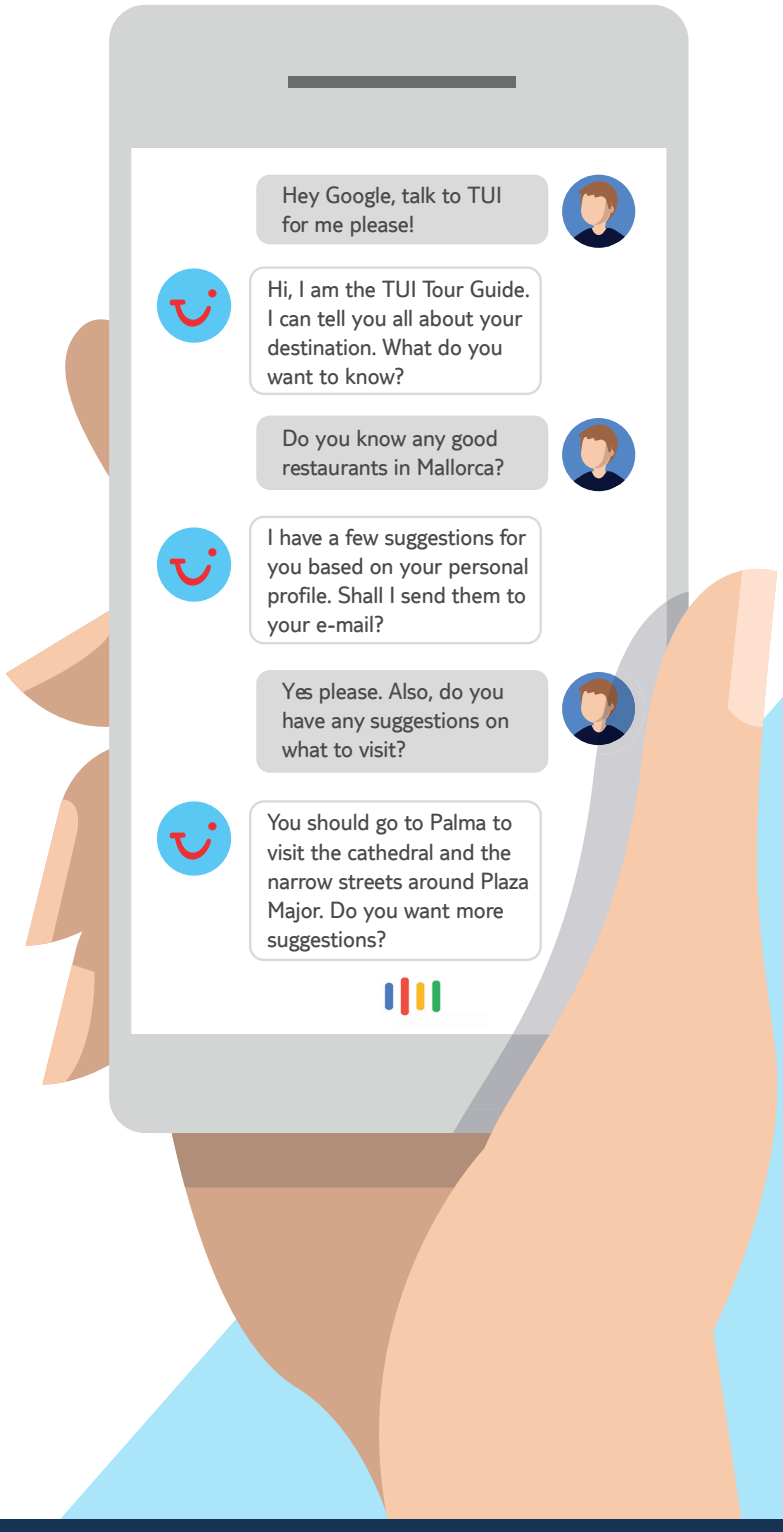

VOICE TECHNOLOGY

AS A TOOL FOR ENHANCING THE DIALOGUE BETWEEN COMPANY AND CUSTOMERS

Master Thesis, February 2019
Delft University of Technology
Faculty of Industrial Design Engineering
Master Strategic Product Design

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EXECUTIVE SUMMARY

Speech is the most natural and most comfortable method of communication for most people (Tadeusiewicz, 2010). So why not use speech for digital communications between company and customers? This graduation assignment aimed to examine this by questioning how voice technology could possibly enhance the dialogue between TUI and its customers.

Voice technology is a rather new technology and has not been fully adopted yet by the public. It was found that the technology should be implemented in gradual steps. This way, company and customer can get used to the technology. Also, starting off small and simple enables stimulation of the adoption (Rogers, 1995).

The Brand Driven Innovation model (Boeijen et al., 2013) was used to structure this project and in order to maintain a high focus on the relationship between company and customer. It was found that the company could highly improve the information it provides to the customer throughout their journey. Within the entire customer journey, the "prepare to go" phase was chosen as a scope due to it not being of critical harm to the rest of the journey. After all, the technology is relatively new and, therefore, brings some risks with it.

Experiments aimed at validating assumptions showed that customers are looking for information while preparing for their journey. They are mainly interested in obtaining information about activities (excursions) and dining options (e.g. restaurants). A link with Musement was made, a company that was acquired by TUI and is designed around providing information about both activities and dining options. The voice-based solution, therefore, consists of an integration of the current Musement voice application into one that suits the purpose of TUI and was named the TUI Tour Guide 1.0.

As said, the technology needs gradual implementation and therefore a stepping stone (MVP) was designed: Holiday Trivia. A voice application with which users can learn what type of vacationer they are and obtain holidays and deals tailored to their vacationer type. This stepping stone was designed using a process tree flow to structure the dialogue, which highly limited the errors in the conversation as was found by user tests.

Both Holiday Trivia and the Musement integration (TUI Tour Guide 1.0) are steps towards the future vision, in which a TUI voice-based tour guide provides information along the entire journey in a personal and transparent way. In order to get there, a roadmap has been established in which the voice-based application is expanded step by step.

ACKNOWLEDGEMENT

This project would not have been as successful without the contribution of a set of people that deserve acknowledgement.

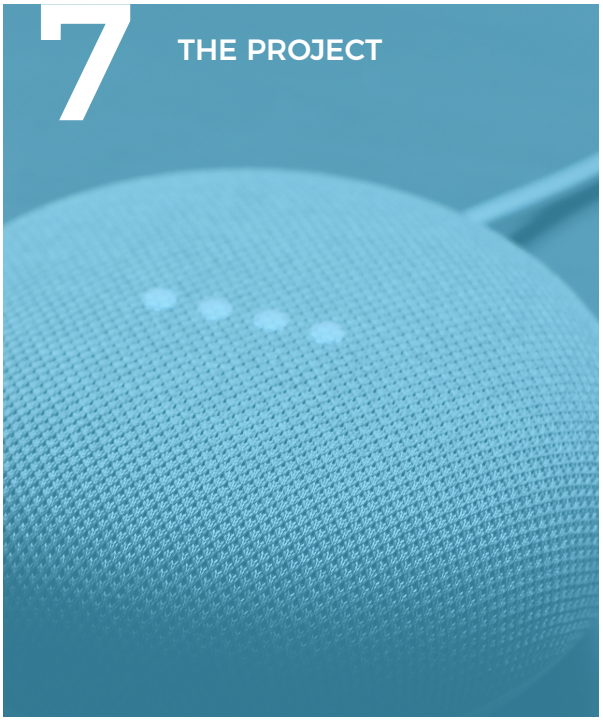
First of all, I want to thank my supervisory team of the TU Delft: Sylvia Mooij and Rebecca Price. Your guidance throughout this graduation has helped me and this project to a higher level. The freedom and support that I obtained from both of you made it an enjoyable experience. Especially, a major thank you for also providing me with advice on stuff outside the scope of the project. Your help has made me a better professional and prepared me for an actual job.

I would also like to thank TUI Netherlands and the Business Development & Innovation team for having me as a graduate intern.

Major thanks to Suzanne Goossen for providing me with this assignment and the freedom to take responsibility and learn about the company. I've enjoyed your support and coaching and look forward to working with you in the future.

In addition, I'd like to take a moment to thank the "Tone of Voice" team, who've been of great contribution to this project throughout the design phase. Besides the hard work that was done, it was also a very enjoyable time.

On a more personal note, I'd like to thank my mother and sister for supporting me throughout the university years, Marrit for putting up with all the yelling I've done against the Google Home, and lastly all the friends and colleagues who have proofread my thesis and provided support.



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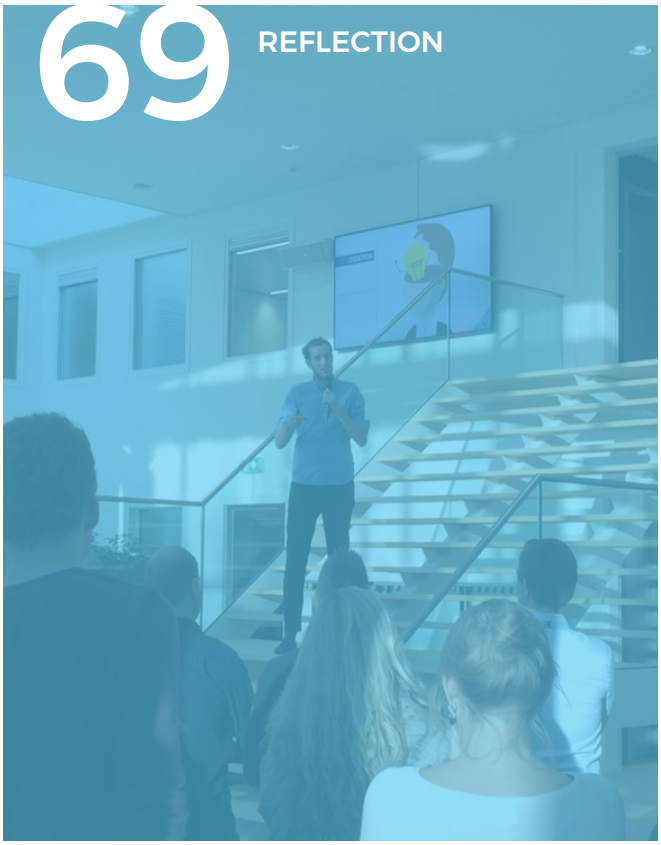


1. PACK YOUR BAGS

THE JOURNEY IS ABOUT TO START

1.1 THE PROJECT

The following project is commissioned by the Business Development & Innovation department of TUI Netherlands, located in Rijswijk.

PROBLEM DEFINITION

At the moment, TUI has a comfortable position within the tourism business (TUI Group, 2018). However, they are struggling with the growing expectations of the consumer, especially on the aspect of information provision. The digital interaction touchpoints (customer support, product offering, and marketing) raise some concerns as TUI is unable to provide the customers with the correct responses to their demands within the desired timeframe.

The company has therefore recognised the potential of voice technology and is eager to examine what possibilities there are for enhancing the dialogue with its customers. The possible problem-solution fit regarding this malfunctioning dialogue and voice technology will, therefore, be examined in this project.

ASSIGNMENT

The assignment of this project is to design a tangible voice-based solution for TUI consumers in order to improve the dialogue and information provision towards the consumer. The tangible voice-based solution will be supported by a roadmap that guides the implementation of voice technology by TUI in the future.

Lastly, the implementation should fit within the current brand image and values of TUI, as this is an essential asset of the company.

RESEARCH QUESTION

The following question has been established to guide this project:

How can voice technology enhance the dialogue between TUI and its customers?

The question will serve as a leading factor throughout the project.

DELIVERABLES

The results of this project are a voice-based solution and a roadmap that illustrates the future implementation of this technology by TUI. The voice-based solution will be prototyped, enabling testing with users and providing opportunities for giving demos. The roadmap will visualise the bigger picture and will allow TUI to further develop any applications with voice technology. The roadmap aims to show the path to a designed future vision for voice technology within the company. This vision will also be delivered in the form of a short film.

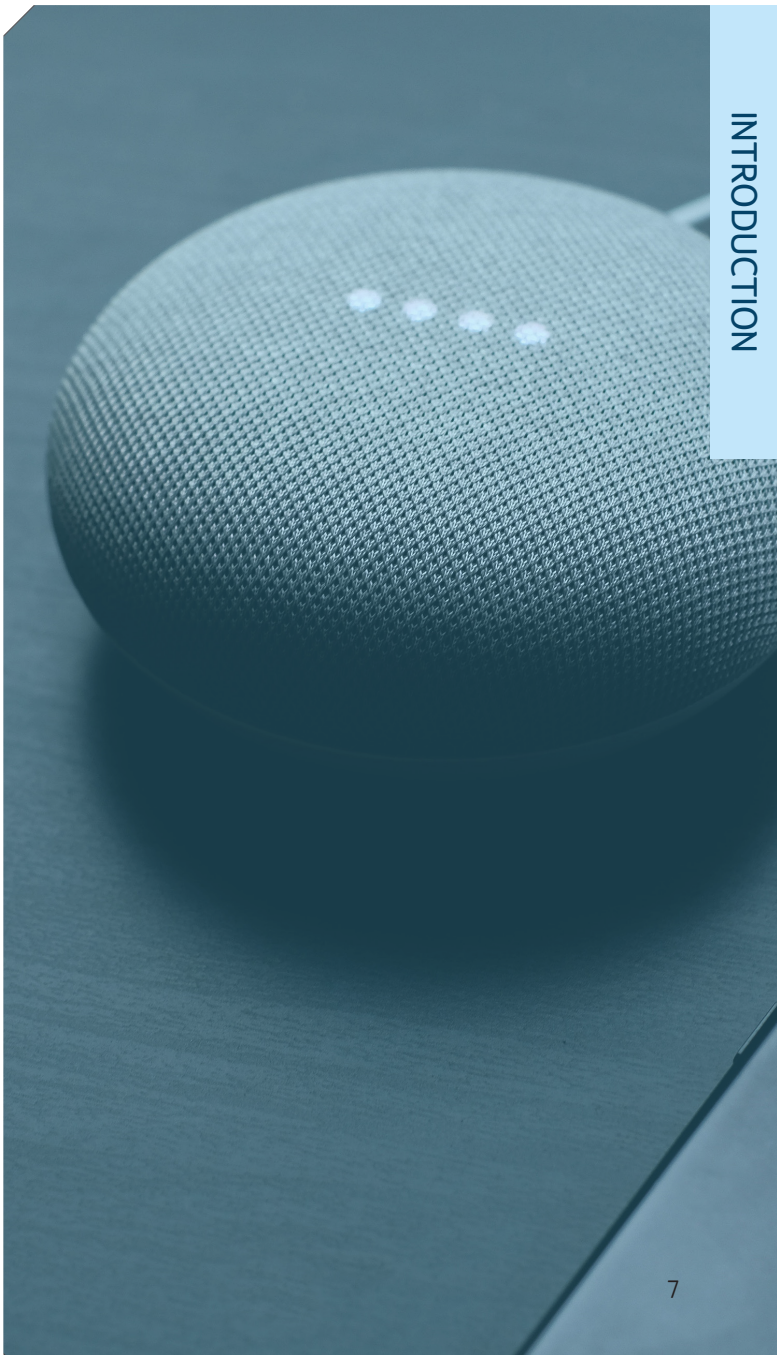
HOW TO READ THIS REPORT

In order to make this report a comfortable and understandable read, you can pay attention to the visuals on the side of each page which show what stage of the project is currently addressed in relation to the Brand Driven Innovation model that will be discussed in chapter 1.2.

GLOSSARY

Some abbreviations are used for repetitive terms. A list of these abbreviations can be found below:

SPD:	Strategic Product Design
ASR:	Automatic Speech Recognition
NLUI:	Natural Language User Interface
MVP:	Minimal Viable Product
KPI:	Key Performance Indicator



1.2 THE APPROACH

The Brand Driven Innovation model can be seen as a concept that combines user-client centredness design with organisation-centredness design (Boeijen et al., 2013).

This means that there is a constant focus on both consumer and company in the design process. This is ideal as TUI is highly attached to its brand, both throughout the organisation and in relation to its customers.

In addition, the model focusses on both innovative change (how to do it) and the direction to that change (what to do). This highly fits the desired outcome of this project.

Four steps are identified in this model, which will also serve as the backbone for both the project and this report.

Stage 1: Understand
Understanding all components: investigating the technology, consumer and the company using literature and interviews.

Stage 2: Focus
Selecting opportunities by combining the outcomes of the first stage, based on findings regarding customer value and company value.

Stage 3: Design
Design based on the selected opportunities in which the organisation's brand vision and customer's brand expectations are matched. Hereby establishing a design solution.

Stage 4: Implement
Focus on delivering solutions that will reach the market quickly and also deliver a touchpoint framework for future applications (a roadmap).

A NEW COMPONENT: TECHNOLOGY

This project can be categorized as a technology-push. This means that a technology is recognized and then fitted into a certain design solution. The model, however, does not mention a possible influence of technology at all and therefore the model is modified to fit this specific project. The influence of technology on the model can be noted in all of the stages of the model:

Stage 1: Technology has to be understood
Technology has to be understood to a similar degree as company and consumer are. Capabilities and challenges will be defined in order to get an understanding of possibilities.

Stage 2: The perception of the technology
Now that we understand the possibilities of the technology from literature, we need to know the technology perception of both company and consumer. We can use these as a reference for selecting opportunities.

Stage 3: Designing and testing the technology
The opportunity has been selected and the purpose of the technology is clear at this point. The next step is to design the tech-based solution and test it with users in order to understand whether it works properly.

Stage 4: Technology influence in a future framework
The solution has been established and the technology will be implemented. A framework will be created in which the technology developments highly influences the path to future applications.

NOVELTY

The alternation of the current Brand Driven Innovation model by adding technology to it is a relatively new approach for tackling a technology-push assignment. Therefore, a reflection of this approach can be found in chapter 10.1.

BRAND DRIVEN
INNOVATION

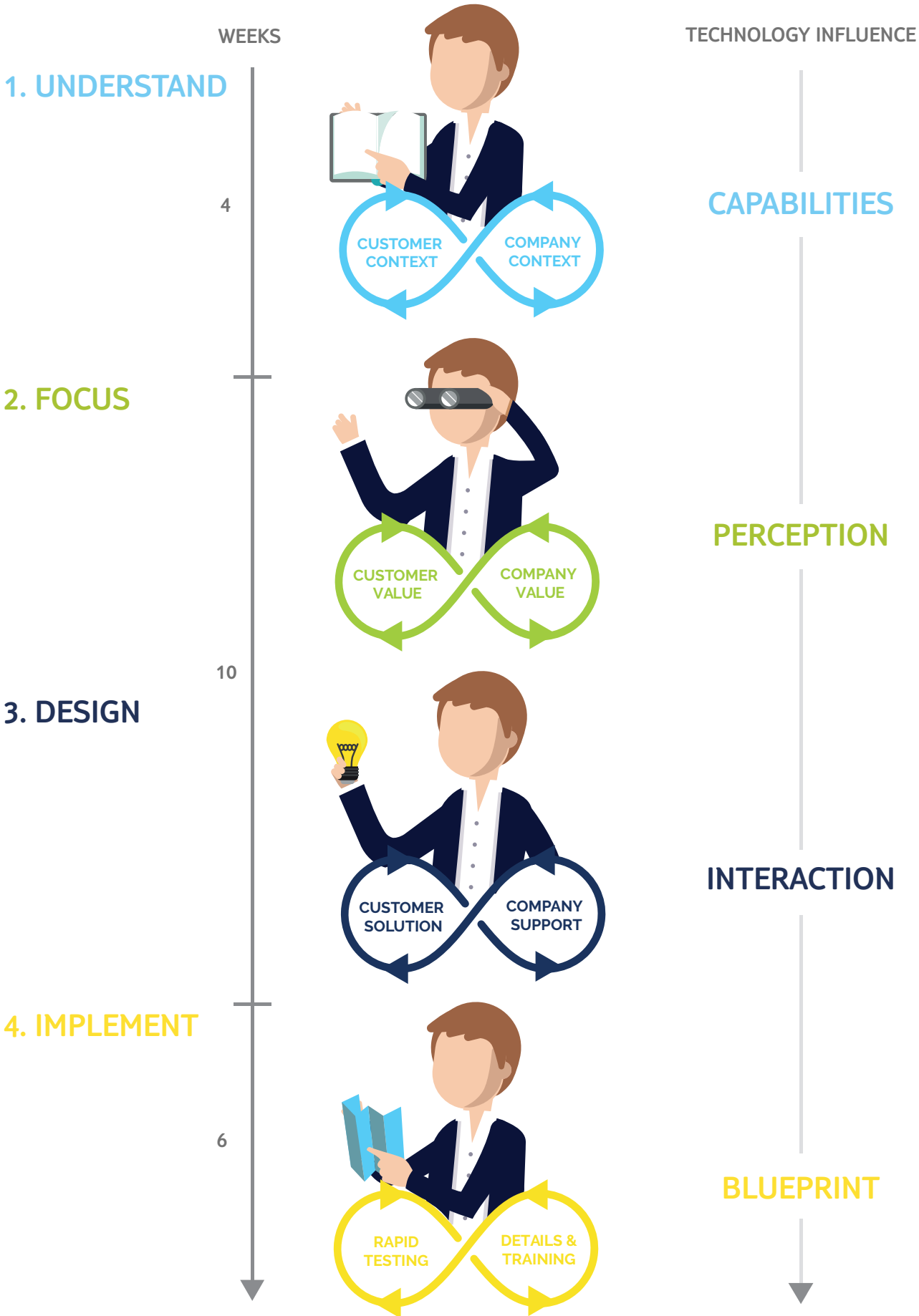


Figure 1: based on Business Driven Innovation Model (Boeijen et al., 2013)

1.3 VOICE AS A STRATEGY

It is something you use every day and key in the interaction between humans: your voice. Since we're so used to using it all the time, why not use it to control technology as well? A question that might have been leading in the establishment of voice technology, the technology which is key in this project.

Before getting into the specifics of this project, it seems essential to mention what voice technology is and how it relates to strategy. This chapter aims to put emphasis on the urgency of discovering and understanding this new technology.

In addition, this chapter introduces the strategic features of the technology and stresses the importance of it for future strategic design.

BRIEF INTRODUCTION OF VOICE

So what exactly can we regard as "voice"? It is natural for humans to communicate by means of language, something that is usually conveyed through means of using voice (Tadeusiewicz, 2010). Voice in a technology sense, equals this kind of exchange. By means of your natural voice, communication and interaction are invoked. However, in this case, it does not involve humans but devices of technology that you are talking with.

If you are thinking that this is a completely new technology, you are wrong. The history of speech related technologies goes back to the late 19th century when the famous Thomas Edison launched his dictation machine. This machine could already record speech, enabling multiple professions to use it for dictation (Boyd, 2018).

