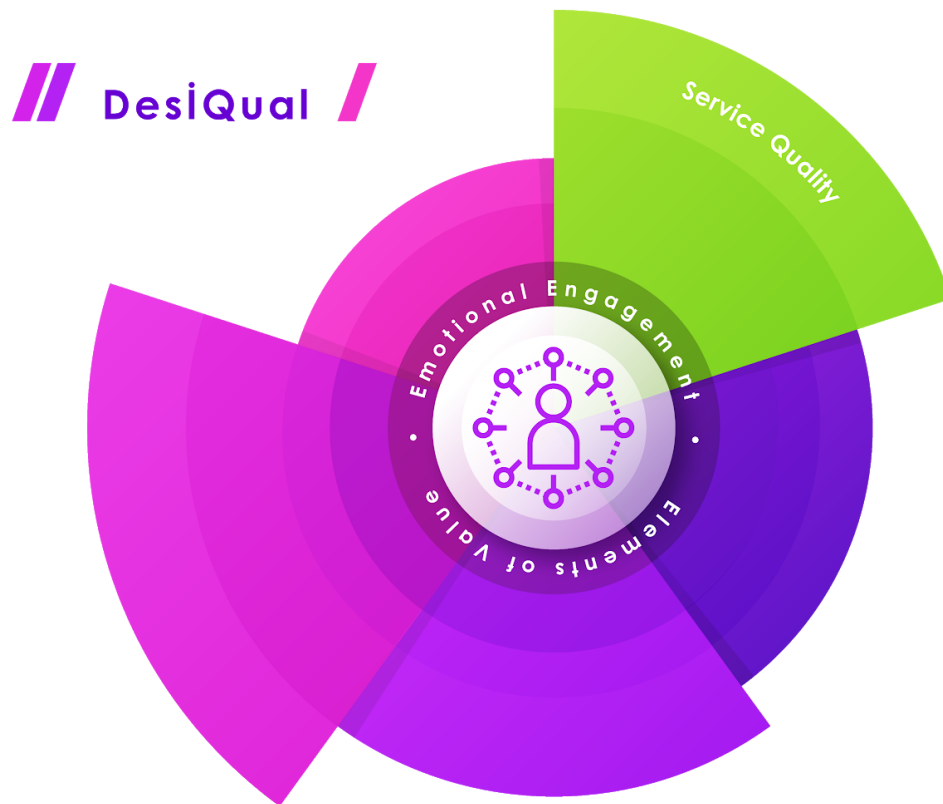


# DesiQual: Destination in Motion

Emotional Engagement as a Determinant of Service Quality  
Service Design for a Personalised Travelling Experience and Well-Being



Media Education. Master's Thesis.  
Faculty of Education. University of Lapland. Spring 2020.

## **University Of Lapland. Faculty of Education.**

**Title:** DesiQual: Destination in Motion. Emotional Engagement as a Determinant of Service Quality. Service Design for a Personalised Travelling Experience and Well-Being.

**Author:** Vésaal Rajab. **Main Pages:** 106. **Appendix Pages:** 7. **Term:** Spring, 2020.

### **Abstract**

The purpose of this study is to explore how values and emotional engagement impact well-being in Self-Service-Technology (SST). By employing methods of roleplay during a multiple case study, the narrative is visually documented and analysed through service design and social-science research tools. Previous studies indicate that the amount of value creation impacts service quality. This study proves that even though value creation is the fundamental foundation of services, it is the emotional engagement and how it is managed that leaves the highest impact on well-being. Quality of engagement has more accurately echoed the nature of the case narratives. Hence, attention to the engagement rhythm, creating services that encourage personal empathic interactions, and providing support through naturalness communication at times of negative engagement may lead to loyalty. Combining methods of social science research and service design has made the analysis approach quite demanding. Defining the multiple-case boundaries has presented some complications. Results indicate that human-agent empathic interactions can be regarded as an unattainable luxury in the wake of airport digital transformation; nevertheless, the criteria of engagement in learning and psychosocial well-being may be adopted to create effective digital services. DesiQual is an instrument model synthesised from the classical foundation of service marketing. For intangible services, the model can be utilised to explore values, emotional engagement, and digital well-being. The original concept of the door-to-door journey — combining air and ground transport through the use of Mobility as a Service (MaaS) — can be an inevitable future scenario. Such concept has been examined through the perception of multiple archetypes, and opportunities are presented within the user experience map. The pattern and results of this study can be very useful in the field of service marketing and education.

