help to translate data of the Google Analytics. For the design, the researcher was asking advices from the designers of the team. Moreover, weekly meeting were taken place with the other two students who were doing there graduation. The researchers were updating each other on the process, getting each others' feedback etc.

Organising | 10. Communication

During the project, the researcher had to update the company supervisor on the process. The student was presenting the progress, the updated and the justification of the design decisions. Moreover, the prototypes were shared with the other team members to get feedback from different perspectives.

The student was going to the graduation circle meetings and always had a prepared presentation to update the graduation tutor and the fellow team team members of the circle.

Professional | 11. Learning ability and reflectivity

This research project required a lot of new knowledge from the student. The topics include: online marketing, chatbots, conversational user interface, automotive market, user experience. In order to create the prototypes, a lot of new skills had to be obtained.

The researcher was taking courses on online marketing, user experience and creating conversational solutions from:

https://www.lynda.com

https://www.pluralsight.com/

https://eu.udacity.com/

and tutorials on Youtube

The knowledge from these resources helped the student to create a valuable products.

The student was constantly asking for feedback from the company supervisor, graduation tutor and the team members. This feedback was implemented in the designs and prototypes.

Professional | 12. Responsibility

A lot of knowledge outside of the CMGT was gained during this project. The student had to learn a lot about conversational user interface, how does it work, and what benefits it can bring. Therefore, the student was using tools like Dialogflow, IBM Watson and Landbot for the first time.

Moreover, working for a product in an automotive tire sector was something completely new for the student. Therefore, a lot of knowledge was gained about the automotive market and tires.

Purchase intention was another new concept that needed to be researched. The student was researching on the purchase intention and reflected the gained knowledge in the final prototype (as the product had to stimulate purchase intention).

The design software, Adobe XD was used for the first time by the student. Since Adobe XD has good prototyping functions, it was necessary to learn how to use it.

The researcher showed responsibility with the ethical issues, for example, for always getting the consent of observing/recording people during the usability tests. The results were made anonymous and used purely for the research purposes.

carmack