Since then, a lot has happened regarding the technology, but big breakthroughs remained scarce. This changed in 2008, the experimental phase of the technology became more tangible when Google launched software with which the user could search their database by means of their voice (Boyd, 2018).

The enthusiasm grew even higher in 2015 when the first smart speakers were introduced. These smart speakers enabled the consumer to use voice as a means of interaction for obtaining information and controlling their homes (Lopez, Quesada & Guerrero, 2017).

The technology continues to advance and can master an extensive range of capabilities. You can find more information in chapter 3.1.

VOICE STRATEGY

Voice technology is basically what the title implies: technology that makes use of a users' voice. But why is it important for businesses and where's the strategic value?

It has been stated that the adoption of voice technology is growing and it is expected that within two years, 50 percent of information searches will be done by the use of voice (Pels, 2018).

This kind of expectations coming from Google seem very biased, but we must keep in mind that these companies also have a certain degree of power to direct us towards their expectations. In the case Google, they are actively approaching Dutch Brands to cooperate with them in order to push the adoption of voice technology in the Netherlands (Pels, 2018).

The expectations mentioned before, are highly influenced by the current adoption in the United States. This is the market where the smart speakers were primarily introduced and therefore adoption is the highest (Lopez, Quesada & Guerrero, 2017). 40% of the current households in the states currently own a smart speaker and this is expected to grow to 75% in the coming 2 years (PWC, 2018). Furthermore, we can see that 60% of the current users of Voice Technology started using it last year, which shows the growth that is occurring (Mindmeld, 2018).

These numbers seem nice but what does it mean for companies? The main concern that companies should have is the ability to which they're able to be reached by the consumer in the future (Klerks, 2018). For TUI, this would mean that they should enable themselves to be found by means of voice command. Ideally, when a consumer asks Google for holiday options, TUI should pop up immediately and answer the consumer's questions.

The scope of the technology is almost endless and companies can already act on what suits their preferable purpose. A voice strategy is simply a well-constructed path towards successful implementation of this particular purpose (Sauer, 2018).

KLM calls it a voice first strategy, in which they try to stress the importance of this new technology by aiming to make it their primary source of interaction (Klerks, 2018). They believe that the use of voice is going to lead to a more specific type of information provision, in which the presence of the brand is most important. A voice strategy, therefore, needs to focus on making sure the brand is in the consumer's heart and related to a specific set of questions or tasks. For TUI, this would mean the specific task and questions related to their core business of package holidays.

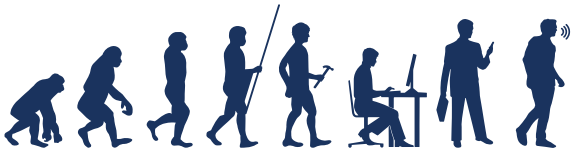


Figure 2: The Voice Technology Evolution

RELEVANCE TO STRATEGIC PRODUCT DESIGN

This report will go into depth about the technology and the possibilities for TUI as a company in the upcoming couple of chapters. However, even though the project has been commissioned by TUI and its aimed to fit within this company's context, it also remains a graduation assignment for the master Strategic Product Design. Therefore, a clear relation to this study should not be left unmentioned.

It highly relates to the matter that this project combines a company analysis with technology roadmapping in order to create a future impact. The impact of a new technology is analysed and translated in such a way that the company can make use of it in a strategic way.

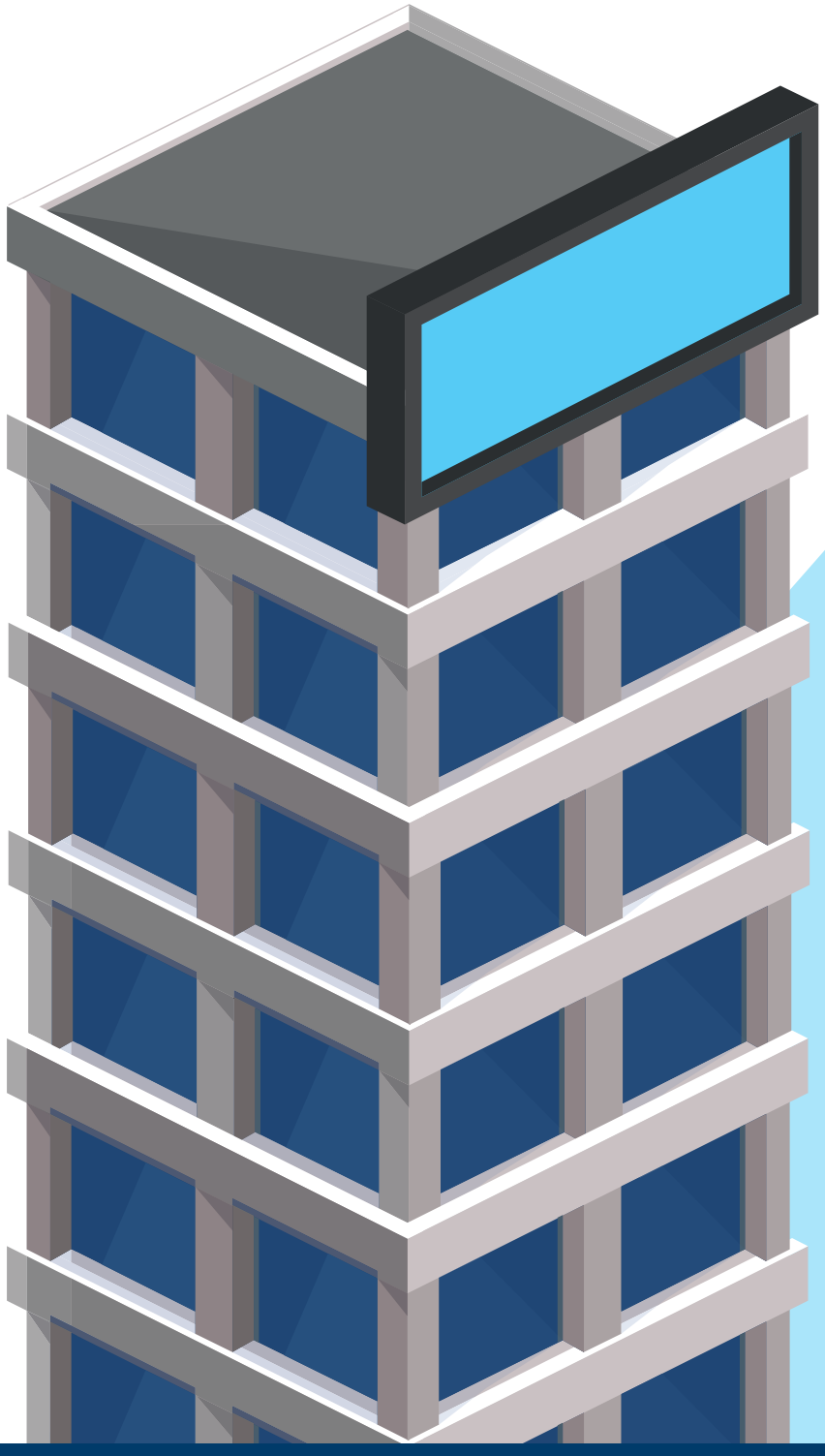
While doing so, a close relation to the market and brand is maintained. In addition, the technology is fairly new so no distinctive roadmaps have not been established before on the adoption of it in a business context. This is an essential deliverable of this project, both relevant to the company and strategic design.

FUTURE OF VOICE TECHNOLOGY IN SPD

On a personal note, a truly believe that the adoption of voice technology will open a lot of opportunities within the strategic design field. A change in the way we interact with devices (and possibly each other) will result in a shift in our interaction, influencing both products and services. There's great responsibility here for designers all around the world.

Especially on the matter of the dialogue with the technology, there are many questions that have to be answered. For example, will we keep addressing our voice-controlled assistants with names such as "Alexa", or will anthropomorphising devices be harmful to the way we interact with each other as humans?

At this point, it is hard to exactly predict the future of the technology, but I personally believe that the interaction with devices will change to a voice-based one. In 1999, nobody expected the mobile phone to ever become a thing. I think we're at the same point again, but this time it is all about voice technology.



2. TUI: THE COMPANY

WHAT IT DOES AND PLANS TO DO IN THE FUTURE

2.1 THE LEADER IN TOURISM

TUI Group is the world's number one tourism group and active in 31 countries. 67.000 employees make sure that more than 20 million customers can travel with TUI annually (TUI Group, 2018). The company started off in the industrial transport business but entered the tourism market in 1997 and now has over 20 years of experience. TUI Group mainly profits from offering package deal holidays, in which flights, transfers, and hotels are included. This paragraph will provide an overview of the company, its business model and approach towards the customer.

TUI NETHERLANDS OVERVIEW

The TUI Group is the market leader in tourism. It has its own accommodations, airlines, vehicles and much more. It has been divided into multiple regions of which one of those is TUI BENELUX: a relative recent established merge of the TUI organisations in the Netherlands and Belgium.

The organisation is doing relatively well over recent years in terms of turnover and overall growth (TUI Group, 2018). However, it has been foreseen that change is needed in order to answer the consumer expectations and approach new target groups and market segments.

Figure 3: TUI Logo and Slogan

THE TUI BRAND

The slogan "Discover Your Smile" goes along with a distinctive logo. The brand wants to answer to all consumers that want to travel abroad and therefore their vision is "Think Travel, Think TUI". More importantly, a recent internal study showed that the conveyed brand image is not perceived by the consumer (Dashorst, 2018). Due to this, TUI has launched an improved brand positioning, in which they state the following:

Only TUI creates WoW-holiday moments that puts U in the middle.

This renewed positioning aims to drive TUI towards a brand image that is more alike with companies such as Heineken and Coolblue, who are not only in the heads of the consumer but also in their hearts. Personalization and customization of the product and contact towards the consumer are key in establishing this renewed positioning.

PACKAGE HOLIDAYS

The core business of the company is the package holiday, in which both transportation, transfer and accommodations are included (sometimes excursions as well). The entire customer journey from start to end is therefore in the hands of the company and can be controlled by it.

Not all of the assets are completely owned by TUI. In that case, the company that is in control of operations obtains a certain commission. It is therefore favourable to the company to use its own resources.

THE AIRLINE

TUI is not only a tour operator, but the TUI Group also has an airline of its own. It is used primarily to bring their customers to the most popular destinations. It also provides the possibility to easily package the flight within their offers.

TUI Netherlands has a relatively small fleet of 9 aircrafts. This relatively small number of aircraft cannot bring all the TUI customers to their destinations. Therefore, TUI buys seats at other airlines (such as Transavia), which they then try to fill with their own customers.

NET PROMOTER SCORE

The Net Promoter Score (NPS) determines the rate at which consumers are likely to speak of TUI positively and in that sense promote the company. Besides looking at the profit that is obtained, this core is leading for determining whether the company is heading in a right direction.

The higher the NPS, the better the company is doing in terms of consumer perception. The NPS is also an internal measurement tool for deciding whether a new initiative has value. Therefore, the new implementation should also take customer satisfaction and desires into account. The NPS is the sum of promoters (positive response) and detractors (negative) as explained below:

Figure 4: NPS explained

ANCILLARIES

Selling ancillaries results into more profit. Ancillaries are additional services to the initially packaged holiday. Examples of these ancillaries at this moment in time are extra luxury options in-flight and options to book additional excursions and activities.

TUI sells these through their own channels and via promotion at their popular destinations. It is one of the key performance indicators of the coming years to sell more ancillaries and by this means increase the margin per pax (TUI Group, 2018).

The company recently acquired a start-up focused on excursions named Musement. This fits with the KPI as it can help boost the awareness and purchasing of the excursions/ activities that are provided by TUI.

This makes an argument for including Musement within this project, as it provides options for selling more ancillaries to the customer.

BUSINESS MODEL

The image below shows a visualisation of the Business Model (TUI Group, 2018). It is supported by the two strategies that TUI aims to put to practice.

The first strategy is aimed at the Sales & Marketing and focusses on market demand, digitalisation, and diversification. Continuous exploration of market demand and answering this demand in an increasingly digital way should help improve the sales and marketing onwards.

The second strategy aims to deliver holiday experiences by making sure the offers are growing and diverse. At the moment, TUI is making sure to develop new concepts and attract new hotel brands in order to supply this extensive consumer demand.

TUI owns a lot of the assets within the process, which gives them an increased advantage relative to its competitors due to the ability to slightly control the customer journey.

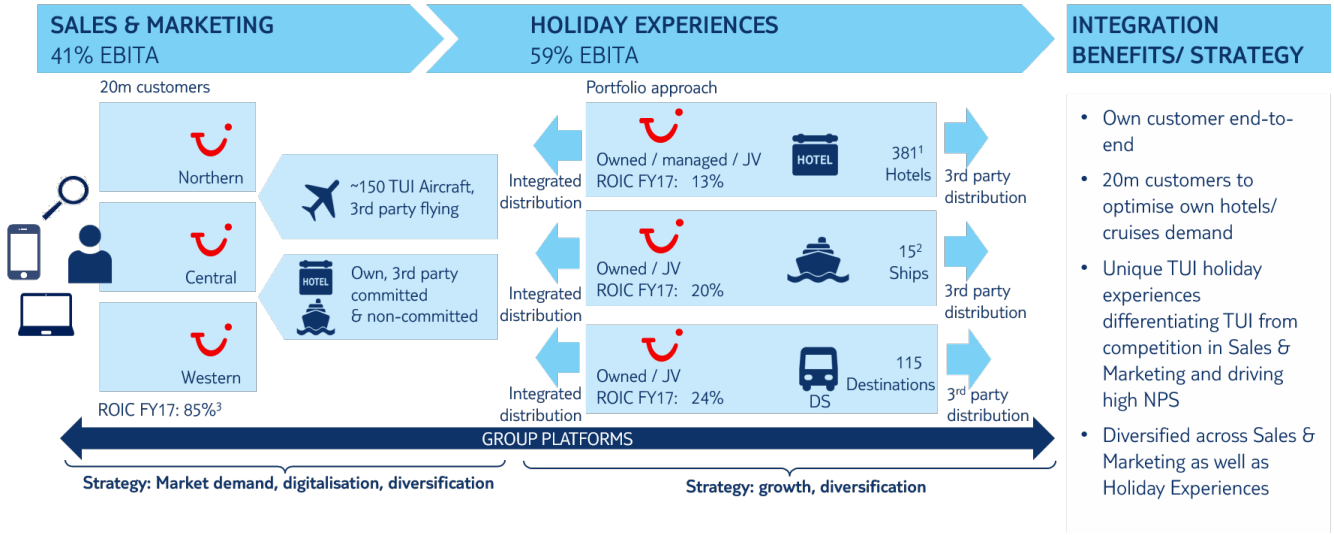


Figure 5: Business Model TUI (TUI GROUP, 2018)

VISION & VALUES

As mentioned, TUI is highly attached to its brand image and therefore regards their vision and values as pillars on which they build upon. The company vision and values should, therefore, be integrated within this project and within any future solutions. The vision aims to explain the monopoly that TUI desires to have. The consumer should immediately think of TUI in their future travel endeavours. The values that are attached to TUI spell its name: Trusted, Unique and Inspiring.

The TUI vision and values are described as follows:

Figure 6: Vision and Values (TUI GROUP, 2018)

OMNICHANNEL APPROACH

TUI holds an omnichannel approach. This term refers to the possibility of using a variety of channels in order to get in contact with your customers (Chopra, 2018). As is shown in the marketing mix in Appendix A, TUI is available both online and offline.

This approach means that the customer can obtain information and book their holidays in both an offline and online setting. Naturally, questions arise whether these physical (offline) stores have to stay operational in the digital age that we're in.

The omnichannel approach, however, has been found to be rather important. A study by Emerce (2018) showed that consumers still want these physical stores to try out products, obtain additional information, and for the sake of just shopping around. More about the influence of the physical retail stores on the customer in chapter 4.1.

The omnichannel approach is essential to name as it is one of the reasons for the addition of voice technology. Voice technology is an additional digital channel through which the customer can communicate with the company and vice versa.

A voice-based solution should, therefore, fit the offline and online relation that the company holds at this point. It should resemble the values as mentioned above, that TUI strives to convey throughout all of their other channels.

The model that is used for this project highly regards the influence of the company context. To conclude this chapter, we can state multiple things about the context of the company.

First of all, the current brand positioning aims to put the customer in the middle, for which personalisation of offering and communication play a big part.

Secondly, it has been found that the company aims to increase the margin per pax. A way to do so, would be to focus on selling more ancillaries. A start-up (Musement) has been acquired to answer to this goal.

In addition, it is interesting to note that the business model directs TUI towards controlling more and more of the customer journey. This provides opportunities for implementations at multiple aspects in the journey,

Lastly, the current omnichannel approach fits the introduction of voice technology as a way for communication between company and customer. Voice technology will even be an addition to this approach and providing an extra mean for getting into contact with the customers.

2.2 COMPANY STRATEGY

As is stated in the business model, TUI has two strategies for making money and providing their holiday experiences. Although the strategies in the business model are interesting, this chapter will look at the strategies on a different level. First of all, it will address the business strategy, which will explain the innovative behaviour. Secondly, it will discuss the customer strategy, a determining strategy for future relations with customers.

It is essential to keep these strategies in mind for the result of this project in order to make sure it fits with the company strategy. Also, this increases the likeliness of making the design feasible and viable.

BUSINESS STRATEGY - DEFENDING

Following the framework provided by Miles and Snow (1978), a better understanding of the overall strategy of a company will be created. We can distinguish four different types of strategy, which all define a particular behaviour. These types are: Prospector, Analyzer, Defender, and Reactor (Miles & Snow, 1978).

Although TUI has a relatively broad range of products, they specialise in one market, in which they try to protect their turf and hold their current position. Minimal changes are made by means of different trenches that form relatively low risks as they mainly involve extensions on current products. TUI , therefore, has a defender strategy.

This means that they are not extremely innovative and are mainly looking for ways to build upon their existing portfolio. Incremental innovation is preferred over disruptive change. At the moment, they are looking to become more of an analyzer, where trends are analysed and a path to the future is established. This project can be seen as an example of this shift.

CHANGE IN CULTURE

Although the business strategy can generally be considered as defending, a transition is taking place within the company in order to prepare for the future (TUI Group, 2018). The realisation has come that to stay ahead, certain processes, roles and mindsets have to be changed. This change is essential as this project contributes to this transition both as a trial and (if all goes well) also as an example.

As a relative traditionally organised company, the culture is top-down and role-based. Tasks are divided amongst departments, and multidisciplinary teams are scarce. In order to break the figurative silo's, a new way of working was said to be needed in which the company would be better prepared to adopt a more innovative mindset. This new way of working is in line with the earlier described transition from being a defender to becoming an analyzer.

Business Development & Innovation is leading in this transition. As said, this project has been commissioned by this department, and it has a multi-purpose as it is also supposed to set an example for future projects such as this. This gives this project an added support from within the business and additional belief in the possibilities of the technology. This transition will have an impact later on in this project, as a new way of working will be tested within the ideation phase. With an agile approach, assumptions will be tested and experiments will be conducted.

The new way of working also proposes a new approach to executing projects within the company. Teams will be created to go through a design thinking process in a dedicated period of time. This way, projects are done in accelerators, in which multidisciplinary teams work towards an outcome. This influences the time-pacing of future projects. As expertise is dedicated to a certain project, prioritizations should be made. This will have to be noted in the final roadmap.

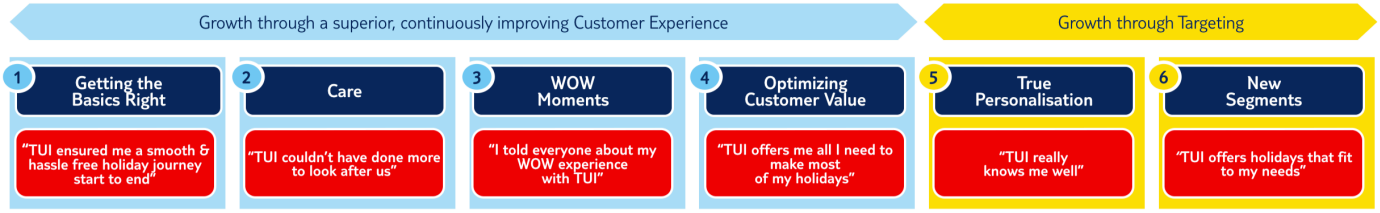


Figure 7: representation of the Customer Strategy (TUI GROUP, 2018)

CUSTOMER STRATEGY

The customer strategy (as visualised in the figure above) is an approach to maintain and improve customer relations. The pillars of this strategy are crucial to customer interaction and therefore relevant to the scope of this project. A short explanation of the pillars will follow.

GETTING THE BASICS RIGHT

This part of the strategy regards ensuring that the traveller has a smooth and hassle-free holiday. The customer is looking to trust TUI in experiencing a holiday without any pain points. The customer journey is therefore essential, for a positive experience through all phases of the journey would mean getting the basics right.

CARE

Once the basics are right, the aim is to show care for the customers that travel with the company. Care can, for example, be realised by providing guarantees on a successful holiday and pro-actively addressing the customer when necessary.

WOW-MOMENTS

As an extension to getting the basics right, TUI is looking to create unique moments in order to capture the customer's heart. WOW-moments can be seen as special moments that are given to the customer and makes them want to tell others about the company. It is preferable that new implementations address these types of moments to stimulate brand positioning and thus putting TUI in the heart of the customer.

OPTIMIZING CUSTOMER VALUE

This pillar emphasizes the importance of providing the customer with value for their money. The expected holiday should match the money spend in order to retain customer satisfaction. This can be built upon by for example improving the offerings or a g https://mail.google.com/mail/u/0?ui=2&ik=7a51ab7f57&attid=0.1&permmsgid=m

TRUE PERSONALISATION

TUI wants to answer the increasing demand of personalisation of the customers (TUI GROUP, 2018). The expectations of the consumer are increasing and companies should start to meet those. Segments should be established to tailor to a specific group of travellers. This way, new customers can be approached and current customers can be retained.

NEW SEGMENTS

TUI does not provide for all segments yet and wants to change this. In line with this strategy, new concepts are developed to attract segments that are at this point left out.

Although all pillars are of importance, true personalisation is one that also has been highly reflected in the new positioning. An interesting pillar to take into account for the future of this project.

Talking about the company's strategy, we can say that it is currently defending, meaning that it focusses on its core business quite well and aims to maintain its position in the current market.

However, a change is taking place in which the focus is re-positioned and the aim is to be more like an analyzer. This means that the company has a strong product in its core and also looks to expand by new developments. Such a new development is the key topic in this report.

The company also has a customer strategy that aims to direct the interaction with the customers. An essential strategy since the assignment is to enhance this dialogue by means of the chosen technology. The pillar of true personalisation is specifically important, as it also resonates in the brand positioning that is to be conveyed. This should be taken into account in this project.