### **Keywords**

Digital Well-Being, Service Quality, Service Design, Emotional Engagement, Personalisation, Aviation, Distance Learning.

<b>1 Introduction</b>	<b>4</b>
1.1 Research Questions	5
<b>2 Background</b>	<b>6</b>
2.1 What is Digital Well-Being ?	6
2.2 Service Design for Digital Well-Being	7
2.3 Emotional Engagement for Environmental Mastery	10
2.4 Digital Service Transformation	11
2.5 Developments in Self-Service Technology (SST)	14
<b>3 Theoretical Framework</b>	<b>18</b>
3.1 Emotional Engagement Criteria: Learning Achievement	18
3.2 The Theoretical Bases of Service Quality Models	19
3.3 Synthesis: The Nordic School in Retrospect	20
3.4 DeslQual	27
<b>4 Expansion of Framework: Principles Affecting Engagement</b>	<b>29</b>
4.1 Principle One: Expected Quality	30
4.2 Principle Two: Experienced Quality	35
4.2.1 Timing: Micro-Moment Needs	35
4.2.2 The Spatial Environment	37
4.2.3 Agency and Brand Representation	39
4.3 Principle Three: Perceived Quality	41
4.3.1 The Elements of Value	41
4.3.2 Service Design for Value Creation	43
4.3.3 Service Design for Emotional Engagement	45
<b>5 Methodology</b>	<b>48</b>
5.1 Research Questions	50
5.2 Methods and Objectives	50
5.3 Participants	52
5.3.1 The Psychographic Profile: Personification of an Archetype	55
5.3.2 Introducing Akí The Explorer	55
5.3.3 Introducing Philip The Business Savvy	57
5.3.4 Ethics	57
5.4 Data-Collection Procedure	58
5.4.1 Service Design Process	59
5.4.2 Case Context and Boundaries	60
5.5 Analysis Procedure	62

<b>6 Analysis</b>	<b>65</b>
6.1 Touch Point By Channel	66
6.2 Within Case Individual Analysis: Experience Map	67
6.3 Cross-Case Analysis	70
6.3.1 Functional Needs	70
6.3.2 Emotional Needs	72
6.3.3 Life-Changing Needs	75
6.3.4 Emotional Engagement	76
<b>7 Discussion</b>	<b>78</b>
7.1 Elements of Value: Needs	78
7.2 Emotional Engagement: Satisfaction and Loyalty	79
7.3 Digital Well-Being: Mitigating a Negative Engagement	82
7.4 MaaS for Quality Perception	84
7.5 Experience Maps: Self-Evaluation for Media Education Research	85
<b>8 Limitations</b>	<b>87</b>
8.1 Methodology	87
8.2 Analysis	88
<b>9 Conclusion</b>	<b>89</b>
<b>10 Recommendation</b>	<b>91</b>
<b>References</b>	<b>93</b>
<b>Appendix</b>	<b>107</b>
Appendix (1): Nonparticipant Observation	107
Appendix (2): Service Design Tool-Box	107
Appendix (3): Storyboards	113

# 1 Introduction

A record of failed airline companies was witnessed across the globe in the year 2019 (Frost, 2019), e.g., Thomas Cook and most recently Flybe. Though this can be attributed to mergers from major airlines in order to survive a “brutally competitive” market (Slotnick, 2019), the question remains on how airline companies should maintain positive customer relationships to withstand such a fickle marketplace. To mitigate this phenomenon, one can only revert back to the essence of customer service, i.e., service quality and engagement.