2.3 COMPANY PERCEPTION

The Brand Driven Innovation model emphasizes the company's internal values. The solution should fit the inner motivations and comply with the brand. Earlier research showed that there's still a lot to do in making sure the brand image is conveyed properly to the consumer (Dashorst, 2018).

The company values should be reflected throughout the business. In order to discover these values, internal interviews were conducted in which values for different departments were investigated. The motivations related to the project are explained below.

COMPANY VALUES FOR THIS PROJECT

In order for this project to obtain the necessary support from within the company, matching the values is preferable. What would be valuable for them regarding this project?

In order to get a grasp on this, interviews were conducted with managers within the company. The one question that was asked was aimed to discover what kind of goals are set for innovation within the company and what the perception of voice technology is within the company. So how does the company perceive the possibilities of the technology?

Lead by example

This project is commissioned by the Business Development & Innovation department. Besides the aiming for a voice-based solution, the project also serves as an example for future innovation projects. This makes it that the process and learnings of the technology are also crucial to the company and should be communicated.

Especially learning is crucial. The company has not been open to new innovations and possible failures. The culture is simply not like that for now, but is soon to be changed. Therefore the learning is also essential and can lead to a more innovative mindset.

Personalisation

On both the levels of marketing and customer experience, there is a high demand for establishing a different brand positioning.

The consumer now knows the company but this should also be translated in a certain positive feeling. It is therefore important to create a more personalized experience, making the customer feel like its one of its kind. This is also one of the pillars from the customer strategy that can possibly be pursued.

Exposure

Voice Technology is internally also seen as a means for additional exposure, both in retail and online environments. It could serve as a mean to show innovativeness and convey the TUI tone of voice. The project is valued at most if it provides a mean for exposure. This way the company can show its new innovative structure and mindset.

In line with what is happening now

The additional exposure and publicity that is aimed for, can be achieved by following the current strategy. If it does so, the company is able to slide it in with what is currently happening.

To sum up, this project can be regarded a success if the following aspects are realised:

(1) learnings are obtained from the new technology
(2) It aims to personalize the current offer
(3) It gives a mean for exposure (publicity)
(4) In line with current events

2.4 COMPANY CONCLUSION

This chapter is an overall conclusion of the most important findings that will continue to be of importance during the project.

1 INCREASE THE MARGIN PER PAX

Selling more ancillaries (additional services) to compliment the packaged holiday is one of the key performance indicators for the upcoming year . This increases the margin that can be obtained per pax.

2 NET PROMOTOR SCORE

The internal measurement tool of succes is the NPS. Impacting the NPS in a positive way by introducing new products or services is therefore favourable.

FUTURE VISION

THINK TRAVEL.
THINK TUI.

VALUES

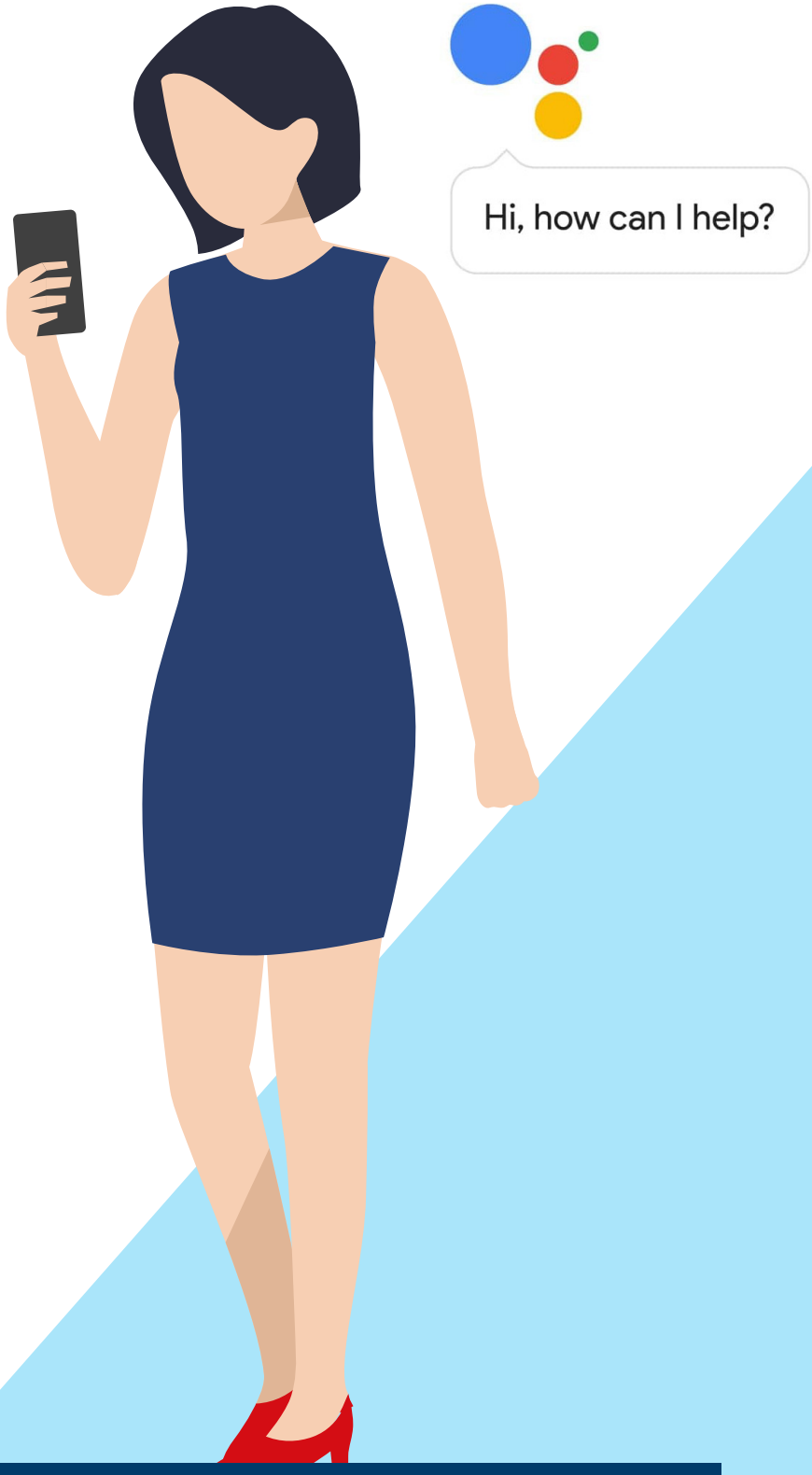
TRUSTED
UNIQUE
INSPIRING

3 CUSTOMER STRATEGY

A strategy has been realised with which the future targets can possibly be reached. It has a set of pillars that are important, of which true personalisation, getting the basics right and WoW-moments offer possibilities for this project.

4 IN TRANSITION

The companies' transition into a more innovative corporate (defender to analyzer) highly contributes to the existence of this project. In influences the time-pacing of future innovations.



3. THE TECHNOLOGY

GETTING A BETTER UNDERSTANDING OF VOICE TECHNOLOGY

3.1 AN OVERVIEW

It has been argued that speech is the most natural and comfortable way to communicate (Tadeusiewicz, 2010). It helps us communicate with each other and obtain the information that we need.

Voice technology is the overarching term for multiple forms of speech-related technologies. Most of them are still in a developing state in which they are learning to improve themselves by the means of artificial intelligence (Gartner, 2018). This section will provide an introduction to voice technology, explaining its features, main developers and challenges that have to be overcome.

THREE TYPES

Voice technology is relatively new and still needs to be adopted by the public as a tool for communicating with devices and companies. It has been argued that this is just a matter of time, as it already has been proven to increase the ease of use, usefulness, and system quality of interactions (Kääriä, 2017). In addition, applications for the technology are on the rise and languages are added to the systems' vocabulary.

Adoption of the technology has started as current solutions, such as controlling the navigational system with voice, are widely accepted. However, only 6% of consumers feel at ease to use voice applications in a public environment (Pestanes & Gautier, 2017). The adoption is therefore on its way, but consumers feel most comfortable using the technology within their own private boundaries.

1. Text-To-Speech

This type of technology utilizes a text string, that is either provided by the user or the system itself and converts this to an audio output. This feature is for example implemented in Google Translate, which will provide the user with pronunciations of foreign words. The applications of text-to-speech are limited but can have quite the impact. Text-to-speech, for example, enabled the blind to read regular books by converting the written words into speech. For now, text-to-speech is a relatively easy implementable form of voice technology, which can be used as a stepping stone for further development.

2. Speech-To-Text (Automatic Speech Recognition)

This type of technology is also known as Automatic Speech Recognition (ASR). ASR focusses on what the user is saying and is able to convert this to a digital text string which it can analyse. It can be used to control a certain interface or analyse a certain conversation. This form is mainly used for speech analysis. It will recognize what the user is saying and transform it into a specific action. In addition, it can also keep track of patterns of a certain conversation.

An example of the use of ASR has been made by Aegon. They noticed that their customer support could improve and decided to change the Interactive Voice Response (IVR) system. This system used to be a text-to-speech application in which the computer would ask the customer what kind of question it wanted to ask. The customer could then use the buttons on its phone to specify the question. The improved IVR makes use of ASR and enabled the consumer to communicate the question themselves. The ASR would then recognize the question and link the person to the correct department within customer support.

3. Natural Language User Interface (NLUI)

The exact term for the combination of text-to-speech and speech-to-text can be debated upon, but this form focusses on a conversation based relationship between human and technology. Natural Language User Interfaces (NLUI) enable the consumer to have a conversation with a device, which can on its turn provide the user with information or perform a certain action. This type is rapidly developing and empowered by the introduction of devices such as Alexa and Google home. These devices allow the consumer to ask for information or action by means of a conversation. They are able to use a combination of text-to-speech and ASR to create a dialogue. This type of technology is the newest. At this moment, we can distinguish two types of NLUI: Question & Answer and Conversational. Q&A interfaces will be the first applications of NLUI, in which users can ask questions and obtain within a structured framework.

MAIN FEATURES

This chapter gives an overview of the technology and its challenges and opportunities, but what features does it exactly provide to the user? There are a few features that are leading (Lopez, Quesada & Guerrero, 2017):

Assistive tasks

For now, the technology is mainly involved with assisting the users in basic tasks such as controlling their calendars, remembering birthdays and setting alarm clocks.

Increase search efficiency

One of the perks of the technology is its possibility to directly answer to a spoken question. This increases the search efficiency while looking for information.

Controlling smart homes

A key feature for which the technology is promoted is the ability to control smart homes. Smart homes are connected to the internet of things which enables the user to control assets of their home by for example phone or voice. A key feature of this technology is to do so by voice. For example, you are able to turn off the lights be simply asking your home to do so.

DEVELOPERS

There are a few developers that are leading in the development of voice technology. These developers are mainly linked to already well-established companies looking for ways to actually implement the technology

The leading developers are Apple (Siri), Microsoft (Cortana), Amazon (Alexa), Nuance (Dragon) and Google (Google Assistant). Amazon and Google, however, are now focussing on voice-based solutions for every home by creating smart speakers.

The smart speakers can be connected to other devices in the consumers' home, enabling voice control. Amazon currently holds 70% of this market with their system called Echo. Google is somewhat responsible for the remaining market share with their Google Home devices (Kääriä, 2017).

Although all of the above developers have built properly working systems, Google Assistant has included the Dutch language.

Google is not the first to launch the Dutch languague since Siri already included this feature for over 2 years. However, Google is the first to tailor it specifically to the consumer demands, whereas the Dutch Siri is just a translation of its English variant (Pels, 2018). As Google is the only developer that has said to supply the Dutch in the near future, TUI Netherlands benefits any further development of this system.

It is desirable to approach the customer in their native language, as not everyone will be able to communicate with a system that requires an English dialogue. A Dutch interface is therefore preferable.

In addition, Google has opened its programming software to the public in order to make the Google Assistant learn as fast as possible. This will also provide TUI with tools to experiment and develop their own application. It also provides a feasible option for prototyping.

Figure 8: A few Dutch brands that offer voice solutions by using Google Assistant (Pels, 2018)

EXISTING SOLUTIONS

Although this is quite a new technology, numerous companies already implemented applications for it in a variety of ways. These existing solutions give us insight into the feasibility and acceptance of specific applications. All of the examples use Google Assistant as their tool. Google has also been actively approaching businesses to do so, as it wants to conquer the Dutch market (Pels, 2018). We can learn about the possibilities by mentioning these solutions. The following solutions are one of the biggest within the Netherlands (Androidworld, 2018):

KLM - Helping you book your flight and pack your bags

The airline company, which can be considered as a competitor of TUI, already implemented multiple applications. They created Blue Bot, a voice-controlled bot that can help you with multiple aspects of your journey. They started with a tool that would help pack your bags in December 2017 and after learning about this feature, they were able to improve the bot to such an extent that it is now also possible to book a flight using voice commands.

Albert Heijn - Listing your groceries and providing recipes

The supermarket franchise launched a voice-controlled bot which can help you list your groceries and find the best possible discounts. In addition, it is connected to a database filled with recipes. The bot can help you obtain the right ingredients for a specific recipe and will also tell you how to prepare the actual dish.

RTL Nieuws - Providing the user with the latest news

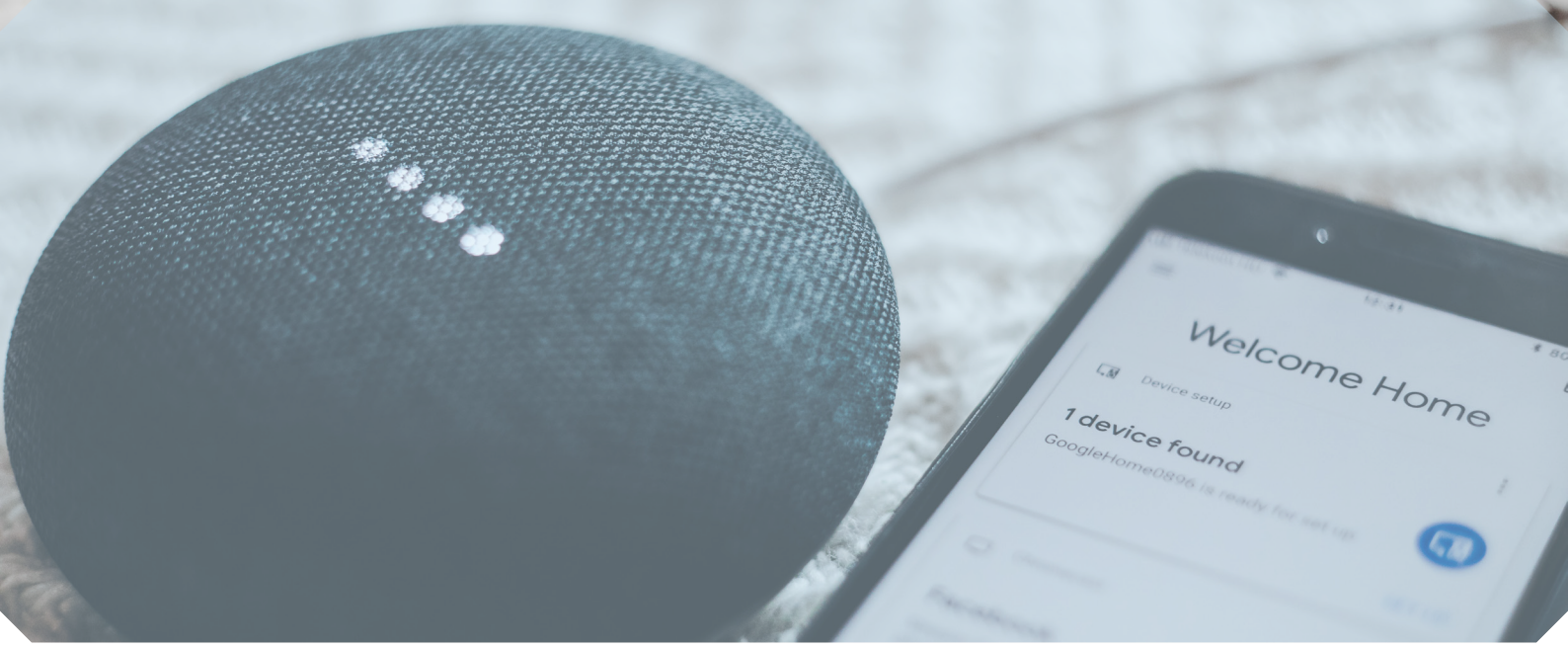
Google Assistant will already provide you with news updates if you ask for it, but the news will be obtained from American sources. RTL changed this so the user has the possibility to obtain the latest Dutch news.

Rabobank, ING, Essent and Eneco - Insight in data

These banks and energy companies provide a good example of most of the applications of voice so far. All of them have adopted voice technology as a tool for identifying a customer and providing them with their personal information. By means of using voice, a customer can obtain information about their bank account and energy usage.

As is shown, voice technology is not limited to a specific sector or purpose. One can implement it for different reasons in the dialogue with their respective customers. Important to state, however, is the amount of users that these existing solutions attract as these are very low. Based on statistics by the Google Assistant Play Store (2018), we find that an application such as the one made by KLM only attracts around 20 users a month at this point. Extensive reasoning for this low number of users can be found in Chapter 3.2.

The goal of these existing solutions is, therefore, to learn from this technology and to be ready when adoption takes place. The latter is in line with the voice first strategy approach as discussed in Chapter 1.3.



LEARNING BY EXAMPLE

Although it is sometimes difficult to admit, learning from competitors can be very valuable. The battle for voice technology adoption has already begun and we can see a sort of voice technology rivalry going on in being the best in using it in a B2C context. In the case of TUI, it is essential to dive into the voice-related ventures of the early adopting companies and learn from their mistakes before you make them yourself.

One of the leaders in adopting the technology is airline KLM. KLM has entered the scene 2 years ago and worked its way through different stages in order to gain knowledge about the technology. They started with a packing application in which the customer was adviced what not to forget by means of voice. Additional services were added in the form of booking a flight and providing airline information.

However, you are wrong if you were to think that these applications were successful in a commercial way. KLM themselves admitted that the Blue Bot, which is the name of KLM's voice assistant, had almost no users and the dialogue was not flawless at all (Klerks, 2018). However, quite some publicity and learnings were obtained.

In all honesty, TUI is probably not going to be one of the early adopters of the technology anymore because those have already launched an application. Learning for them is a key feature of the technology, even on a higher level than supplying the customer with a solution at this point. The exposure of being involved with a new technology is also an added benefit.

Concluding the insights from the examples and existing solutions that are given, it can be stated that learning about the technology is essential. Getting out there and giving the consumer a taste of it in the context of your company will lead to exposure and a great positioning when the adopting kicks off. This can mean for this project that it is not directly necessary to provide a voice solution that answers to consumer needs or problems. Although this is preferable, it is primarily important to introduce the technology to the customers.

DIALOGFLOW

All of the previously named actions have been built in Dialogflow. This program has been created by Google itself to stimulate the creation of actions by both companies and individuals (Pels, 2018).

It is open to everyone and does not require any programming skills for the creation of basic applications. This might seem fairly easy but automating a conversation has a lot more to it than meets the eye.

Creating such a dialogue requires structure and a framework in which the conversation takes place. It also needs to take into account that you might get input that was not intended by the user, such as grunts or background noise. There is also the influence of context and use of different words that might not be known to you as a developer. All of this is needed to be taken into account while developing a voice-based action.

An action is started by an invocation, which is a name that has to be called in order for the app to start working. It is essential that this name is two-fold, such as Doctor Travel instead of Travel, so that these actions are not invoked by accident. A future application of TUI has to take this into account as well, although exceptions can be made for brand names.

Any dialogue that is written for a voice-based application is based on intents and entities. The intent is the input of the user to which a certain action is required. The intent could , for example, be a question regarding the holiday destination. These intents are supported by entities, which represent define objects and terms that are essential to the conversation.

The intent in which a question is asked regarding a holiday destination will probably hold the entity of a particular city or destination. Entities are important for training the technology, as they will help remember context and provide answers for that particular context. All of the above will be essential whilst developing a voice technology action for the Google Assistant

Building such an action in Dialogflow will initially cost you nothing at all. The profit model for Google will be similar in the future as their current model regarding Google search terms for businesses. A company will be charged for the number of searches done through Google. However, for now, there is no model yet for actions that are created by a company itself.

CHALLENGES

The main challenges for the technology lies in user intentions and social context (Ning et al., 2017). The deepest layer of human conversation can already be challenging for humans themselves, let alone technology. The development of interpretation within a specific context and recognizing emotional motives are key priorities for further development.

In addition, the audio output by the system should increasingly be capable to mimic user pronunciation (Pestanes & Gautier, 2017). This will increase the level of anthropomorphism which will create a higher level of attachment and acceptance towards the technology (Kääriä, 2017).

Furthermore, the technology is highly dependable on its learning aspect. The implementation should, therefore, be gradual. Information should be gathered about the linguistics and questions of the consumer in order to respond correctly in future endeavours.

Another challenge that definitely needs to be taken into account is security. Research has shown that voice assistants are prone to attacks by malicious apps (Alepsis & Patsakis, 2017). These apps can hack into a devices' microphone and control the voice-controlled applications and by this means possibly access personal information. Users are also aware of this aspect and see this as a barrier for adoption (PWC, 2018). Awareness is needed.

GUIDELINES

It has been stated that there are 4 pillars on which voice applications should be successfully build. They are not there to overcome all challenges but are needed to be implemented in order to stimulate adoption (Kleber, 2018).

1. Subordinate

The application should be subordinate, meaning that the user leads the conversation and is the boss of the outcome. While using commands, this will naturally be the case. The application should also be subordinate in its response as if it were an assistant helping you.

2. Conscientious

In line with being subordinate, the technology should also act conscientious. This stresses the importance of being assistive. The technology holds the knowledge, which is only used for helping the user get the right answers.

3. Empathetic

To some extent, the application should also show empathy for the user. Based on context, it should show some form of care and understanding for the user. It should relate to the user.

4. Good Humored

Users are not waiting for a robot that gives the same answer over and over again in a robotic manner. The bot should be good-humored, even when it can not give you the answer at that point in time.

The technology entails quite some developments. First of all, we can distinguish multiple developers active in the field, of which only two include the Dutch language (Siri and Google Assistant). A choice has been made to make Google Assistant the choice of system, used by also multiple other Dutch companies and furthest in the Dutch language conversation.

It is also important to learn from the earlier examples of companies that have experimented with the technology. We can then see that a company such as KLM needed years of experimenting before successfully launching their application. This shows the state of the technology at this moment in time.

From a technology perspective, challenges have to be overcome as well. In the dialogue, the technology lacks recognition of context and inability in its pronunciation. It takes time for the technology to learn these kinds of actions. Lastly, security challenges have to be overcome. It is therefore advisable to stay clear from linking personal information to any application using voice technology until this has been improved.

3.2 ADOPTION

The existing solutions have shown that there is a reason for starting with the technology, but also that users are limited and learning should be one of the main motivations. This chapter will explore why the users are low and how the adoption of the technology is expected to go in the upcoming years. This will be mainly based on the Gartner Hype Cycle (Gartner, 2018).

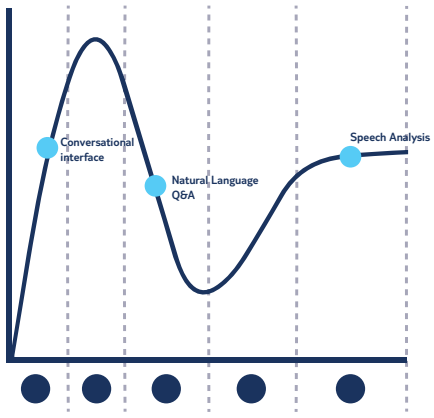
The Gartner Hype Cycle is a tool with which you can determine a new technology's path towards public adoption. The cycle below shows the various stages of this adoption and the path that voice technology still has to follow.

GARTNER HYPE CYCLE

The hype cycle below can help us conclude what path the technology will take over time and how to design for it. As is visualized, text-to-speech is not even on the hype cycle anymore. It has been fully adopted and has entered the plateau of productivity some time ago.

Speech Analysis, a form of ASR, is being adopted as we speak and implemented by numerous companies. In the innovation model by Mckinsey, we can classify this type of tech to be within the Horizon 1 boundaries (Mckinsey, 2009). Lastly, NLUI is still on its way and can be classified in the Horizon 2 and Horizon 3 boundaries within the same model.

The hype cycle is illustrative for the time-pacing of the technology which is essential later on in the project.



1. Innovation Trigger
2. Peak of Inflated Expectations
3. Trough of Disillusionment
4. Slope of Enlightment
5. Plateau of Productivity

Figure 9: Gartner Hype Cycle: an interpretation of the Emerging Technologies Hype Cycle (Gartner, 2018)

STIMULATE ADOPTION

Rogers established a framework in which the essential factors for technology success are displayed (Rogers, 1995). 5 characteristics are named which influence the adoption of voice technology on the long-term:

Compatibility

The technology initially fits the existing values, patterns or tools. The implementation should substitute a current event in order to make it compatible with the consumers' knowledge.

Trialability

It is favourable to have the consumer try the technology before they have to purchase anything related to it. This way the consumer can be introduced to the capabilities and understand what use the technology has. A minor trial or gimmick which can introduce the idea of the technology to the consumers.

Relative advantage

The advantages over other similar products should be clear to the user. In the case of voice technology, it should mainly focus on its proven ease of use, fast respone (Kääriä, 2017). The advantage should be clear compared to, for example, other means of achieving si milar tasks.

Observability

The technology should be visible by any means. The effects and benefits are similar to the trialability aspect. Once a consumer can observe what specific benefits the new technology provides, he or she is more likely to adopt it.

Observability can, for example, take place in the form of demo's, but early adopters are also significant in displaying novelties to the public.

Simplicity/Complexity

If something is easier to learn or understand, it is likely to be adopted much faster. As stated, limited knowledge and complexity can form barriers to consumer adoption (PWC, 2018). The technology should therefore be handed to the consumer in an easily comprehensible way, before extending it to more advanced applications

Looking back at what is found in the Gartner hype cycle and the existing solution, the focus of this project would preferably be in its trialability and simplicity. It should make for an easy and fun trial without too many risks and also be understandable to the user.

TECHNOLOGY ECOSYSTEM

Another interesting approach to adoption is provided by Adner and Kapoor (2016). They describe the influence of the surrounding ecosystem of a new technology or concept and how it contributes to the adoption, while also putting emphasis on the fact that the timing of the technology will at all times be difficult to predict.

In order to get a grasp on the pace of adoption according to this methodology, the ecosystem of voice technology should be described. Based on the earlier findings of the technology, it can be stated that it will enter an ecosystem centred around commanding and searching by means of voice instead of touch. Voice technology can be seen as the starting point of an ecosystem. It is a means to obtain specific goals and therefore is mainly responsible for enabling its ecosystem to be used by the customer. We can see the ecosystem for this technology growing, as more and more companies start to built actions for providing information or create smart home applications. An example of this is the expansion of the smart home lighting by both IKEA and Philips (Emerce, 2017).

The ecosystem of voice technology is directly competing with commands and searches by physical input (touch). The pace of the substitution of the old technology is determined by the challenges of the new technology and its ecosystem (Adner & Kapoor, 2016). Adner and Kapoor (2016) created a framework for defining the pace of this substitution. The framework is visualised in figure 10.

Following this framework, it can be stated that the voice technology ecosystem will be involved in a robust coexistence with the current ecosystem for commands and information provision. The new technology will likely make it into the market, but improvements in the old technology will slow down its adoption and market share (Adnan & Kapoor, 2016). The customer is the winner in this kind of substitution, the old technology will continue to improve and sets the higher standard for the adoption of the new ecosystem.

To conclude, it remains important to look at the ecosystem of new developments and what ecosystems it is battling in order to get into the market. The ecosystem of voice technology should continue to expand in order to overtake the current ecosystem that is mainly aimed at physical input (touch). A voice-based solution should take this into account and make sure to create possibilities for expansion of its ecosystem. A way to do so is, for example, incorporating it within current channels and processes.

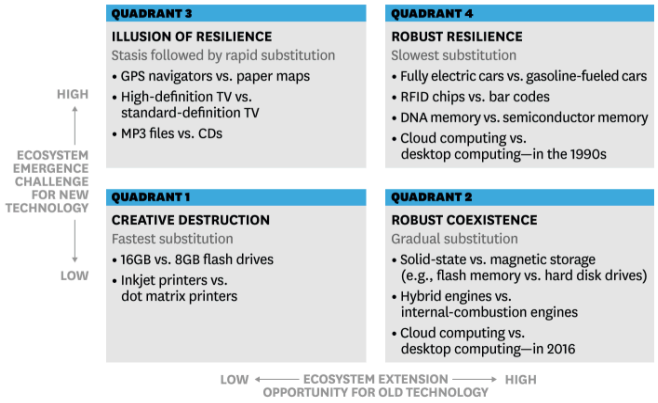


Figure 10: Framework for Technology Substitution (Adner & Kapoor, 2016)

The adoption of the technology is quite critical to the outcome of this project. In the end, we'd naturally like it for such a design to be used by the customers, as it is built especially for them. This chapter has provided insight in the pace at which adoption can be expected and how this adoption can be stimulated. A couple of conclusions can be made.

First of all, the Gartner Hype Cycle (Gartner, 2018) shows that the adoption of ASR is there. More importantly, we see that a NLUI with a question and answer based conversation is on its way and likely to be adopted within a year. This will then over the course of about 5 more years evolve into a more open conversation type with a smarter system talking to the customer.

The adoption can also be stimulated by the factors that have been described by Rogers (1995) and based on the earlier findings it has been stated that focussing on trialability and simplicity is favourable.

Lastly, the ecosystem of voice technology plays a big part. It was discovered that the ecosystem of voice technology will be to existing in robust coexistence with the old ecosystem of command by physical touch.

This raises the bar for adoption, as the previous choice is still available and satisfactory. Therefore, strengthening the ecosystem by connecting to current channels and processes is crucial.

3.3 VOICE TECHNOLOGY CONCLUSION

This chapter is an overall conclusion of the most important findings that will continue to be of importance during the project.

1 GRADUAL IMPLEMENTATION

The Gartner Hype Cycle (Gartner, 2018) shows gradual adoption of the technology and expansion of its functions. This should be reflected in the roadmap.

2 LEARNING

Learning about the technology is a key motivator for the existing solutions and should be considered throughout this project. Data gathering is part of this.

STIMULATE ADOPTION BY

COMPATIBILITY
TRIALABILITY
ADVANTAGE
OBSERVABILITY
SIMPLICITY

GUIDELINES FOR CREATION

SUBORDINATE
CONSCIENTUOUS
GOOD HUMORED
EMPATHIC

3 GOOGLE ASSISTANT

Although Siri has been available for over a longer period of time, the choice of system is the Google Assistant. It specializes in the Dutch language and provides for the existing solutions.

4 CONTEXTUAL CONVERSATION

Recognition of the context of a conversation remains a challenge. Also following the factors that can stimulate adoption, a solution should be established that is directed at creating a conversation in which context is not a barrier.

4. THE CUSTOMER

THEIR HOLIDAY DESIRES AND TECHNOLOGY PERCEPTION

4.1 THE TRAVELLING CUSTOMER

This chapter will address the travelling customer, which is the customer that TUI is involved with. This customer has an extensive journey as going on a holiday brings you past numerous touchpoints. These touchpoints are highly related to TUI, as there is interaction in most phases throughout the journey. The pain points throughout the journey are also examined.

In addition, a study of the retail environment takes place. This offline environment might seem like a step away from the core of this project, but it remains an important touchpoint for the company and the customer and thus in their interaction. Learnings can be taken from why the customer still is in such need of this channel.

INFORMATION PROVISION

Throughout the journey, a re-occurring theme can be recognized. The consumer demands a certain degree of information in order to feel comfortable within a certain situation.

In the phases that do not deliver the desired satisfaction, the customer is looking for additional information for either reassurance or convenience (TUI Group, 2018). The information that is demanded ranges from information about the destinations to travel details and hotel specifications.

As this is one of the earlier described features that can be delivered by voice technology. It is favourable to look at applications in those areas.

Figure 11: TUI Customer Journey (TUI Group, 2018)

TUI CUSTOMER JOURNEY

The customer/consumer journey shows the path that is followed in order to use the company's product. It also shows the emotions of the customer along the way, which gives insights into the pains and successes of the journey.

The customer journey of a consumer that purchases a TUI product is quite extensive. It follows the entire process of thinking about booking a holiday, all the way to coming home from said holiday again.

WoW-moments are moments where TUI aims to improve the relationship with its customers by creating unique service features. These moments are highlighted by the star sign. The journey can be found in figure 11. As the journey shows, the consumer experiences negative emotions for multiple aspects of the journey.

TRAVEL NEEDS AND PAINS

The consumer is increasingly demanding and therefore research was conducted by the ANVR (Algemene Nederlandse Vereniging van Reisondernemingen), which looked into the consumer needs and pains throughout their travels (ANVR, 2015). We can establish the following needs and pains over the customer journey.

The following can be concluded based on the needs and pains that are explained below:

- Consumers demand easy access to information
- There should be no surprises after booking
- Consumers feel too dependent on external factors
- Companies should allow reviews on all platforms.

	NEEDS	PAINS
	**Easy access to information** that is country specific.	Lack of online skills make the **independent search** tricky.
	Everything in one budget, **no suprises** at destination.	Overall **poor customer services**, slow response on calls and
	**Obtain information** on visa, transit policies and weather for destination.	**Confusion about mandatory** immunizations and documentations.
	**Quick communication** in case of delays or other travel issues.	**Waiting times** at multiple points of the airport.
	Transfer that brings you **to the front door** of your hotel.	**Insecurity** about finding the right transfer to the hotel.
	**Presence** of fellow travellers and good internet connection.	Fake hotel room pictures, **extra costs**.
	Easy to locate **tourist information** desk where info can be obtained.	Bad customer service at hotel, **not enough information.**
	Being able to book **affordable activaties** at the location.	Expensive **additional costs** of excursions that were not mentioned.
	Transfer that brings you **directly to the airport.**	**Being dependent** on the transfer to the airport.
	**Quick communication** in case of delays or other travel issues.	Airline **check-in online** and seat reservations are unclear.
	Ability to **spread the reviews** on multiple platforms.	Website not giving the option of leavin **reviews for public reference.**
	**Easy to create memories** by means of for example a photobook.	Nothing in specific.

Figure 12: Needs and Pains of the Customer Journey, based on a research by the ANVR (ANVR, 2015)

CUSTOMER RETENTION

The customer journey and pain points have highlighted what issues can possibly be addressed. This next paragraph examines what values are important to the customer and to which of these values this project can address in relation to the company.

It is important to do so in order to fully grasp the customer context, which is leading in the Brand Driven Innovation model within this phase. This paragraph on its own focusses on what it takes for a customer to stay loyal to a certain company.

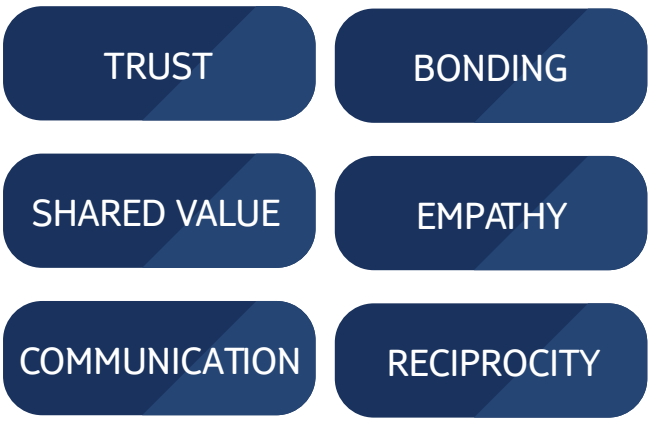


Figure 13: six dimensions of building customer relationships (Sin et al. 2002)

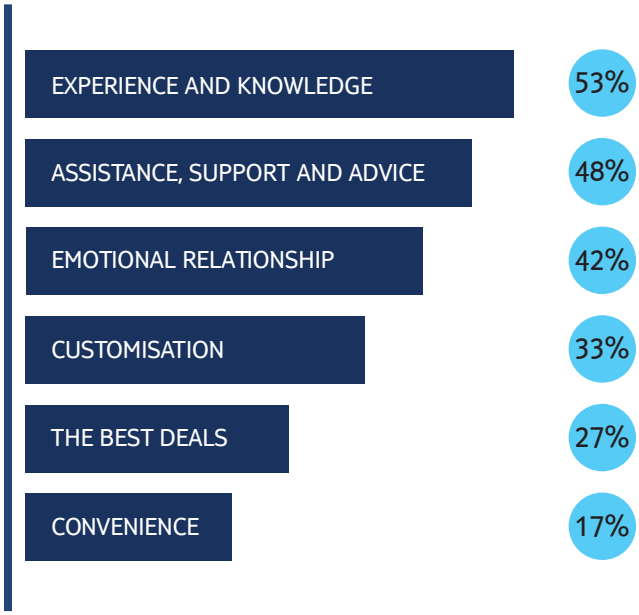


Figure 14: Reasons for visiting the retail travel agency (Terblanche & Taljaard, 2018)

A growing number of companies are targeting the same consumer segments which makes it difficult for agencies to stand out in the crowd (Mokhtaruddin, Wel, Alam & Khalid, 2018).

There is a shift in consumer approach since they've become more active (instead of being passive) in exploring their travel opportunities themselves (Scott et al, 2017). They have the ability to purchase travel products both online and offline or they can seamlessly move between the two options (Edelman, 2010). This is also why TUI remains committed to its omnichannel strategy.

Customer retention is naturally aimed for by businesses. Customer retention can be defined as an activity of converting new customers to regular ones by providing a service that will enhance their satisfaction in the long-term (Kotler & Armstrong, 2013).

There are six dimensions which contribute to the relationship and thus customer retention (Sin et al., 2002). The six dimensions are: Trust, Bonding, Communication, Shared Value, Empathy and Reciprocity.

From these six dimensions of retention, TUI highly focuses on the first one: Trust. This dimension is also crucial for the adoption of the technology, as it is one of the barriers. Therefore, this project should retain a high focus on the trust of the consumer towards the new technology and the company. This will result in a higher retention, lowering the barrier of adoption and resonance within the company values.

To continue on the topic of retention, it has been stated that personal experiences have a close link to retention, which means that a positive experience in 1/3 of the cases will lead to a returning consumer (Scott et al., 2017). Examining in what way voice can create this positive experience is therefore essential for launching a successful application.

Limiting the extent of insecurity about a specific product shows the strongest influence on satisfaction, followed by empathy (Fung, Dong & Lu, 2018). This also complies with the barriers of adoption, as knowledge of capabilities is key in adopting voice technology.

To conclude, It is important to look for ways to build customer retention. Trust is key for this project, as it resonates with the company values and the barriers for adoption. Also, it should be clear what purpose new (voice) applications have. In order to limit insecurity and create higher customer satisfaction.

CONSUMER & RETAIL TRAVEL AGENT

A differentiating aspect of TUI is its omnichannel approach and high number of retail shops. This is important, as a recent study has shown that although the consumer is increasingly using online channels to find and book holidays, travel agents (retail stores) are still an important source of information (Korneliussen & Greenacre, 2017).

The main reasons for visiting a retail agent is for their expertise and knowledge (Terblanche & Taljaard, 2018). Terblanche and Taljaard found that the following perceived benefits are obtained in this offline environment:

(1) Convenience
(2) Customization
(3) Expertise
(4) Support
(5) Empathy

In relation to the project, convenience and expertise can be strong arguments for implementing the technology. The more of these perceived benefits can be integrated into a "digital" travel agent, the better it will probably be received.

RETAIL OBSERVATION

TUI values its omnichannel approach highly and consumers are serviced both online and offline (in retail shops). TUI itself has around 150 travel shops in the Netherlands where consumers can visit and book their flights.

In order to get a grip on the journey in this shop, an observation was done. The ability to work in a TUI shop for one day, provided first-hand insights in the contact between TUI and the consumer.

The retail stores give great insight into what moves the consumer to choose for TUI as its agent. In addition, it shows the motivations for visiting such physical stores instead of booking online. Some examples of actions in the store are: booking a flight, obtaining additional information, making a booking change or simply printing tickets.

Most of the requests at the store show a similar motivation that connects them: insecurity. The consumer is looking for extra reassurance and information about their booking. The consumer displays this insecurity due to the following reasons:

(1) The consumer does not speak Dutch well enough to be secure about what they're booking exactly.
(2) Little to no experience with travelling, so the consumer is unsure what is actually going to happen.
(3) Not sure whether the prices on the website are definite and therefore try to get a better deal in store.

Another reason for visiting the store is the convenience of the service. Consumers are looking to print their tickets, pay by cash or get additional information leaflets.

Figure 15: Images of Observation @ TUI The Hague

To conclude, it can be stated that the key pains in the customer journey are related to the information exchange between the company and its customers. A great opportunity for voice technology to work its magic. Within this exchange, a value of trust should be regarded highly as it is important to the customer and aligns with the values of the company.

Lastly, learnings can be obtained from looking at the offline environments where customers actually come for obtaining (additional) information. From observation, it has been stated that here reassurance about their travels plays a big part. Insecurity should be countered by providing useful information.

4.2 CUSTOMER & VOICE TECHNOLOGY

The other aspect besides the company in the Brand Driven Innovation Model is the consumer. It is important to take them into account because without these consumers there will be no business for TUI. It has also been stated that the consumer is increasingly demanding better services and products (McFarlane, 2013). This is likely to also influence TUI on the long-term.

The following chapters will aim to examine how the consumer is predicted to react to the introduction of voice technology. In addition, it will research the current relationship between the company and the consumer and the possible demands and reactions of said consumer.

CONSUMER ADOPTION

The introduction of a new technology might cause a shift in consumer behaviour. The consumer has to adopt the new application, establish a certain degree of trust and find a reason for using the technology.

A recent survey in which 1,000 participants were asked about voice technology gave valuable insights into the consumers' perception (PWC, 2018). The most important findings which are relevant to this project will be discussed. It is important to state, however, that the survey was conducted in the United States, a country where adoption is much further and 40% of the households currently own a smart speaker (Lens-Fitzgerald, 2018). The statistics do provide insights into the possible adoption.

Later on in this chapter, we'll dive into the perception of the Dutch consumer. First of all, it is interesting to notice that although the young consumers are driving the adoption in terms of numbers, they are not heavy users. The heavy users are the 25 to 49-year-olds who use it mainly to structure their routines. The image below shows the use of voice-driven technologies. There is, however, a threshold that keeps the consumers from getting involved with more advanced activities:

1. Limited knowledge of all capabilities
The consumer is unaware of the capabilities of the technology and therefore enthusiasm and perceived usefulness are not maximized.

2. Lack of trust
The consumer is sceptical about the new technology's security features and is unsure whether using it will not cause any harm.

3. Complexity and Price
The consumer does not fully understand the technology and fears that purchasing it (for a relatively high price) could be a mistake.

These barriers can be related to chapter 3.2 that concerned the adoption of the technology. Especially the factor of complexity resonates in the factor of simplicity as a stimulator of adoption. In addition, we can see that trust is a returning factor throughout the report.

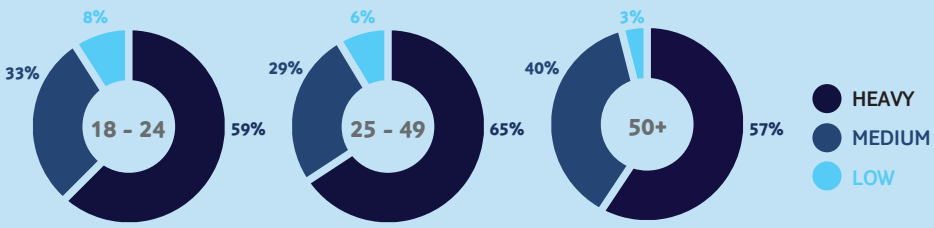


Figure 16: Usage of voice technology (PWC, 2018).

Figure 17: limitations of adoption (PWC, 2018).

DUTCH CONSUMER PERCEPTION

In order to capture the consumers' perception regarding the technology and create an understanding of the possible adoption, a qualitative research was conducted. A combination of observation with a semi-structured interview will serve as guidance towards a better understanding.

The research involved 12 participants with different background and different ages. This chapter will briefly go over the method and mainly focus on the outcomes.

The research will expose the participant to the voice technology and their reactions will be observed. By conducting travel related tasks we can see the consumers' perception and capabilities about using this technology.

METHOD

The research aims to answer the following question: What is the Dutch consumers' perception of voice technology in a travel context?

To do so, we'll look at the reaction of the consumer towards the technology first and then bring it into the travelling context. An observation will be supported by a semi-structured interview.

The observation will exist of 3 tasks, that are performed by the participant while using a voice-based device. The tasks are as follows:

(1) The participant is asked to start the device and ask for the weather. A relatively simple task.

(2) The participant has now learned from the device and is asked to get the weather for his or her dream destination A double question task which needs a follow-up question.

(3) The participant knows how to ask follow-up questions and is now asked to book a flight to Paris using their voice-commands.

All 3 steps will be performed and recorded. The observation can give insight into the capabilities of the user and the understandability of the technology.