In marketing literature, customer satisfaction is driven by the perceived service quality. The most significant weight of the “service functional qualities” is placed on the interactions between human-personnel and customers “during” the consumption period of the service (Grönroos, 1984, p. 8, 1985) and (Cronin, 1994; Ikechi, 2019; Mukhtar, 2017; Parasuraman, 1985; Rasyida, 2016). Accordingly, this research is situated within the dimension of “functional features” during the day of aviation travel (e.g., Grönroos, 2001, 2007). As live-human-agent interactions diminish during service consumption, and as Self Service Technology (SST) dominates the service environment of travel, how can digital services maintain customer well-being ? In this context, the most appropriate approach is to discover the circumstances that affect such an atmosphere and what causes value-in-use — feeling accepted, appreciated on a personal level, and feeling better off than before the service interaction began (Grönroos, 2008). Hence, qualities that can develop personal value and appreciation are strongly associated with the psychosocial well-being of the user (Ryff, 1995).

Concept models that were designed to measure the perceived quality in services are no longer fully viable to measure the rapid digitisation of customer service in aviation. Without reliable measurements, attempts to improve digital services can be ineffective. In order to explore the necessary perception of the user’s emotional

engagement throughout such novel changes, a modern synthesis to such existing service quality models is needed.

## **1.1 Research Questions**

- 1- What values can be obtained during the door-to-door aviation journey ?
- 2- What is the impact of values, digital well-being, and emotional engagement on satisfaction and loyalty ?
- 3- Negative engagement is inevitable; how can digital well-being mitigate and promote positive emotional engagement ?
- 4- MaaS combines transportation services into one digital solution. What is the impact of MaaS on the quality of transport connectivity at Helsinki Airport ?

Regardless of the digital interaction overload one might experience during travel, the benefits of technology in non-human service assistants can not be denied (Jylkäs & Rajab, 2018). In the midst of such an overwhelming digital environment, what values have been met and what values have been neglected, and how can service providers offer customer empathy and well-being ? Namely, what effect does emotional engagement have on the perception of service quality. As an initiative approach, it is necessary to discover the customer's personal attributes — i.e., identity, goals and needs. This can identify how well-being can be offered through journey. Service design method tools are traditionally focused on addressing such attributes affecting the user.

## 2 Background

### 2.1 What is Digital Well-Being ?

In general terms, well-being refers to the facilitation of a “good life” for a human being; digital well-being is when a good life can be provided through the use of digital technology and information channels (Burr, 2020). To manage issues of well-being, offering measurements and improvements, a multifaceted approach is needed to dissect the complexity of such concepts (e.g., Hargrave, 2006). The context of digital well-being is to understand the behavioural aspects that can lead the individual to be motivated and engaged. Namely, to create positive emotions through the use of information technology (Amichai-Hamburger, 2009).

Positive emotional engagement is more probable when most of the following psychosocial factors are experienced: 1- Self-acceptance: expression of identity online. 2- Environmental mastery: experiences that lead to learning achievements. 3- Positive relationships: information-society and online support groups. 4- Purpose in life: understand the psychographic behaviour of the user, e.g., needs and goals. 5- Personal growth: allowing values to be created and exchanged, i.e., value-in-use. 5- Autonomy: technology is able to facilitate a journey without the need of live-human-agent interactions. When such factors are channelled through technology interactions, contributing to an individual's contentment, digital well-being can be achieved (Barak, 2008; Dierendonck, 2004; Ryff, 1995; Vasalou, 2008).

In perspective to digital services for transportation, well-being can majorly be defined as the emotional engagement that leads to value, enjoyment and content (Grönroos, 1984). However, unlike online social interactions and internet use where the user is empowered to choose the time and place of interactions, in SST interactions during the day of travel, time, location, and the spatial environment is rather limited and

not in the control of the user (e.g., Barak, 2008). For example, social-anxiety can threaten environmental mastery by creating a mental block, disrupting the quality of digital interactions (Heuvel, 2012; Krashen, 1981). By understanding external matters that can impact the traveler's experience, solutions to improve digital well-being can be presented. One way of tackling these problems is by examining the individual's personality, highlighting behavioural “psychographic” qualities as a predetermined to digital well-being (Vasalou, 2008), e.g., the user's lifestyle and sought values (Zins, 1998).

## **2.2 Service Design for Digital Well-Being**

The service design research approach is to place the individual's identity in the forefront of problem solving. In disciplines such as marketing and education research, it can be more common to start the focus on the demographic segment, community groups, and culture (Cooper, 2011; Mukhtar, 2017). On the other hand, service design starts with the foundation of knowing the identity of the user, i.e., a “customer centred” approach (Miettinen, 2009). Understanding the psychological attributes of the user's identity allows service providers to know which psychosocial elements to personalise in order to facilitate digital well-being. Hence, each user reflects distinctive behaviour influenced by personality, sought values, lifestyle, and the purpose of engaging with a service. Such factors are what construct the behavioural “psychographic” profile of the user (Zins, 1998).

Non-quantifiable qualities such as value, identity and emotions can be complicated to measure. Psychosocial well-being can be overlooked when the measuring system is unable to represent a comprehensible format of such attributes (Burr, 2020). Service design tools are placed together as an “optimal” effort to visualise the psychosocial construction of identity and offer solutions for well-being. “Positive computing” is therefore possible when design is able to identify the individual's



concerns, resolve problems and create new opportunities that lead to well-being (Burr, 2020, p. 12). When user psychographics are visually evidenced and accessible to all stakeholders involved (Miettinen, 2009, p. 189), design can offer “mental filter systems” that allow respective users to filter out unnecessary information in their digital media experience (Stickdorn, 2012, p. 62). This creates a wider perspective to social science research, approaching digital well-being in a contextual manner that can offer personal significance to the user (Peters, 2018).

The more we are exposed to information technology the more it becomes a burden to process such information; in order to facilitate the user with a level of personalised interaction that can lead to well-being, the user must acquire some degree of media literacy. In education, critical literacy and expressionism offers students bases of filtration skills in media consumption, allowing important information to be brought in perspective (McLaughlin, 2020). Therefore, thinking skills should be able to develop literacy that is able to proficiently process information, turning information into knowledge applicable to specific and unique situations (Cash, 2017). However, the rapid shift towards digital societies has placed a greater burden for such skills to be applied. Namely, it is likely that users are unable to catch up with literacy and technology skills. For example, distance learning and telework can be counteractive when the user is overexposed with a plethora of information. The requirement to interact with such technology landscapes and the lack of critical and media literacy skills pose a threat to digital well-being. As a solution, when SST interactions are capable of identifying the user's skill levels, technology tools through the digital experience (UX) can bring into focus information that leads to positive action, lowering the risk of anxiety and improving the user's knowledge (Burr, 2020). Moreover, when ethical matters of data and privacy policies have been appropriately applied, personalisation can offer a deeper layer of digital well-being; thus, spiritual elements such as vitality, happiness, and self-esteem can furthermore be applied within the experience (Van Dierendonck, 2004).

Spiritual elements can be vital to the success of service marketing. Digital assistants and SST are unable to provide the same psychosocial attribute in comparison to live human interactions. In other words, spiritual elements that are associated with emotional values can prove to be more challenging to achieve without the human-touch. This gap is important to address in the wake of the digital transformation of aviation services. Service Design has revolutionised how marketing research is approached by placing considerable attention to the user's emotional state — before, during and after the service — whereas traditional marketing research has more often focused on what the customer says and does (e.g., Mukhtar, 2017); to offer well-being, it is necessary to combine all aspects of the user's actions, self-assessment and “feelings” into the research sphere (Sanders, 2002).

Digital transformation of airport and airline companies has largely focused on customer “reduction values” such as simplifying, speeding up the service process, and lowering cost (Almquist, 2016). This is often performed through traditional marketing research with quantitative statistics, generating a one-size-fits-all scheme (e.g., Mukhtar, 2017). In the past, human to human interactions allowed real-time vigilance on customers' behaviour and emotional engagement, placing the buyer and seller in more frequent contact. This allowed research scholars to be more aware of the immediate emotional effect of service interactions. However, in today's perspective, the emotional impact of service engagement has seldom been addressed following the digitization of transport services. Thus, in self-service technology (SST), there is a need for current research efforts to understand the customer as an individual, taking into account the behavioural and emotional aspects driving the individual to engage with a service. This is where the multidisciplinary approach of Service Design steps in. It evidences the customer's emotions more profoundly. Researchers are able to step in the shoes of the customer and learn first-hand how it feels to engage with digital services. Hence, design

is to construct services that demonstrate spiritual elements such as validity, meaningfulness and enjoyment (Miettinen, 2009; Stickdorn, 2012).