When the participant is finished, a semi-structured interview will help establish the perception of the technology. The observation and the interview will be transcribed and analyzed, in order to formulate theories about the outcomes. The set-up of this research can be found in Appendix B, as well as the statement cards.

RESULTS

The research was aimed to discover similarities over the entire sample regarding the perception of the voice technology. For the analysis, we distinguish 3 categories in which we'll look at similarities.

First of all, we'll look at the emotional reaction of the consumer towards the technology. Secondly, we'll analyse the similarities in interaction, both those that are positive and those that are negative. Lastly, we'll note distinctive opinions regarding the (future) use of the technology.

The research shows similarities with the earlier research regarding consumer perception in the USA, in which limited knowledge, complexity and trust were mentioned as the main barriers in adoption and perception (PWC, 2018).

Limited knowledge of the technology was displayed by the participants, as they showed amazement about the functionalities. The interaction showed complexity in its interaction and that the process is easily disrupted. Lastly, the main barrier for using the participants mention their lack of trust (security) as a barrier to using the technology.

We can conclude that the design should put emphasis on the named factors as they are of high influence of the consumer perception of the technology and, therefore, the adoption.

"This is really fast, I did not know it could do this."

"Does it record me all the time? Or only if I talk directly to it?"

Figure 18: Quotes illustrating amazement and lack of trust.

In conclusion, it is important to address the customer perception towards the technology. Three barriers for adoption should be taken into account that were stated in the study by PWC (2018), but also by the experiment that was conducted among Dutch consumers.

The barriers of knowledge, trust and the relation between price and complexity should be taken into account in this project. Trust, a value that resonates in customer retention and the company values, should be addressed in the voice-based solution as it is also a barrier.

4.3 CUSTOMER CONCLUSIONS

This chapter is an overall conclusion of the most important findings that will continue to be of importance during the project.

1 INFORMATION PROVISION

Multiple phases in the customer journey show a suboptimal customer satisfaction. A key factor for explaining this is the lack of information that the customer has compared to a desired state.

2 TRUST

Trust is a value of the company, a reason for the customer to return to a company and also a barrier for the adoption of the technology. Reason enough to make this a key factor in the project.

VISITS RETAIL FOR

CONVENIENCE
CUSTOMIZATION
EXPERTISE
SUPPORT
EMPATHY

BARRIERS OF ADOPTION

KNOWLEDGE
TRUST
PRICE

3 TARGET GROUP: 25-49

The heavy users of the technology are in the range of 25 to 49 year olds. They use voice technology for more occassions. It is also a current target group of the company and will therefore be the target group for this project.

4 LESSONS FROM RETAIL

The offline environment provides us with insights about information provision, since this is the place where people go when they are insecure about their travels. This is in-line with the disatisfaction regarding the information provision throughout the journey.

5. DESIGN DIRECTION

MAPPING CUSTOMER AND COMPANY VALUE IN ORDER TO ESTABLISH A DESIGN BRIEF

5.1 DEFINING A SCOPE

The understanding phase has examined the three crucial components for this project: the company, the customer and the technology. Insights have been found and described but no scope has been established yet.

This chapter will go into depth about what values are important to both company and customer based on the earlier found insights. These values will be guiding in the selection of the scope for the project.

VALUES

Following the Brand Driven Innovation Model (Boeijen et al., 2013), the focus phase concerns the trade-off between company values and customer values. These can be concluded from the earlier insights and are leading in the selection of the scope.

The company is eager to explore new opportunities as it is in transition and looking to create a positive influence on customer satisfaction in terms of NPS. From the company perception in Chapter 2.3, Related to the technology, it is eager to learn from the technology. In order to do so, voice technology will have to be gradually implemented and valuable data has to be gathered.

The customer is looking for information throughout the customer journey in order to solve their main pain points. They are insecure throughout the journey and are looking for reassurance and are, therefore, interested in more knowledge. They, therefore, value reassurance through information provision. In addition, customers have been found to be looking for trust. They value a company or solution that ensures that they will not be harmed and treated with respect

The scope of this project should aim to answer to the company and customer values and should, therefore:

(1) offer opportunities for the generation of valuable data.
(2) fit the need for gradual implementation of technology.
(3) provide information to the customer.
(4) contradict the current feeling of insecurity

SCOPES

The existing solutions of voice technology applications in the Netherlands have shown that the technology does not apply to a specific scope only but can entail different kind of functions. A few scopes can possibly answer to both earlier findings and the criteria of the scope that have been set above.

The scopes are introduced and the aspects regarding the values (either positive or negative) are highlighted.

CUSTOMER SUPPORT

enable better support by the use of voice

- Generates valuable data
- Is somewhat researched within the company (faster adoption)
- High impact on customer journey, possible increase in CX = NPS
- Business improvement, better handling of questions and tasks
- Not that new and innovative as others have done this already
- Possibly slow to implement (lot of stakeholders)

BOOKING/PURCHASE

enable the customer to use voice as a means of purchasing the TUI product.

- Positive influence on Customer Journey
- Faster and easier purchase also valuable for company
- Can generate quite some valuable data
- Studies show that the consumer is hesitant towards booking/ purchase via voice
- Studies show that the consumer is hesitant towards booking/

PREPARE TO GO

enable the customer to use voice for preparing their journey

- Safe place to learn about consumer interaction (prep is not critical)
- Highly appeals to insecure feeling of the consumer (gives reassurance)
- Can generate quite some valuable data
- Making this personal is difficult (GDPR and other reasons)
- Less impact on Customer Journey pain points

DESTINATION EXPERIENCE

Use voice as a tool for information provision at the destination

- Information provision is important for CJ
- Appeals to the insecurity (provides reassurance)
- Link to Customer Support (Contact Centre at Destination)
- Not a personal approach (difficult, compared to a real host)
- Lot of work to do this for all destinations

RETAIL

Use voice to improve retail experience

- Heighten the experience
- Great channel for getting this technology exposed
- Data is gathered (about questions etc.)
- Consumer is highly attached to personal approach in store by agent
- Difficult to add to the core business of the agents that work in store

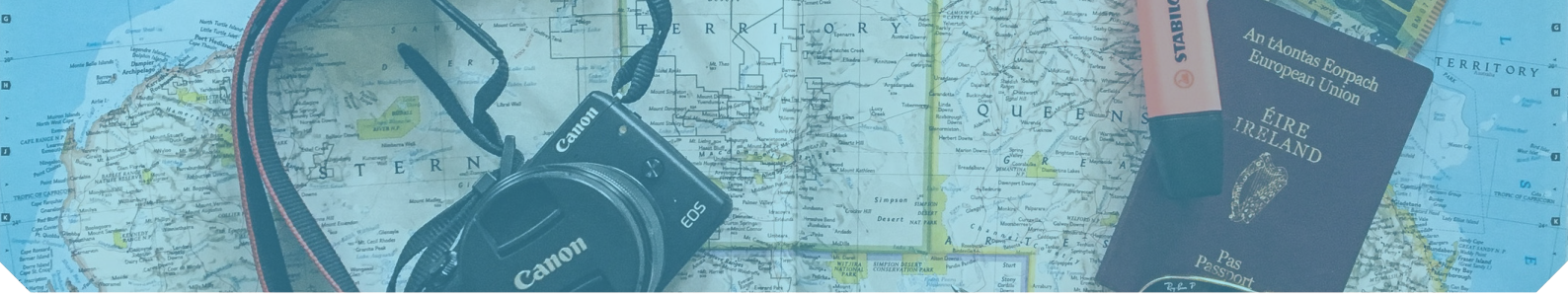
BUSINESS IMPROVEMENT

Voice as a tool for improving internal processes

- Improves efficiency
- Knowledge of voice is spread throughout the company
- Data can be gathered, documented and labeled about ongoing processes
- No direct influence on Customer Journey or NPS
- Direct results of the efficiency are difficult to grasp

Figure 19: Selection of Scopes.

FOCUS



PREPARE TO GO

Looking at all the scopes and previous findings, two of them seem to stand out: Customer Support and Prepare To Go. Both good places for learning about questions and technology and both aim to solve customer (and even company) pain points.

The two have a very decisive trade-off. Customer support is likely to create the greatest impact and biggest learnings, it can be seen as more riskier and will involve convincing and changing more stakeholders. On the other side, the preparation phase is a relatively small and less critical part of the journey and will create a smaller impact. This is however also what makes it a perfect place for experimenting and learning from the technology, from which we can build onwards.

This choice of scope has been made based on the earlier findings and internal motivations. The department concerned with customer support is looking into voice solutions but will first start with other means of improving their business. In addition, the department for customer experience stressed the importance of the preparation phase and the learnings we can get from focussing on this scope.

The prepare to go phase is the period in the customer journey between booking the (package) holiday and leaving the house to go on that holiday..

This also leads to a specific target group for the voice-based solution. The solution will be used by consumers that are booking with TUI. This eliminates looking at the younger (millennials) segment.

Although these are the majority of adopters of voice as we have previously discovered, we will not aim the solution towards them. We'll aim at the 25 to 49 -year-olds, as these are (heavy) voice users and within the age range of TUI customers.

INFORMATION AT DESTINATION

In order to specify what aspect of this phase could be addressed, a brainstorm session was held with a number of stakeholders and members of the voice team that will be introduced in chapter 6.1.

As stated before, one of the stronger assets of voice technology is the ability to provide information in an easy and fast way. This highly aligns with the information provision that is demanded by the user.

Ideally, information is provided on service based questions, those are the questions regarding practicalities, bookings and seat reservations. However, at this moment, the company is lacking the data to provide systematic answers to this kind of service questions. Therefore, it has been decided to start off with the information provision about destinations.

Providing information about the destination by means of voice is, therefore, the choice of scope for this project.

THE RUNNER UP: CUSTOMER SERVICE

Another promising scope was the addition of voice technology to the customer service centre. This option was valued high but also as relatively risky. At this point in time, the company struggles to answer all the calls it gets, also negatively influencing the experience of their customers (and therefore the NPS).

There are therefore already a lot of obstacles to overcome in this department. Voice technology could be a very good fit to this, but also a very risky one is the technology is not fully adopted yet and still a bit experimental.

The department is already involved with looking into innovations to improve their services. A company has been contracted that will built a chatbot. This chatbot can also gather data about the questions that are asked. This is also data that can be used for further voice applications. The creation of the chatbot, however, might take a while. Therefore this is a promising scope but it is to soon to start with this scope right away.

However, to conclude, it is very favourable to direct the technology towards this scope once the company and the customer has a little bit more experience.

The scope for this project is to look within the Prepare To Go phase. During this preparation of the customer's journey, the aim is to provide information about their destination by means of voice. This scope has been chosen due to its relatively low impact on the customer journey, making up for a good experimental environment. Starting here, expanding to different scopes is advisable.

It addresses the values of the company and the customer in the sense that the company is able to learn from the technology in this scope and the customer obtains the information it desires.

FOCUS

5.2 FUTURE VISION

Figure 20: Future Vision Visualisation

The scope gives a direction in terms of where to design for. To strengthen this direction, a future vision is established which is basically the dot on the horizon to which a certain design aims to go. The future vision also serves as the end-goal of the roadmap in this project.

Future visioning concerns the process in which an image is created in which a possible future state is captured. A future vision serves as a starting point for the roadmapping process. It is the dot on the horizon which serves as the destination of the roadmap. It is important to define the properties of this destination, in order to succesfully map a path towards it (Simonse, 2017).

According to Simonse, a future vision cannot rightfully be created by one person only. A group has to be formed (3-5 persons), in which values are discussed and possible solutions that can help establish these values are created. In order to create this vision, such a session was held in which values were discovered related to the context of this project. By combining these values, a vision statement is created and visualized.

VISION STATEMENT

The following vision statement has been chosen:
TUI becomes the ultimate voice-based tour guide by providing customers with the required information about their travels, anytime and anywhere. It provides this in a personal, reassuring and transparent manner.

The statement follows out of the following 3 values:
(1) Omnipresence
being accessible and present at any time and anywhere
(2) Personalization
It should also be tailored to the individuals' expectations
(3) Reassuring
Worrying about anything should be banned in the future.
(4) Transparency
Any service should be transparent towards the user

The future is envisioned in which a voice-based tour guide is realised that provides information in a personal, reassuring and transparent manner for the customer. This future vision is the final dot on the horizon for this project.

FOCUS

5.3 DESIGN BRIEF

A Design Brief forms the start of the product design phase (Boeijen et al., 2013). Although there is a debate on the exact content of such a Design Brief, a study by Jones and Askland (2012) showed 7 key elements that should be discussed in order to commence with a successful design process.

PROJECT OVERVIEW
The goal of this project remains to create a voice-based solution for TUI, that enhances the dialogue between customer and company.

CATEGORY
This project focusses on pushing voice technology into the market within a business context. The business context can be defined as the tourism industry. The design will need to be aimed at providing information to the customer through voice technology and will, therefore, belong to the category of information provision. The current way that the targeted audience obtains this information is either through searching the web or going to a TUI retail store.

TARGET AUDIENCE
The targeted audience of this project is the TUI customer, between the ages of 25 and 49 (to be specific). This target audience is expected to be the heavy user of voice technology. The target audience knows how to deal with voice technology and is looking for additional information about their destinations during the preparation of their holiday.

COMPANY FIT
The company is currently in transition (see Chapter 2.2.). A technology push project such as this answers to the need of becoming more innovative. In order to make the project fit with the company, a link with the customer strategy should be made. As this is strategy aims to structure and improve the interaction with the customer.

BUSINESS OBJECTIVE
In order to obtain a certain degree of business value, a possible increase in margin per pax should be realised. The most likely way to do so is aiming to sell more ancillaries (such as excursions) to the customer.

SCOPE, TIMELINE AND BUDGET
The voice-based solution should be able to provide information about the destination of the customer. It should still be tested what kind of information is desired.

There's no specified timeline for the implementation, although it has been stated that it is good to gradually implement the technology and start as soon as possible in order to learn. Furthermore, there are no budget allocations as of yet.

RESEARCH DATA
The previous chapters have provided insight into what literature and interviews tell us about the company, the customer and voice technology. The following two things should also be taken into account in the design:

(1) The customer is looking for information provision and a trusting relationship with the company.

(2) Keeping it simple will stimulate the adoption of voice technology.

To conclude, this project aims to establish a voice technology solution for TUI customers, that enhances their dialogue with the company itself. TUI customers between the age of 25 and 49 years old are targeted. The goal is to provide information about the destination for the customer. In the meantime, the project should provide options for learning about the technology. The design should be in line with the customer strategy, as this connects it to the way that the company currently aims to interact with its customers.

FOCUS

INFORMATION ABOUT YOUR DESTINATION

A VOICE-BASED SOLUTION

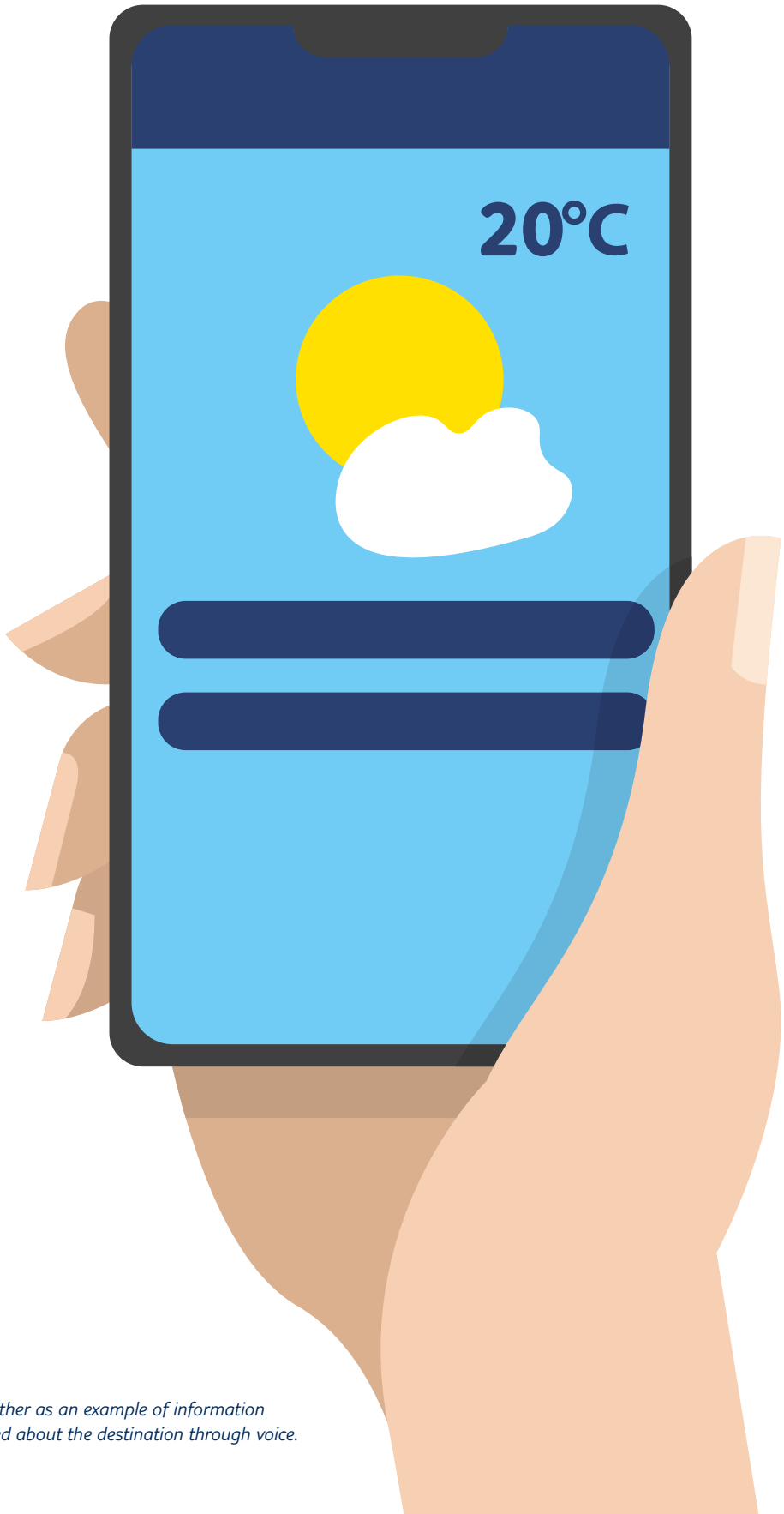
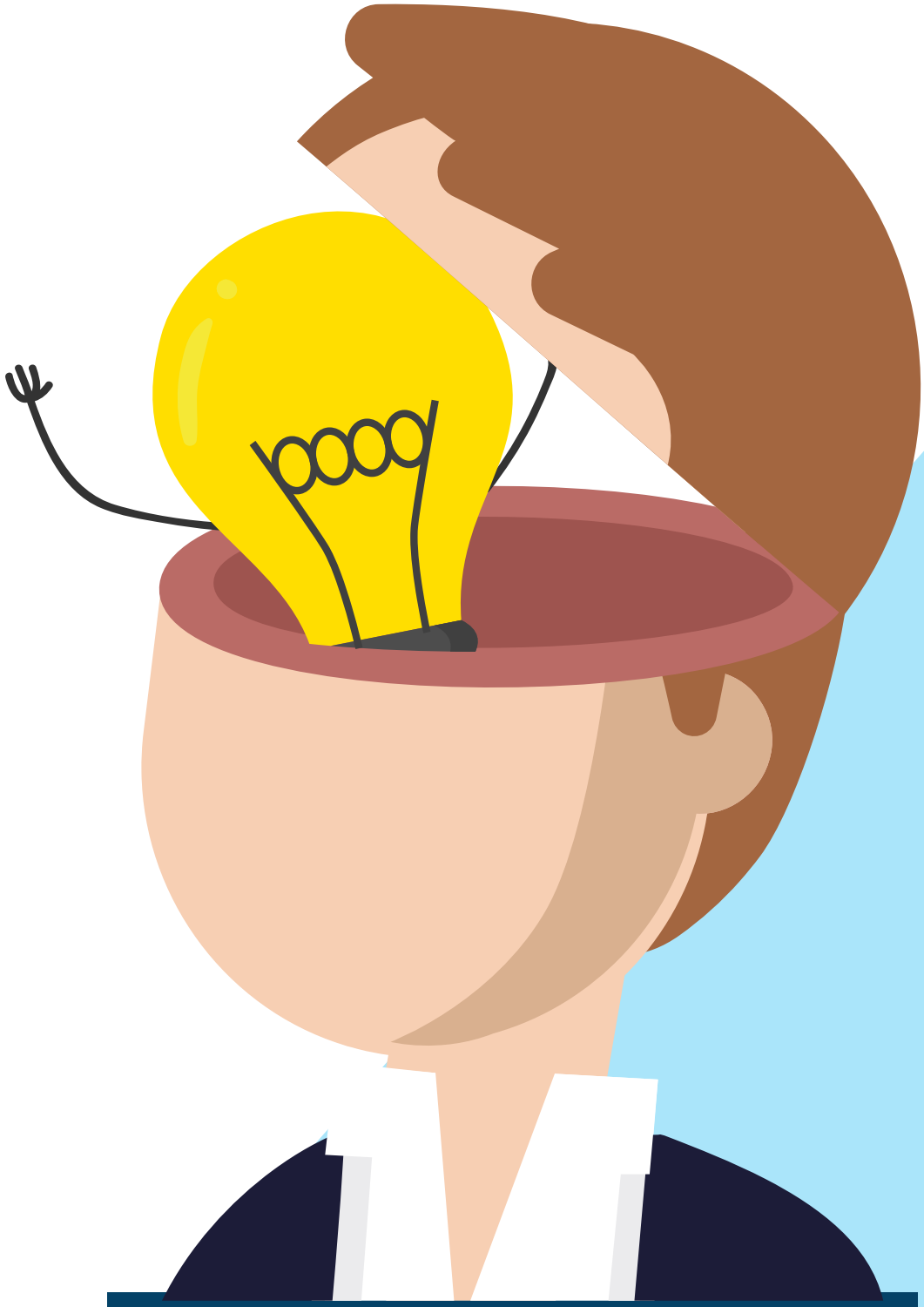


Figure 21: Weather as an example of information that can be provided about the destination through voice.

APPENDIX D:
ASSUMPTION MATRIX
INTERVIEW GUIDES
EXPERIMENT RESULTS
VAKANTIE VICTOR



6. IDEATION

CREATING A VOICE-BASED SOLUTION FOR THE PREPARE TO GO PHASE

6.1 GOING AGILE

The design brief has been formulated, marking the start of the design phase. The design phase will commence in a team. The team has been created because this project will also serve as an example of how future innovative projects can be set up within the company. The project therefore has multiple purposes which are combined.

On the one hand there's the excecution of this project for which I am responsible. On the other hand, there's the transition of the company which is done by Innovation Booster, an external party that facilitates this transition within the company, by using this particular project as an example. The idea is to create a more agile way of working. The agile methodology is concerned with an iterative process in which continuously review helps adapt a certain project to a change in environment (Cervone, 2011). In order to do test this way of working, a voice team was established. This team will work agile in order to go through the design phase of this assignment.

I will be the technological lead from within the company, whereas Innovation Booster will serve as the facilitator of the way of working.

The team that will work agile on finding a voice-based solution in the prepare to go phase consists out of 6 people, that will work on this project maximum 2 days in a week. for a duration of 6 weeks. I will take the lead content-wise, as it is an extension on my previous work. In addition, it is my task to also continue with the project once the team stops.

My main focus was on the feasibility of the technology,. Besides me the following people are involved:

Facilitator
Two employees of Innovation Booster facilitate the agile way of working and were in charge of maintaining the roles and processes.

IT Consultant
A TUI colleague with a background in IT joined in order to provide information on the internal IT possibilities

Digital Marketers
Two TUI colleagues from the Digital Marketing department joined to give their opinion and knowledge about consumer behaviour and data.

Business Development & Innovation
The innovation lead from the Business Development & Innovation department joined to learn about and stimulate the innovation project. The Business Development Manager also joined for learning the ways of Design Thinking and how that influences the process.

As said, the majority of this team worked around 1-2 days per week to discover what it is like to adopt this style of working. The output of this team helps improve the outcome of this project but does not find the solution on its own. The responsibility for this project remained my own.

Figure 22: representation of the team

6.2 TESTING ASSUMPTIONS

This chapter will focus on creating a narrowed down definition of the scope and finding and assumptions that are crucial for establishing a potential end solution. In ideation, it is easy to think certain things are given although we are not sure of them. These are assumptions and these need to be tested in order to validate whether they are true and we can build further upon them. This chapter answers to the three most crucial assumptions.

FINDING THE MOST CRUCIAL ASSUMPTIONS

The number of assumptions for a certain project can be enormous depending on the topic. Therefore it is essential to map out the most crucial ones in order to prioritize which ones to test first. This is done by mapping assumptions on a matrix. The matrix can be found in Appendix C.

Due to time, it is impossible to test every possible assumption. In that case, it is essential to experiment with the assumptions that are most crucial and unknown to the designer(s). For this project, 3 assumptions were selected and formulated into questions:

(1) Do travellers prepare for their travels?
Also, what kind of information do they require in this phase? This will be tested by means of semi-structured interviews as explained on the next page.

(2) Are TUI customers able to use voice technology?
A big assumption in using the technology in any form is the ability of the user to handle it. Therefore, a usability experiment will take place in which the current state of the technology will be examined together with TUI customers.

(3) Are the TUI customers willing to ask questions via voice technology?
Also, what kind of questions are asked and what kind of response is favourable? This will be tested by a wizard of oz experiment as will be explained later on in this chapter..

The assumptions above do not cover all of the assumptions that had been made to start with. By only answering the most crucial ones, an assumption is made on its own.

That assumption regards the possibility to solve any of the other assumptions, even if they are faulty. This is a risk to take, but timewise necessary. Only time will tell if unresolvable issues will turn up, something to reflect on later in this report.

The assumptions are supported by multiple hypotheses in order to provide the possibility for validation in terms of numbers and percentages. The following pages will, therefore, describe hypotheses based on the assumptions. If these hypotheses are validated, so are the related assumptions.

EXPERIMENT 1 | EXPLORATIVE INTERVIEWS

A first experiment was designed in order to validate the assumption that travellers show acts of preparation for their travels. It aims to find what kind of information is demanded in the preparation phase and what actions are taken based on these findings.

Semi-structured interviews were conducted, containing a set of open questions that the customer had to answer. A total number of 16 TUI customers participated. All of the participants were within the age range of 25-49 and 9 of them were women. The semi-structured interview guide for this experiment can be found in Appendix D.

The interview aimed to answer the following hypothesis linked to the described assumption:
70% of the participants will actively look for information about activities and excursions for their holiday destination, during the 'Prepare to go' phase.

Outcomes of the interview can be explained on multiple levels. First of all, a whopping 100% of the participants make sure to get information about their destination in the prepare to go phase. 69% of them also looks for excursions in specific. This is similar to the hypothesis and validates that information provision is very important and crucial.

In addition to answering the hypothesis, the interviews also gave some other insights. 94% of the participants do book an excursion while on their holidays. They orientate at home and book at the destination. Only 7% books their excursion with TUI, which is mainly due to the relatively high prices.

Extra fun fact: almost 25% of participants obtain information about excursions from the TUI host and will then book somewhere else for a cheaper alternative of the same excursion.

To conclude, the hypothesis (and thus the assumption) is validated and TUI customers do look for information in the prepare to go phase. It also includes information about excursions. This is important because this is where TUI can make money and the use of voice can be commercialized. This is in line with earlier findings regarding the importance of selling ancillaries.

EXPERIMENT 2 | USABILITY TESTING

A second experiment was conducted in order to see whether TUI customers are capable of using voice-based applications. It is a crucial assumption, any application is worthless if the customer cannot make use of it.

The experiment is similar to the one performed in the focus phase of this report. However, this time TUI customers within the targeted age group were asked to perform multiple tasks. Also, the tasks differed from the first session, they were more specific. The following tasks were presented to the participant:

Task 1: Find out what the weather is in Mallorca
Task 2: Find out what the main attractions are in Mallorca
Task 3: Find out what the best tapas bar is in Mallorca

The following hypothesis was established for this experiment. 50% of the 20 participants will be able to complete all three challenges by using Voice technology.

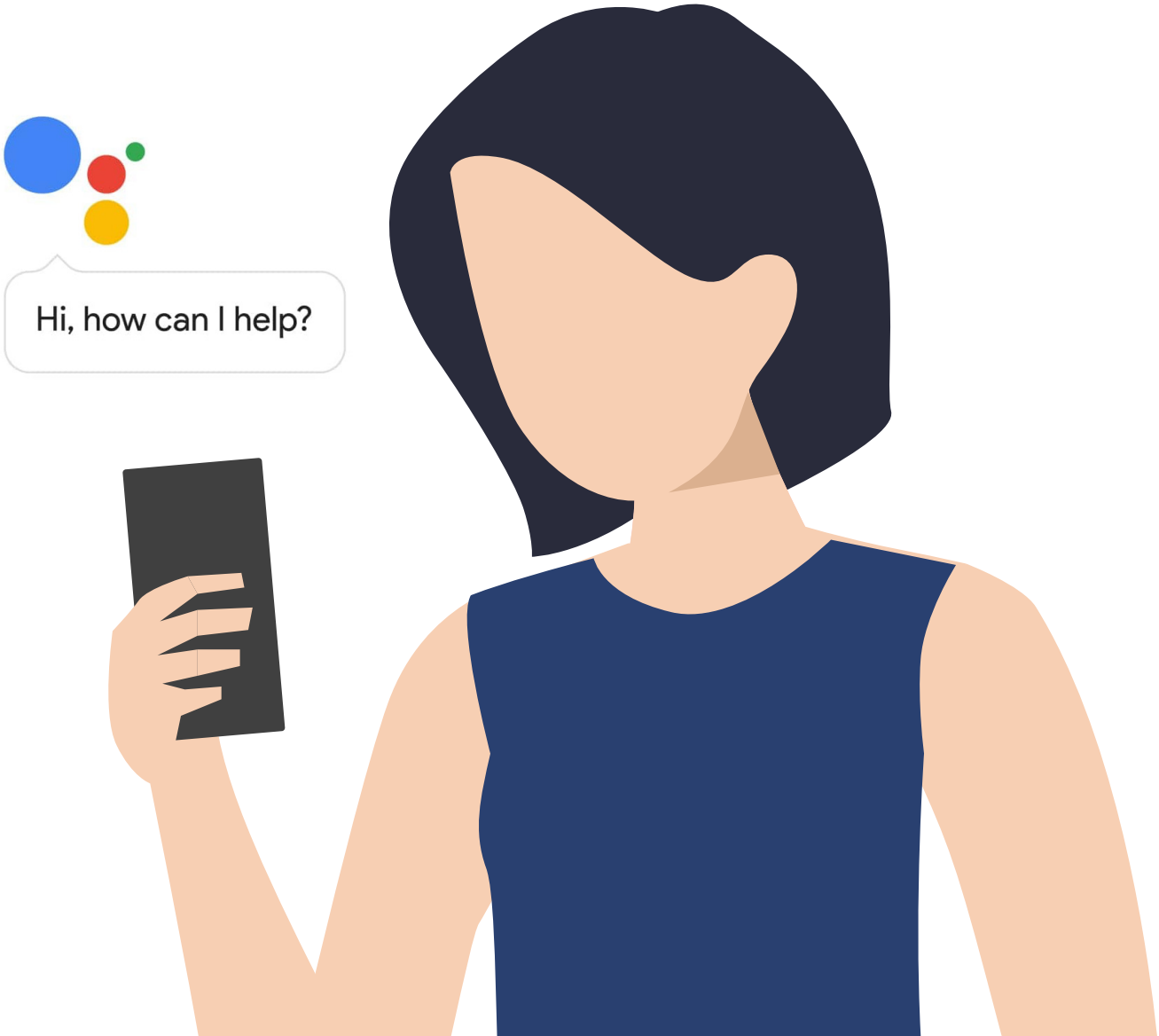
86% of the participants were able to complete all 3 tasks without the help of a researcher. 90% of them, however, needed more than 5 questions to get an end result. This implies that they had to learn from the response and improve their input. The hypothesis is therefore validated and TUI customers are able to use voice-based applications. Furthermore, information about the perception of the technology was also gathered. 49% claimed that it was still awkward to use this specific technology.

EXPERIMENT 3 | WIZARD OF OZ - VAKANTIE VICTOR

The third experiment was established to test multiple assumptions/questions. These are the following:

(1) TUI customers are willing to ask a question via voice
(2) TUI customers will ask TUI holiday-related questions
(3) TUI customers prefer voice output over text output

An experiment was conducted in which the potential solution was simulated by the use of manpower. An experiment like this is called the Wizard of Oz, where the desired solution is replaced by human influence in order to test related assumptions.



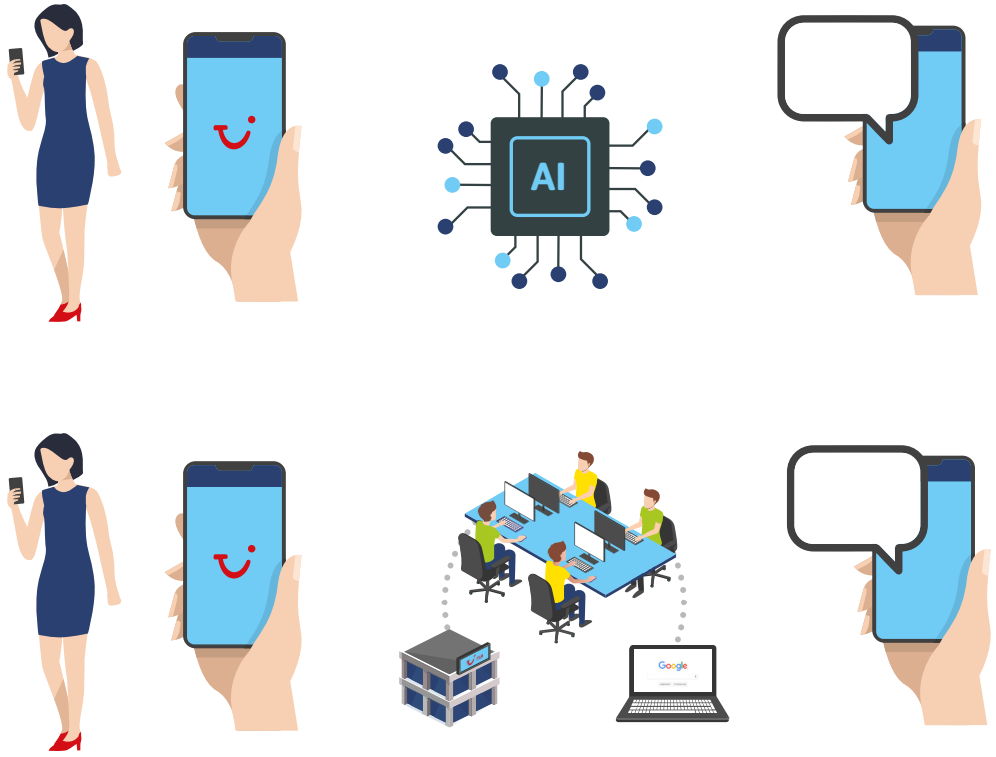


Figure 23: Wizard of Oz: simulating the AI

In order to conduct the third experiment, the potential solution has been simulated. The potential solution would consist of a voice application that can be approached by the TUI customer for questions which TUI could answer. In the ideal situation, the questions are handled by AI and answered automatically (future vision).

However, to experiment this quickly without spending a lot of money and time, a simulation of the product was designed to test the users response. The differences are explained in the figure above.

In an ideal situation, an experiment like this is conducted from within the company and targeting their current set of customers. However, this was at this point seen as a risky venture and therefore the TUI name was not to be used. In order to still continue with the experiment, a fake start-up was established with which the simulation could still take

Figure 24: A fake start-up: Vakantie Victor.

The start-up was named Vakantie Victor and could be reached by means of Whatsapp. Consumers could send the company a voice message via Whatsapp with any question about their holiday destination. Vakantie Victor would then answer to the consumers' demand by providing information, either by means of text or voice. By these means, all the assumptions as explained before were tested.

Vakantie Victor was promoted within the company, via social media channels and the personal network of the team members. Promotional material can be found in Appendix D. However, we were only able to obtain a total number of 41 participants in this experiment. From this it is difficult to conclude whether the assumptions have been tested. The willingness to ask a question via voice was proved by the 41 participants, but as we are not sure how much people we reached it is not possible to say anything about a conversion rate.

The second hypothesis could be answered to some extend. Although it is questionable whether the customers were biased by the way of promotion, we do see a clear division in the kind of questions that are asked. Victor was mainly asked about dining options and activities/excursions.

Lastly, out of 41 participants, only 8 were willing to share their opinion about Victor. So the last hypothesis regarding the preference of output could not be tested. All in all, the results lack a bit of evidence and the experiment can be seen as failed. However, the information about the type of questions is still very valuable and will be examined furthermore in the next chapter. Also, an experiment as such involves a lot of learnings, which I will reflect upon at the end of this report.

EXTRA INTERVIEW: HOLIDAY ANTICIPATION

Not for the first time in this project, interviews were conducted to answer to the assumptions. Similar to experiment 1, the semi-structured interviews were aimed at obtaining information about the preparation phase by asking open questions.

However, this time the focus was on the content of the information preparation and what a consumer highly anticipated within this phase. The interview guide can be found in Appendix D.

The interviews confirmed that discovering and planning activities, such as excursions and dining, contribute to the satisfaction of vacationers in preparing their holiday. The confirmation makes for an argument to pursue the provision of information about the destination and in particular about activities and dining options.

The assumptions have been tested and we can now state that TUI customers prepare for their journey and look for information in that phase of their travels. They are also able to use voice technology, which is quite crucial for the outcome of this project (as the deliverable is voice-based).

Lastly, we can state that the customer is looking at information specifically aimed at activities at their destination or dining options.

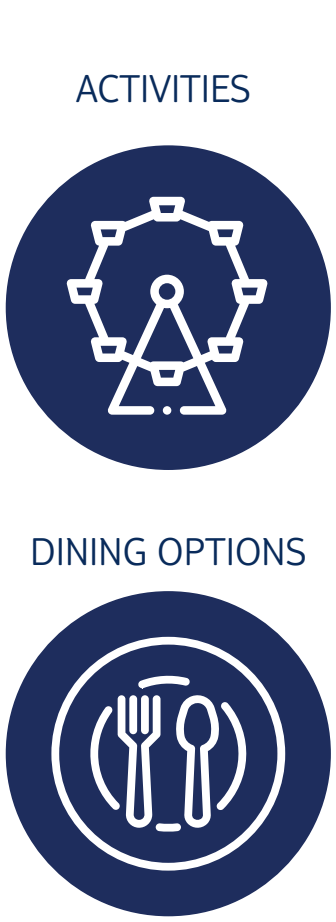


Figure 25: The topics on which customers desire information during the prepare to go phase.

6.3 MUSEMENT INTEGRATION

The Vakantie Victor experiment showed that consumers had an interest in obtaining information about dining options and available activities and excursions at their destination. This chapter highlights the confirmation of the earlier obtained information and the conclusions that are drawn from it. It then establishes a relation between the found insights and a possible solution: the integration of Musement.

MUSEMENT

In line with the current strategy of the company regarding the increased selling of ancillaries, Musement was acquired in the summer of 2018. It is an online platform which can direct you to the nearest activities and dining options. It can also provide this information about any destination other than your current one. This highly fits with what customers stated as desired in the interviews. The next page shows the app as it is.

Musement answers to the 2 primary features (activities and dining options) that have been found through interviews and does so through its extensive database. Integrating this start-up will, therefore, be desirable for the customer.

In addition, Musement also has a voice-application. Despite the fact that it is in English and that the dialogue is not error proof yet, it is still a very good basis to build upon. The start-up has created the application themselves and holds the in-house knowledge for further development. Changes are relatively do-able, translating the application for example, would take a maximum of two weeks.

An overview of the Musement functionalities can be found on the next page.

FITTING THE STRATEGY

The reason for acquiring the start-up in the first place fits with the strategy of TUI in which there is a high focus on an increase the selling of ancillaries. This is where a possible solution will make money and create value for the company as well.

TOO SOON

Even though everything seems to come together at this point, it is too soon to celebrate. Musement has been acquired last summer but, due to legislative matters, the launch on the Dutch market has been predicted for the summer of 2019. Add some new voice technology to this prediction and this prediction will be even more unreliable. So Musement is a solution that will be desirable and feasible by probably the end of 2019. It is an interesting dot on the horizon to which a company could work towards. In addition, it is possible to make Musement voice-based and use the advantages of this new technology. A starting point is needed in order to introduce the technology in the short term and start learning from the dialogue with customers.

Figure 26: Musement Logo

A STARTING POINT

With the knowledge obtained about the previous chapters, we know that there is still a lot to learn on both the consumer and the technology side before full adoption of voice technology is possible. A voice-based solution in which Musement is integrated will possibly not be ready within a year and is therefore not favourable for learning about the technology at this point in time. This will also be visible in the roadmap.

With this in mind, an minimal viable product (MVP) should be created as a starting point. This should be an application that

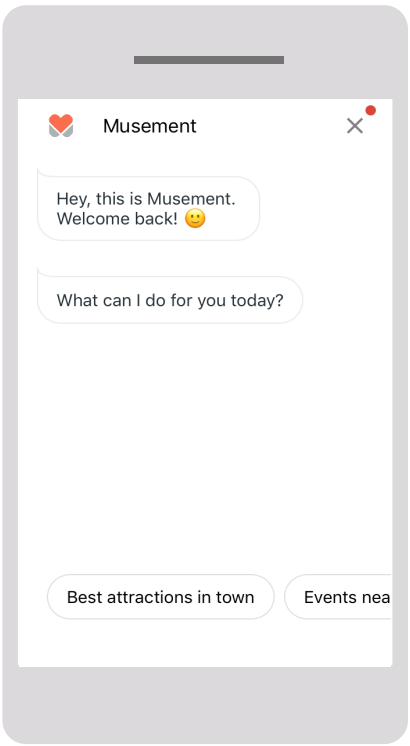
(1) has a link to Musement and serves as a step-up towards this voice-based solution.

(2) It should be possible to build this MVP within a couple of months so that there is enough time to learn from it before launching Musement.

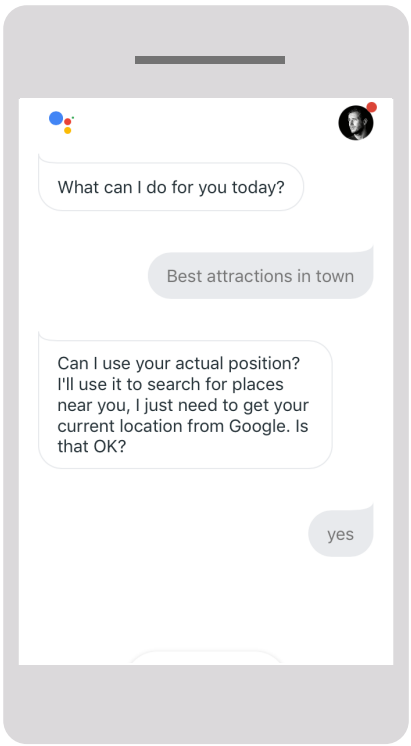
(3) Errors in the dialogue should be limited, to help both the consumer and the technology.

The MVP is allowed to be a bit further from the findings that have led us to Musement but should fit the company strategy. The next couple of chapters will highlight the design of the MVP and how it relates to the final Musement Integration.

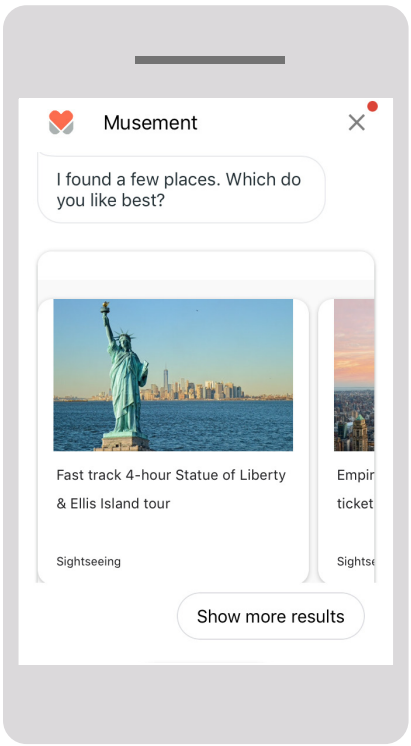
The customer is looking for information about activities and dining options at their destination. Musement, a start-up acquired by TUI in the summer of 2018, is able to answer exactly to that specific desire. Musement already has a voice technology application that can offer the desired information. However, it is too soon to implement this within TUI boundaries for now and therefore a starting point is needed to learn from the technology. The starting point should have a clear link to Musement, be feasible on the short-term and should limit errors in the dialogue.



Starting the application provides options with what you want to do that day and a few suggestions



A selection can be made on what you're in the mood for and the app provides suggestions based on location.



However, it is also possible to ask about other destinations such as New York. Results are then given which can be clicked upon.