The service-provider aims for efficiency and market survival; therefore, marketing statistics is important. Service design thinking brings both the customer's qualitative identity and the service-provider aims under one reconciled solution. Thus, all problems are approached and solved by co-creation. Indisputably, this is a central pillar to the foundation of service design, an essential philosophy to design thinking. Co-creation encourages staff, executives, designers and the customer to discover and examine both hidden and recurrent problems. Collaborative efforts offer innovative solutions to the user's well-being and optimise the service experience (Stickdorn 2012, p. 194). Thus, rather than exclusively observing the customer in a statistical manner, service design investigates the multi-dimensional and non-quantifiable attributes of psychosocial well-being and the psychographic needs of the user.

### **2.3 Emotional Engagement for Environmental Mastery**

Mastery is when the user has acquired enough skills to manage their immediate environment (Ryff, 1995). Skills are developed through a learning experience; hence, when service environments are to a certain degree educational and skills are developed, the user is more likely to experience well-being and value. Emotional engagement is a fundamental entity of how every human-being processes information and learns (Cooper, 2011, p. 03). When observing the customer's door-to-door journey development, we notice that digital interactions are a series of learning processes. In each of the journey stages, a skill can be developed or mastered. These interactions can familiarise and promote adaptation to the service environment; hence, service engagement can be designed as a learning process that offers knowledge each time the user frequents the service. Familiarity ensures a smoother journey from which more values can be attained with less obstacles to face. An effective journey is therefore one

that transfers pain-points into a learning experience and allows the customer to solve problems as they arise (Google, 2018).

Digital tools are constantly being introduced into current educational systems, allowing users greater autonomy. The 21st Century educational scheme advocates digital literacy, skills and problem solving. Thus, focusing on the personal experience becomes vital. Propositions of emotional engagement in education can lead to the mastery of service environments. Namely, user engagement is the root element of learning (Burch, 2015), and emotions are the “heart” of an effective learning experience (Hargreaves, 1998, p. 835; Taylor & Statler, 2014). Therefore, “emotional needs is what will help address learning gaps, increase motivation to learn, and ultimately lead to a rise in student achievement” (Cash, 2017, p. 16). Similarly, if environmental mastery is a factor that contributes to an individual's contentment and psychosocial well-being (Ryff, 1995), then it is safe to conclude that emotional support is what leads to positive engagement (Virtanen, 2015), and placing emotional engagement as a pillar to digital interactions can increase well-being and learning achievement (Lee, H., 2012).