Figure 27: Current Musement Featurs (captured from the application)

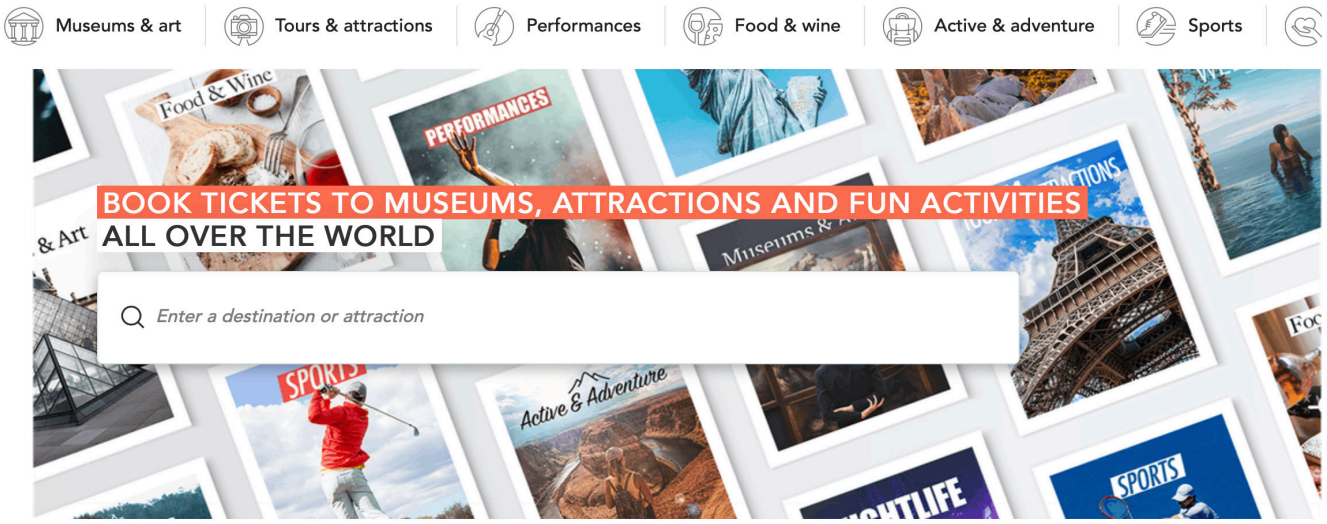


Figure 28: Musement capabilties through website

APPENDIX E:
MVP DIALOGUE FLOW

DESIGN

7. MVP

CREATING A MVP AS A STARTING POINT FOR THE FINAL VOICE-BASED DESIGN

7.1 HOLIDAY TRIVIA

As stated in Chapter 5.2, the dot on the horizon has been established in the form of the future vision. Holiday Trivia is the first step towards this end-goal.

As has been discussed in the previous chapter, a MVP will be built in order to function as a stepping stone towards the final solution: the integration of Musement as a voice-based application. This MVP should meet certain criteria and serves a particular purpose that will be discussed here.

CRITERIA

Criteria have been set for making the MVP a successful starting point for the Musement integration.

LIMITING THE ERRORS

From a technology perspective, it has been stated before that gradual implementation is key for the success of adopting voice technology. Both the consumer and the technology are not ready yet for a flawless dialogue, and matters must be taken to stimulate the adoption. It has also been stated before that the simplicity of a newly established product can stimulate the adoption and making the product easy in its use will, therefore, help the consumer in understanding it (Rogers, 1995).

In order to stimulate the adoption of this aspect, it is essential to limit the errors in the dialogue and make the experience as simple as possible. To do so, it is favourable to frame both the input of the user and the output of the technology. This is done by creating a dialogue that is structured according to a process tree flow. In such a flow, a question is posed to which the answer can either be A or B. A question could, for example, be: do you prefer drinking wine or beer?

In this case, the answer a respondent can give is limited to either wine (A) or beer (B). An example is given in the figure below. By providing two options such as is given here, we can limit the error in the dialogue. To conclude, a requirement is hereby set as that the MVP will be structured through a process tree flow.

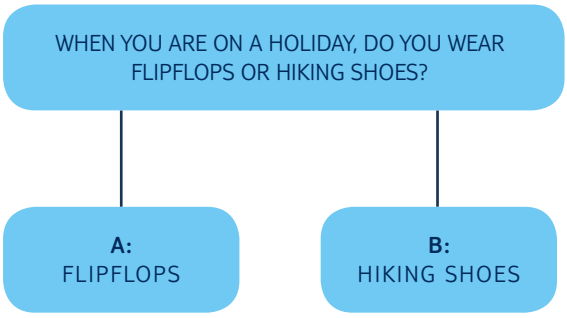


Figure 29: Example of process tree flow dialogue

LINK TO TUI PRODUCTS

As it is a starting point to the Musement integration, it has to align with the key features of the future application. The key features are linked to activities such as dining and excursions and will eventually be used to sell TUI products.

The MVP should, therefore, be linked to these products and preferable the possibility to purchase them. This way, the MVP is more than just a stepping stone and will also serve a business purpose.

ANSWER TO CUSTOMER STRATEGY

Looking back at the existing solutions and examples that were given before, two reasons for starting with voice technology concerned the introduction of the technology to consumers and the following publicity that is derived from that. Both of these aspects are also interesting for TUI.

In order to do so from a marketing perspective, the MVP must answer to aspects of the customer strategy of TUI. If it does so, it fits with the current strategy and can be promoted to the public. The customer strategy has a lot of different components that can be addressed. However, looking at the link to TUI products that is also required, three areas within the strategy are most relevant.

All-Inclusive Campaigns

This component of the strategy is directed at changing the image of All-Inclusive holidays. TUI has a lot of them and there is quite a difference between them. However, the consumer is yet to discover the differences and thus TUI is aiming to convey them in a new and improved way.

Personalized Recommendations

A second component focusses on true personalisation in the form of personalized recommendations. Based on knowledge about the consumer, the company is aiming for providing holidays that suit the customer's preferences.

Tours and Cruises

Tours and Cruises are two new products that have not been fully discovered by the TUI customer yet. This component of the strategy aims to get them known and purchased.

To conclude, all of the above are requirements for an initial MVP. It should limit the errors in the dialogue by creating a flow in which input from the user is steered within a process tree flow. A link to TUI products has to be established in order to make it viable for business and link to the integration to Musement. Lastly, the customer strategy has to be taken into account in order to align the MVP with the current strategy and the current approach towards the TUI customers. Now that the requirements are clear, the next chapter will go into the specifics of the MVP.

HOLIDAY TRIVIA

Holiday Trivia matches the requirements that have been set in the previous chapter. By means of voice technology, the user can obtain information about what kind of traveller he or she is.

These types are linked to concepts that are currently included in the company strategy. This way, the customer obtains a personalized recommendation for a type of holiday concept and is in line with current products. It gets to a certain type by following a process tree flow in a gamified way, limiting the errors in the dialogue.

The attentive reader will now raise his or her eyebrows because the question arises if this can still be considered as a solution aimed to solve pain points in the prepare to go phase. The answer to this question is simple: no. In order to build a starting point that follows the criteria, it has been decided to move away from that specific phase in the customer journey. The desires of the customer will be addressed in the Musement integration, the MVP merely serves as a tool for introducing the TUI customer to voice technology.

SEGMENTATION

In order to be able to make purposeful personalized recommendations, a segmentation model has been created internally. The segments are made up of a set of characteristics, which suit a particular type of traveller. The MVP makes use of the internally established segments (see Appendix E).

It does so for an important reason. Sticking to the segmentation as is used within the company, helps for the further gathering of truthful data and alignment with the current business. This answers to the requirements that have been set before. In addition, this starting point can now also create business value and personalized recommendations that are correct.

The TUI segmentation recognizes 8 different types of vacationers, ranging from young independent travellers (Travalista's) to older segments that like comfort and luxury (Senior Service). Based on the prescribed characteristics of the segments, a process tree flow was made through which a user would be able to define what type of vacationer they are.

LINKING THE CONCEPTS

As said, in order to give it make it more valuable to the business, concepts should be linked to the type of vacationer. There was no pre-established framework for linking the concepts to the segmentation. Therefore, an assessment was made based on the characteristics of the different segments.

The addition of the concepts enables the user to also find out what type of holiday he or she could book. This contributes to the business value of the MVP.

THE DIALOGUE

Earlier in this report, there was a lot attention for the dialogue. This has been translated into the MVP, in which simplicity is key. Errors have been limited in this MVP. It will also respond to the users in a TUI tone of voice way. It is essentially a tool for finding information.

The flow of dialogue will provide the user with the type of vacationer they are. The conversation continues as the business side comes into play and the user is asked whether he or she would like suggestions for a next holiday.

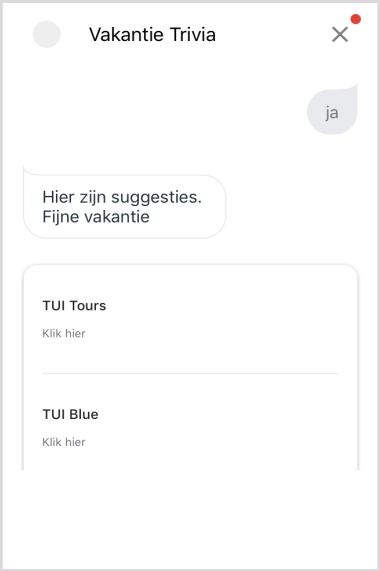
At that point, clickable links pop-up to segment based TUI concepts. Clicking these links will redirect the user to the webpage of that particular concept, where these can be booked as well. This way, the user gets tailored recommendations based on their type of vacationer.

Holiday Trivia voice application (prototype)

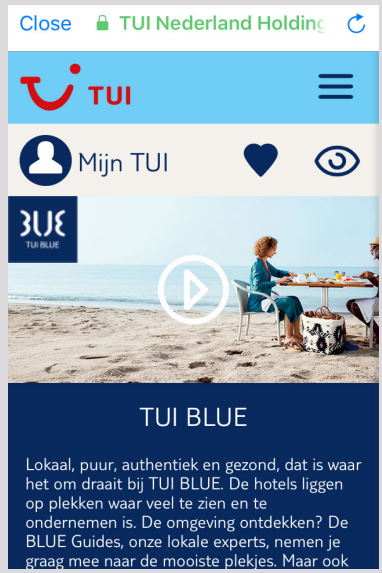
Start of the application, with first question related to the segmentation.

Second question

Third question



Providing suggestions based on the segmentation which can be clicked upon.



Clicking on a suggestion will bring you to the corresponding website.

Figure 30: Holiday Trivia (MVP Screens)

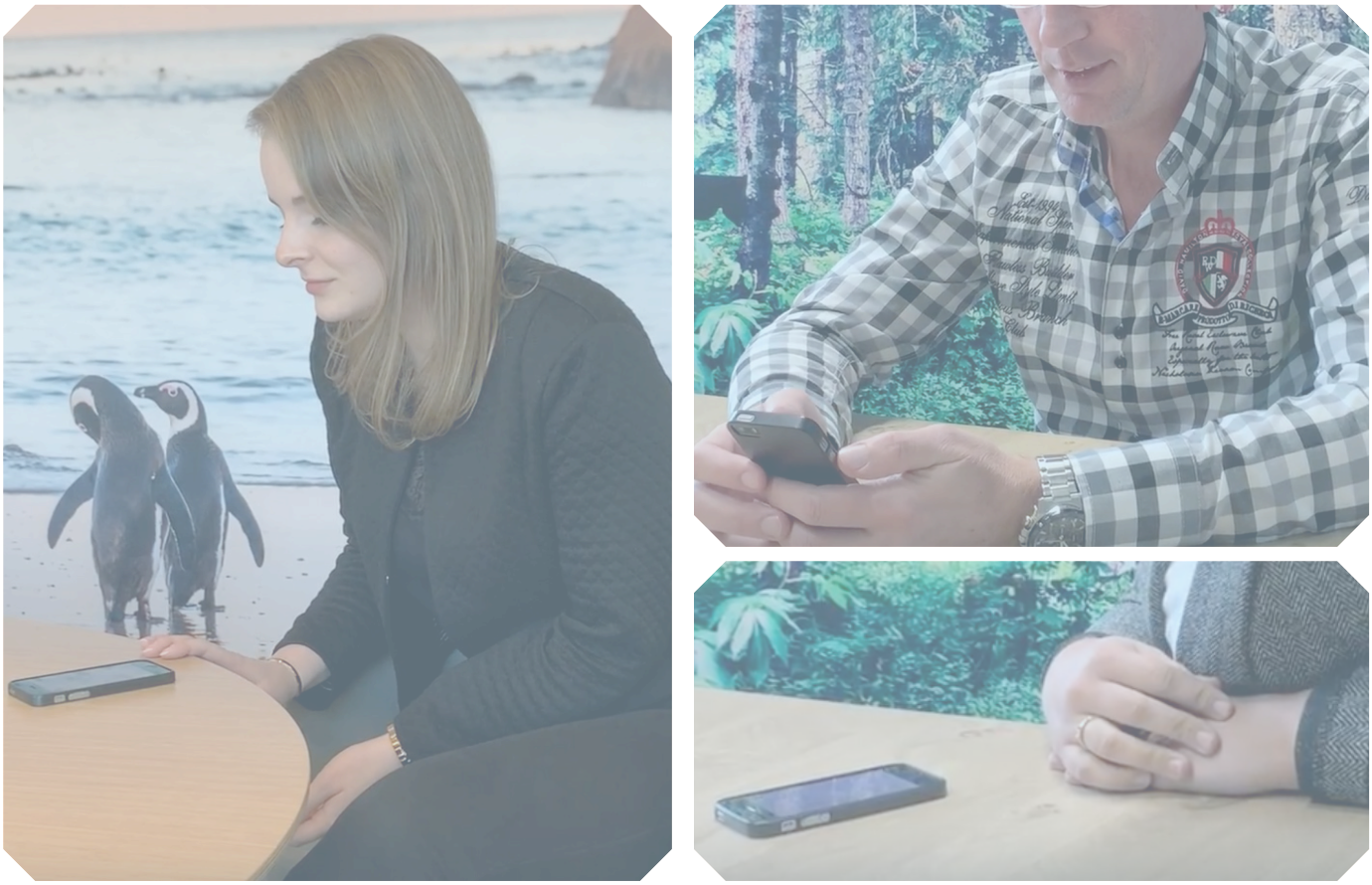


Figure 31: Photos of user testing

USER TESTING

A MVP has been created and built by using Dialogflow. User testing is needed to validate whether the user is able to work with the created MVP. In addition, it should be tested whether the self-made flow towards the segmentation is truthful and users are satisfied (and agree) with the eventual outcomes. To do so, 20 participants were asked to test the device. After which necessary changes were made, before testing with another 10 participants.

SUCCESSFUL CONVERSATION

All the participants were able to have a successful conversation with Holiday Trivia. Types of vacationers were found and participants clicked on the provided concepts. As expected, limiting the input of the user will result into a more succesful conversation.

SAME RESULTS FOR ALMOST EVERYONE

Although the conversation was successful, the end result was not. 86% of the users that tested the MVP were classified as being energised adventurers. Most of them did not identify with such a segment and also did not identify with the advised concept. The correctness of the outcomes is quite essential for the existence of this MVP. We can, therefore, conclude that the MVP as it is now, has no value to both the company and the customer. On the other hand, the conversation was successful, so no changes to the flow of it are needed. The input of the flow, however, needs to be revised. More about this in the next chapter.

We can conclude that the MVP as of now, is on the right track but does not provide correct responses yet. It needs a stronger fit with the company and flow.

FIT WITH THE COMPANY

The user tests pointed out that the input of the flowchart should be changed in order to be truthful. A company is also not going to launch such an application if it is not correct in content. Therefore, a perfect fit with the company has to be found.

The changes that had to be made were found easier than expected. The CRM department, responsible for establishing the segments, had in the meantime created an algorithm themselves, more advanced and aligned with the internal systems of the company.

COMBINING VENTURES

The algorithm is used to approach customers in a similar way as they MVP aims to do, only not by voice but by video. Combining the ventures will lead to the best result for the business context.

CHANGING THE FLOW

The algorithm that is used proposes quite some changes to the flow of the dialogue as more information from the user is needed. The extended amount of questions help in defining a more precise segmentation. Therefore, the current line of questions of Holiday Trivia is not significant anymore and need to be replaced.

The type of question remains somewhat the same. The new flow will also make use of A or B questions, or provide a range within which the user has to select a number. Both ways are still limiting the number of errors that possibly occur.

The questions will be more extensive however, a few will be added in order to increase the significance of the segmentation. Information about the age and gender is therefore also needed.

Also, the concepts should be revised as the user tests showed that the results were not relatable to the actual preferences of the customer. The improved concepts will follow from the improved algorithm for segmentation.

The proposed changes cannot be made within the duration of this project. The roadmap illustrates the future proceedings that are needed over time.

The MVP in the form of Holiday Trivia is created with the criteria set in previous chapters. It limits the errors well but does not provide the correct information yet. Changes have to be made based on the algorithm that is created by the CMR department. However, delays in the final stages of delivering said algorithm make that these changes cannot be made within the timeframe of this project. The MVP did show promise for a voice technology application since users were able to use it and obtained a satisfactory experience, even though not getting a satisfactory result.

7.3 TUI TOUR GUIDE 1.0

Now that the MVP has been established, we're going to take a look at the final solution: the musement integration into a TUI voice application. This application will from now on be named as the TUI Tour Guide 1.0.

This chapter will go into the details of this voice assistant, what features it holds and how it can be built. It shows a favourable flow of the assistant and the desired outcomes that belong to it.

FEATURES

The TUI Tour Guide 1.0 is a combination of the earlier described MVP with a translation and slight modification of the Musement Google Assistant application. The modification of this application will only be in the flow of the dialogue, as can be seen on the next page. The assistant will have the following features that it offers to the user:

(1) Personalized Recommendations
The most important asset is the possibility to provide personalized recommendations based on the type of vacationer. This is in line with the strategy and will provide value in both the customer and company context.

(2) Information Provision & Inspiration
The voice-based solution can help provide information to the user about any activities at destinations. Including good sights to see, dining options and excursions. This can also contribute to the inspiration phase of the customer.

(3) Booking Activities
The user is able to book or reserve activities (preferably those hosted by TUI). This can happen both at the destination or at home. This is also important concerning the company context as this is where the money comes in.

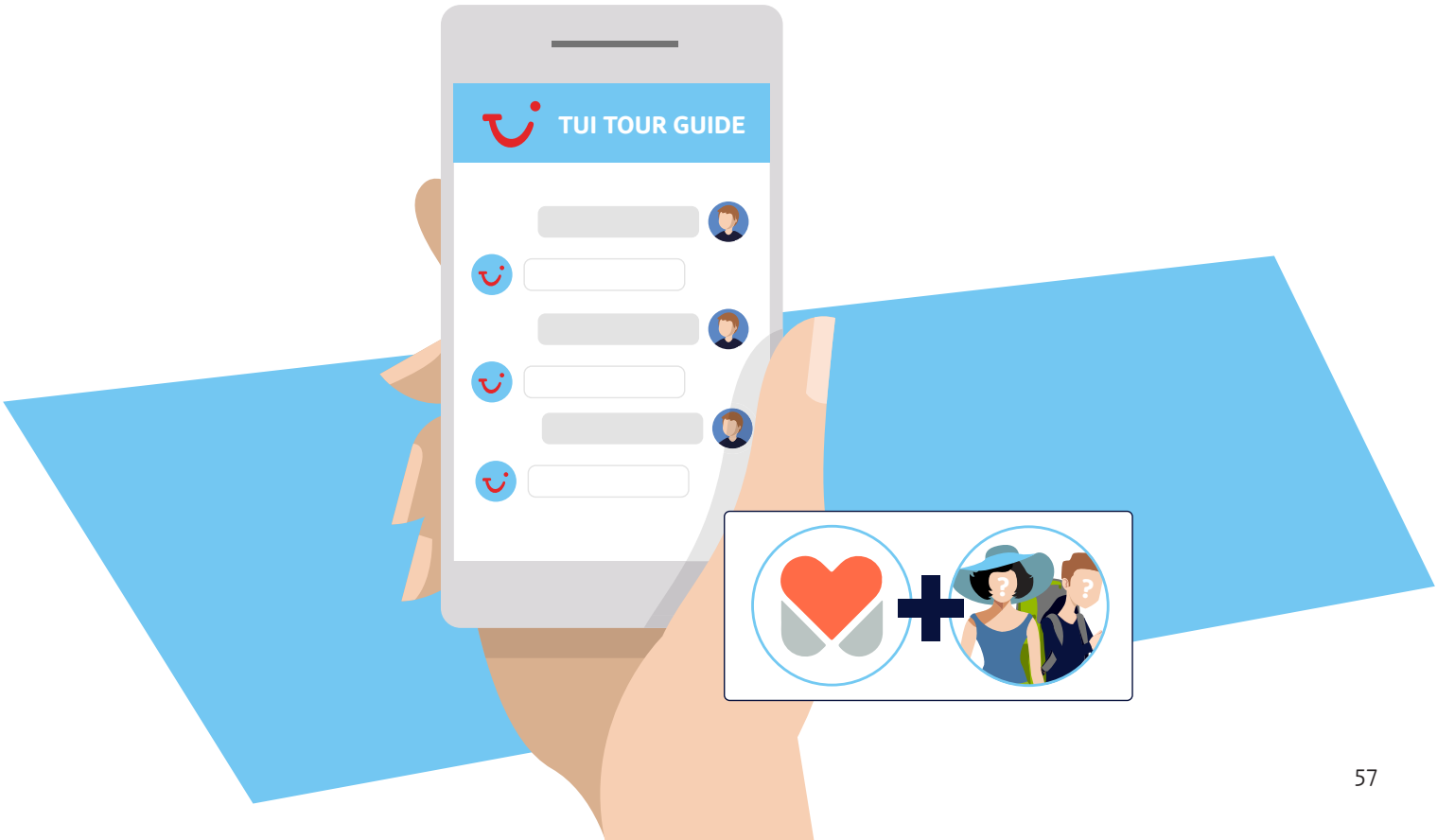
MODIFICATIONS

In order to establish these features, a few things need to be done besides translating the application. These modifications are needed in order to strengthen the impact of the voice-based solution and make it coherent with the insights that have been gathered earlier in the project.

First of all, the MVP tool with which a type of vacationer is determined needs to be integrated and linked towards certain types of activities as well. This way, personalised recommendations can be provided. This is important, as it is a key pillar in the customer strategy and also a desire that has been named by the consumer.

Secondly, a booking system must be added. The system must, therefore, link towards a payment system with which this can be arranged. It is favourable to start with links to the current payment systems. On a process level but also due to the earlier mentioned security challenges of the technology.

Lastly, the translation should, similar to the MVP, be tailored to fit the TUI tone of voice. This way it is ensured that the application resonates with the brand image.



8. ROADMAP

THE PATH TO REALISATION OF THE VOICE-BASED SOLUTION

8.1 DEFINING HORIZONS

Now that we've got a MVP, a voice-based solution and a future vision, it is time to define when these designs should be implemented and what means are necessary in order to do so. A decisive factor to the implementation is the time pacing: the timeframe in which you will be able to launch products or services (Simonse, 2017). This chapter will determine what actions will happen during what specific time and what actions are required. This information serves as the input for the eventual roadmap, the deliverable of this project.

TIME PACING

At this point, it has been established what is needed and what is visioned for the future. With this information, it is almost possible to establish a roadmap. However, one important variable is missing: time. Including this variable makes it possible to also state when certain actions should take place and how these actions relate over time. Time pacing is related to 3 horizons. These horizons are similar to the earlier described model by Mckinsey (2009) but contain added business values that have to be included within the horizons (Simonse, 2017). The following horizons are stated:

Horizon 1: Design Value Enhancements

Simonse (2017) states that it is necessary to include an enhancement on current processes within the first horizon. This first phase builds upon current systems and relates to future developments. In the case of this project, this phase will, therefore, include the MVP, which serves as a stepping stone for the future solution(s).

Horizon 2: User-Centred Value Creation

This is where the importance of the user kicks in. The concept is developed and tailored more to user needs in order to be fully adopted. It is tailored to the desires and needs of the users. In the case of this project, this phase will, therefore, contain the TUI assistant, with which the user can obtain information and find personalized recommendations.

Horizon 3: Value Proposition Creation

This horizon embodies the path towards the future vision. It holds quite disruptive changes and is vague compared to the other phases. For this project, this phase will also contain the path to the future vision.

TECHNOLOGY PACING

A leading influencer of the time pacing is the rate at which the technology develops. Therefore, the rate of adoption has to be regarded. This rate can be obtained from the Gartner hype cycle as visiualized in chapter 3.2. It states that a NLUI Q&A type of interaction is preferable for the upcoming year but will likely change into a more open conversation type after that.

For this project, this will mean that the upcoming year, the dialogue should remain a question and answer based one. The closed format will help the degree to which customer and technology understand one and another. Following the expectations in the Gartner Hype Cycle (Gartner, 2018), that has been discussed in Chapter 3.1, we can expect that from that point onwards, the dialogue can be slowly turned into a more open conversation type. This means that for the first year, the MVP should be leading. The flow of this first application limits the errors and creates an environment in which can be learned about the technology

REQUIRED EXPERTISE

Due to the novelty of the technology, a certain degree of expertise is required in order to establish a well-designed application. A strong asset of the designed solutions is that there has been attention for gradual implementation and can be built upon an existing Google Assistant application which has been created by Musement.

The required expertise for the MVP and the TUI Tour Guide 1.0 are therefore momentarily available. The design was also tailored to the fact that this would be possible, it is, therefore, no surprise that the applications in horizon 1 and 2 can be established as it is. However, additional expertise is required to realise the future vision as more features will be added.

PUBLISHING AN ACTION

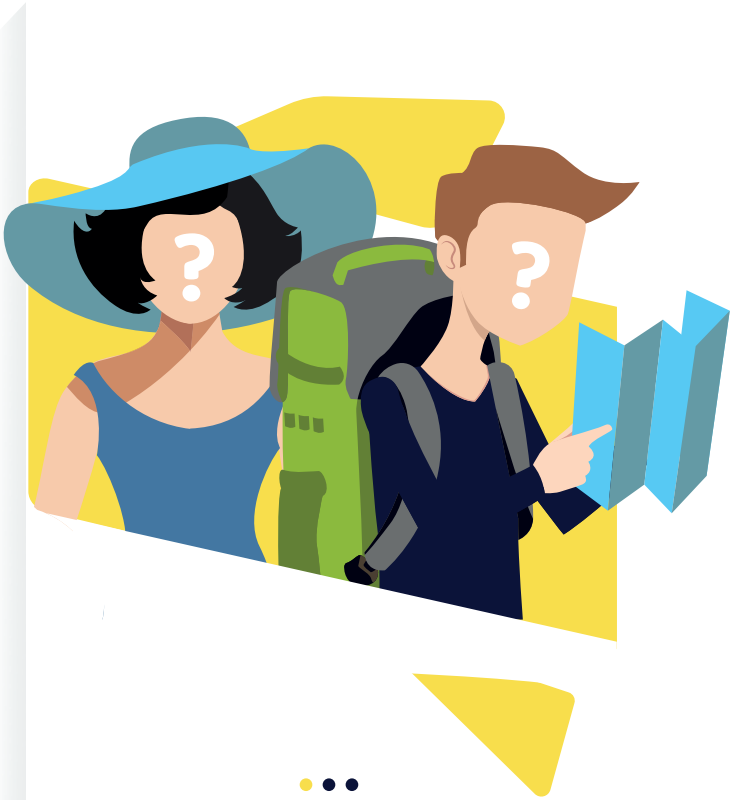
Once you've built a voice action (or application), it still needs to be published. As the action is created in Dialogflow, a request for publication has to be sent to Google. A few requirements have to be met to do so, which increase in importance once the action develops and obtains more and more features. The most important one for succession in future actions is the required privacy policy regarding the action that has to be delivered.

EXTERNAL PARTIES

In Horizon 3, external parties come into play as the technology and TUI application develops. . At this moment, there are numerous companies involved with the technology. Companies such as Q42, Mirabeau and Kraftwerk are only a few of the examples (Lens-Fitzgerald, 2018).

However, as the technology is developing rapidly, it is difficult to provide a clear suggestion as to which partner is preferable in the future. Also, if the voice revolution would take place, it seems not very unlikely that companies will have their own voice designers in-house. Therefore, options should be considered during horizon 2, as of which path to take.

HORIZON 1 - VALUE ENHANCEMENT BY MVP



HORIZON 1

What type of vacationer are you? Talk to TUI, answer a few questions and find out what holidays suit you the best.

Required Steps:

(1) Finalize the MVP
(2) Pilot and Launch 1st version
(3) Launch full version

Reason for doing this:

(1) Gradual Implementation
(2) Customer Strategy
(3) Learning and Data

Key Features:

(1) Segmentation
(2) Personal Recommendation of Concept
(3) Information about Deals

State of Technology:

Natural Language Q&A in a closed format

The first horizon is the here and now. It concerns the value enhancement of current processes and systems by means of a voice-based solution. Naturally, it still has to be built, therefore this horizon stretches from this point to maximum a year forward.

For this project, this horizon contains the MVP, which is the stepping stone towards further development in horizon 2. It won't, however, require the entire year. The MVP will be built in this first year of the roadmap and also preparations for the Musement integration are made. A start on the translation will be made.

As the MVP does not require any programming knowledge, it can be established with the knowledge that is in-house. The Musement integration needs more work, but due to the acquirement of Musement itself, the developers that are employed at that company can take care of this aspect. As said, the MVP (and thus the first horizon) do not contribute directly to the earlier specified scope: the prepare to go phase. The pain points of that phase will be addressed in the second horizon. This first year will be focussed on the following:

(1) Gradual Implementation of Technology
As stated before in chapter 3.2, the technology requires gradual implementation before the adoption can take place. This first horizon is dedicated to making sure that the steps are accessible for the consumer.

(2) Customer Strategy Alignment
The MVP as it is now is in line with customer strategy and can , therefore, be implemented within current business initiatives. This gives it more strength and internal motivation within the company regarding pushing the solution.

(3) Gathering Data
Lastly, important data is obtained about the customers and to what segmentation they belong. Also, data about the usage of the technology can be used for future reference.

This first phase will build towards a first voice-based solution for TUI. It will provide the company with a certain degree of publicity in an attempt to convey a more innovative mindset to the outside world. The customer will also get a taste of how a TUI voice application can be used.

TUI DEALS
To increase the value of the MVP to the business, a full version of the MVP also contains TUI Deals, that are provided once the customer is assigned to a particular segment. The deals can, therefore, be linked to the concepts that are recommended.

HORIZON 2 - USER-CENTRED PERSONALISATION

Now that the first year has passed, the roadmap directs towards horizon 2. This horizon takes place between 2019 and 2021 and builds further upon the previously established MVP. The translation of Musement has taken place by this time and the MVP and the translated Musement application can be combined in order to establish the TUI Tour Guide 1.0.

The above actions can still be done with the expertise of the companies in question and therefore no external parties are needed as of yet. However, this horizon also marks the start of finding the right parties that can help the application forward.

The solution at this point is applicable in the prepare to go phase and also answers the desires of the consumers. It is in line with the following insights:

(1) Personalisation
In line with what has been found important in consumers' desires, the customer strategy and future vision. Here, the consumer obtains the possibility to get personalized recommendations for holidays and activities.

(2) Increase Margin per Pax
An important factor in moving forward for the company is finding more ways to increase the margin per pax. Horizon 2 will enable the consumer to get early access to the ancillaries that are offered. Selling more ancillaries will then increase the margin per pax that is obtained.

(3) Information Provision on Activities
Information on activities is provided here for the first time in quite an extensive manner. Information about destinations is enabled and popular food venues, interesting sights and excursions are displayed to the customer

FROM TRANSLATION TO PERSONALISATION
Once the application is translated, the MVP that has been established in horizon 1 should be included. This makes it so that the MVP is not a stand-alone product but is used on a long-term basis.

By assigning the customer to a certain type of vacationer, personalised recommendations can be provided by using the Musement database. This way, the customer will obtain activities and dining options that are tailored to their personal preference.

HORIZON 2

Talk to the TUI Tour Guide 1.0. It provides you with information about your destination based on the type of vacationer that you are.

Required Steps:

(1) Translate the Musement App
(2) Modification of the App
(3) Include the MVP

Reason for doing this:

(1) Desires of Customer (Result Experiments)
(2) Customer Strategy
(3) Attempt to sell more ancillaries
(4) Information Provision

Key Features:

(1) Booking
(2) Personal Recommendations
(3) Inspiration and Information

State of Technology:

Natural Language Q&A, more open structure

HORIZON 3 - VALUE PROPOSITION BY FUTURE VISION

A lot of activities are happening during this last horizon. It is needed in order to reach the future vision. This horizon takes place from 2021 to 2025. During this time, measures should be taken in order to enable the vision statement to become reality. The statement is as follows:

TUI becomes the ultimate voice-based tour guide by providing customers with the required information about their travels, anytime and anywhere. It provides this in a personal, reassuring and transparent manner.

In order to answer to this statement, the other scopes that have been defined as interesting in Chapter 5.1 come into play. A strong focus of the statement is the information provision. Answers for any travel related question should be answered. Therefore it is essential to make a link with the information that is currently available in the Customer Service Centre.

As stated in chapter 5.1, this is an interesting scope due to the amount of information that is available and the current problems that occur there. The data that is gathered there now, can be used for providing the voice technology dialogue with the right questions and answers.

INFORMATION THROUGHOUT CUSTOMER JOURNEY

What the vision statement basically entails is the insurance that the customer can obtain information throughout the entire journey. With the introduction of the MVP, TUI Tour Guide 1.0, and service questions, most areas are covered. However, during Horizon 3 it should be ensured that:

(1) The retail is taken into account, as this is an important asset of the omnichannel approach. The Tour Guide can be present in booking and inspiration in the physical (offline) environment

(2) The airline should be included in order to provide travel details. Information about the time of departure could, for example, be provided but also at what gate the plane will leave and travel durations.

In the end, a complete TUI voice assistant is created. An assistant that is knowledgable about the entire customer journey and is able to communicate this through a voice-based conversation.

The provided information is based on personalized data. Questions regarding flight departure and what is needed for travelling is also provided, making sure the customer does not have to worry anymore.

HORIZON 3

Talk to the TUI Tour Guide. The voice based system that knows where you should go, how you can get there and everything else related to your travels.

Required Steps:

(1) Incl. service questions (Customer Service)
(2) Add Flight Information (Airline)
(3) Include Retail

Reason for doing this:

(1) Future Vision
(2) Customer Strategy
(3) Information Provision throughout journey

Key Features:

(1) Information Provision
(2) Personal Recommendations
(3) Reassurance

State of Technology:

Natural Language Conversational Interface

9. MAKING IT VIABLE

WHAT ARE THE REASONS FOR SUCCESS?

9.1 COST OF DOING NOTHING

At this moment, it has been stated that the solution fits the desires of the consumer and that it also is feasible to create. The sweet spot of innovation, however, remains untouched as it has not been discussed yet whether the business would be able to benefit from such a new technology solution and what its chances of success are in the long-run.

This chapter will try to provide an answer to that specific question and introduce the costs of doing nothing.

It is difficult to put the introduction of voice technology into a financial perspective. Companies currently recognise that they should be involved with digital transformations. However, these transformations are often seen as evil extra costs rather than as an opportunity for the business (Kimberling, 2018). Mainly due to this reason, a lot of companies wait till a new solution has been proven to work. This is sometimes jokingly named as the ostrich approach to doing business (Caton, 2017).

So how can we know whether a particular solution will be a fit for the company? This is very difficult, as we simply cannot predict the future and the possible negative consequences might frighten companies.

Especially in the case of implementing new technologies, costs can be very high while benefits are unclear (Kimberling, 2018). A mindset to tackle this issue is proposed by Seth Godin (2015), he states that being wrong will cost you less than doing nothing.

The cost of doing nothing is a concept that is often related to the introduction of new technologies, because without actual use cases being there we simply do not know whether it willl be profitable to us (Caton, 2017). Doing absolutely nothing can be critical to the existence of your company.

An example can be made out of Kodak (Mui, 2012). The traditional photography company was unable to recognize the disruptive entrance of digital photography. The company was aware that the digital photography trend would be a possible threat to the company but believed it was a future issue that was too costly to address at that point in time.

So, the company decided to do nothing and it has been stated that this is the reason that the company had to file bankruptcy in 2012 (Mui, 2012). A bit of a drastic example, but shows that the cost of doing nothing can be very high.

A parallel can be made to voice technology. With limited use cases, it is difficult to state whether the technologies will be viable in the long-run.

We can state, however, that it is best to at least try for being wrong costs less than doing nothing (Seth Godin, 2015). The upfront costs of voice technology are also relatively low. As discussed in Chapter 3.1, building a Google Action can cost no money at all. In addition, Musement has been acquired and the company has their own Google Developers. Therefore, through the first 2 horizons, the financial risk is very low and so are the upfront costs.

Also, we must not forget the voice first strategy. As discussed in Chapter 1.3, it is essential for a company to prepare for a future in which interaction happens through voice. The cost of doing nothing is in that scenario very high, although it is difficult to put this into figures.

THE ECOSYSTEM

As stated in Chapter 3.2, the ecosystem of the technology is important to consider for the adoption. In order to do so, the voice-based solution aims to expand the ecosystem by gradually implementing the TUI tour guide. Starting off small with the MVP and gradually expanding through the ecosystem. The controlled expansion of the ecosystem heightens the chances of success of this project.

EXPOSURE

A widely perceived benefit for the business is also the publicity a voice-based solution can provide through showing a more innovative side. Showing this more innovative side is in line with the transition of the company and brings value to the image of the company.

PUSH TO PULL TRANSITION

Also, this project takes into account that a change will take place as the technology develops over time. from (supply) push to (market) pull. At first, the technology is pushed in a gamified manner whilst limiting the error. Once the customer is knowledgable regarding voice technology, all information should be included in order to answer to the consumer's demands.

TUI has a favorable competitive advantage here, being one of the only in the business that has assets throughout the entire customer journey as was discussed in chapter 2.1.

As Seth Godin (2015) stated: the cost of being wrong is lower than the cost of doing. Voice technology is such a new initiative that financial prospects are unclear and it is, therefore, easy to hesitate and do nothing.

However, with low upfront costs, the gradual expansion of the ecosystem guiding towards a push-pull transition, and great publicity for the company, makes it that the costs of doing nothing is high.

10. TO CONCLUDE

RECOMMENDATIONS AND REFLECTION

10.1 CONCLUDE & RECOMMEND

This chapter will conclude the findings of this project. It will also provide some recommendations for further research and development of voice technology by TUI.

CONCLUSION

The assignment of this project was to find a way in which voice technology would be able to enhance the dialogue between TUI and its customers. Voice technology is a rather new technology and has not been fully adopted yet by the public. It was found that the technology should be implemented in gradual steps. This way, company and customer can get used to the technology. Also, starting off small and simple enables stimulation of the adoption (Rogers, 1995).

The Brand Driven Innovation model (Boeijen et al., 2013) was used to structure this project and in order to maintain a high focus on the relationship between company and customer. It was found that the company could highly improve the information it provides to the customer throughout their journey. Within the entire customer journey, the "prepare to go" phase was chosen as a scope due to it not being of critical harm to the rest of the journey in case something would go wrong. After all, the technology is relatively new and, therefore, brings some risks with it.

Experiments aimed at validating assumptions showed that customers are looking for information while preparing for their journey. They are mainly interested in obtaining information about activities (excursions) and dining options (e.g. restaurants). A link with Musement was made, a company that was acquired by TUI and is designed around providing information about both activities and dining options. The voice-based solution, therefore, consists of an integration of the current Musement voice application into one that suits the purpose of TUI.

However, this integration could not take place within a year. As said, the technology needes gradual implementation and therefore a stepping stone was designed: Holiday Trivia. A voice application with which users can learn what type of vacationer they are and obtain holidays and deals tailored to their vacationer type.

Both Holiday Trivia and the Musement integration (TUI Tour Guide 1.0) are steps towards the future vision, in which a tui voice-based tour guide provides information along the entire journey in a personal and transparent way. In order to get there, a roadmap has been established in which the voice-based application is expanded step by step.

Voice technology is a new technology and financial prospects are difficult to make. However, the cost of doing nothing is relatively high and it is advisable to start as soon as possible.

RECOMMENDATIONS

This project has provided a roadmap towards the establishment of a TUI voice-based tour guide, providing information to the customers throughout their journey. However, there are still some areas for improvement and further research that will be discussed here.

VOICE FIRST STRATEGY

It takes more than the design that has been made in this report to be ready for a revolution towards a voice-based interaction. As has been discussed in Chapter 1.3, a voice first strategy can be adopted in order to prepare for the future. This means that you prepare to interact with your customers primarily through the use of voice technology. This also implies changing the way customers can find you in day to day life. Think, for example, about a change in Google searches. Currently, a user searching for holidays will obtain a list of sources it can scroll through. When this user is making use of voice technology, it will only provide information about the top hit. Therefore, choosing the correct keywords in searched and making sure to add brand names becomes increasingly important in such a strategy.

CONTINUOUS DEVELOPMENT OF TECHNOLOGY

As has been stated in this report numerous times, voice technology is still very much in a developing state. Projections have been made regarding the pace at which it will be adopted and grow, but this may change over time. It is recommended that TUI starts with the technology now, but also continuously monitors the developments in this field.

In addition, the interaction with the technology will change over time as data is gathered about the users. This project focusses on starting points that do not obtain personal information. However, it is quite likely that in the future this will be the case and this will change the dialogue. Voice technology will address users according to the data it has already learned and obtained.

EXTERNAL PARTIES

There has been mentioning of including external parties in the future developments of voice technology for TUI. A few parties have been mentioned, however, an assessment of possible parties should be continued. Voice technology is still in its early stages and once the technology develops, it is likely that more and more qualified parties will enter this field.

TEST WHETHER PURCHASE INCREASES

There is still one big assumption that has not been tested yet. The company is looking to increase the margin per pax through increasing the number of ancillaries that are sold to the customer. The TUI Tour guide aims to stimulate this, however, we cannot state with certainty yet that this will be the case.

OBTAIN A TUI BRAND VOICE

This report already talked about giving the voice application a TUI tone of voice in its communication. It is recommended to even further extend this to a personalized voice. The solutions in this project make use of existing Google solutions and, therefore, the voice that is provided by Google. It is, however, possible to record and use a voice that matches your own Brand Identity (Koevering, 2018). This requires at least 30 hours in a recording studio and quite some money but could be a big improvement for voice-based communication in the future.

FINANCIAL MODEL

Further research is needed to build an entire business case around voice technology as the financial models around the technology will likely change over time. At this point in time, it is important to look and see what Google will, for example, do when adoption hits. Their current objectives are not to make money out of this technology, but to stimulate the adoption (Pels, 2018). They might change this approach over time when the number of users has grown.

OTHER PLATFORMS

This project is highly dependable on Google Assistant and its developments on the Dutch market. It is advisable to also keep other options open as other platforms might support the Dutch language and thereby be a compatible solution as well.

TRUST

Lastly, trust has been found to be an important value to both company and customers. In this project, this has been taken into account by staying away from any personal data of the user. Developments in voice technology should be followed to ensure that the voice-based dialogue remains secure. This way, the company remains trustable in the perception of the customer.

The voice-based solutions that are established in this project fit the gradual development of the technology and the desires of company and customer. However, it is recommended to continuously monitor the developments regarding voice technology and adapt accordingly.

Other parties can possibly join and other platforms might join the battle for the Dutch market. In any case, a recommendation is set for a voice first strategy in which TUI as a company should make sure they are ready for a (possible) voice “revolution”.

10.2 REFLECTION

This graduation project has marked the end of my study in Strategic Product Design. In this final chapter, I will reflect on the process and outcomes of this project.

Let's first discuss the approach that this project has been taken in terms of the Brand Driven Innovation model (Boeijen et al., 2013). This was a new model to me and the approach felt quite suitable to the core of this project. Continuously looking at both the company and customer context helps build a solution that is suitable for both and take desires from both sides into account. The addition of technology to the model modified the model a bit, in the sense that a match between technology capabilities and perception of company and customers had to be made. I suspect that this relationship helped build an application that was understandable for the customer and feasible for the company.

At the start of this project, I could not have imagined that I was able to build my own working prototype and test with it. The knowledge I've gained about this new technology will remain valuable to me in the future. The outcome, the voice-based solution linked to Musement, has been accepted enthusiastically by the company and will very likely be developed.

The path to the outcome brought me through some new experiences. Getting the assistance of a team during the design phase was extremely helpful, but I did not always feel at ease as the project the team was working on was also my graduation project and my responsibility. Also, the team consisted of TUI employees which tested my professional behaviour at the same time. This made me feel like I am ready for responsibilities that belong to an actual job.

Working agile with the team got me out of my comfort zone where I went and talked to numerous people in order to validate my assumptions. I wanted to get more out there and was able to do so by also visiting multiple conferences related to voice technology. Also, during the demo days of this project, I was able to present the progress for a large audience of TUI employees, which was probably the highlight of this graduation project.

Putting everything I've done and learned into this report might have been one of the hardest things to do, so I hope it was a comfortable and understandable read. Although I feel like I am ready to start working life, there is still so much in the field both voice technology and strategic product design that I am eager to learn.

Overall, I am grateful for the freedom and trust that both my supervisors and the company gave me. This has led to an outcome that I am proud of and eager to share with others.

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