## **2.4 Digital Service Transformation**

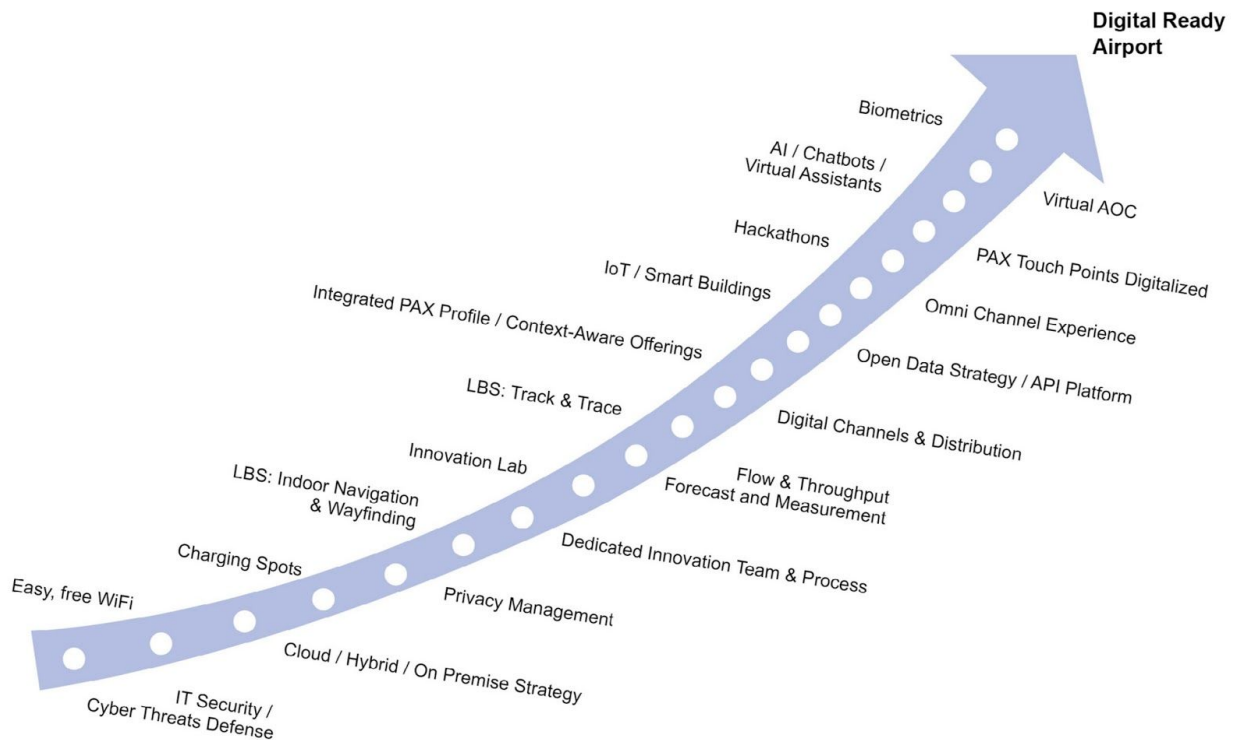
Today's benefits of self service technology are astounding. Across many industries such as travel, hospitality, medical-care and educational institutes, users are submersed in the convenience of customisation, affordability, and accessibility of services. Additionally, with the increased efficiency of service-technology and its cost-effectiveness, service providers are rushing and competing towards digital transformation (ACI, 2017; Dabholkar, 1996). Hence, In the span of two hundred years, which started from simple analog vending machines, service-technology went from providing customers with simple paper tickets to biometrically processing the passenger's journey (Biometrics, 2019). Most recently however, technology has gone as far as “frictionless” grocery shopping where customers require absolutely zero

interaction with any kind of machine or human-agent. They simply walk into the store, grab their items and leave (Qikserve, 2018).

As a result of such realities, technology-ready societies are eagerly anticipating to jump onto the wagon and indulge in digitally-driven services. For example, the nordic region's conception of digital literacy is embedded well within the educational system from an early age (Leinonen, 2014; Tømte, 2018), all within the hopes to improve the socio-cultural construction of individuals through the use of digital-media interactions. As a consequence, the Nordic region ranks as EU's "best-performing countries in digitisation" with Finland taking the lead in digital public services (Harrie, 2018, p. 03). Namely, over ninety percent of the Nordic population having access to internet-ready smart devices. The top service categories purchased with such devices are events and travel services, at 82 and 79 percent respectively. Nearly fifty percent have purchased their public-transportation tickets via mobile devices (Malmlund, 2018, p. 38). Therefore, it is safe to assume, because of consumers' positive attitude and expectation towards digitally based transportation services, SST services are likely to keep rising in the Nordics (Dabholkar, 1996), increasing dependency on digital services.

Nevertheless, numerous studies have shown links between Information And Communication Technology (ICT) with elevated levels of anxiety, depression and psychological distress. In recent years, Human Computer Interactions (HCI) has offered measurements of biometrics and stress related issues through the accelerometer of smartphones, able to detect levels of occupational stress. Nevertheless, it is argued that management of such automated processes and privacy concerns can lower the quality of well-being (Burr, 2020). This can complicate matters of legislations towards ICT policies, e.g., detecting users' stress levels in educational settings (Livingstone, 2009). However, awareness of core matters affecting the user's well-being can provide researchers to promote security measures and future policies that enhance HCI (Burr, 2020, p. 19).

To expand the spectrum of well-being, additional attributes of human biology such as ergonomics, posture and vision must also be addressed in ICT usage. With increased dependency on mobile devices, studies are projecting relationships between poor health and problematic ICT usage (Panova, 2016). Consistent connections between upper body pain and the duration of mobile device usage are evidently linked. Negative strain on upper muscles and thumbs have been associated with holding devices and using smaller sized interfaces (Budnick, 2017; Eason, 1991). Adding to such growing concerns, “blue light” emitted from electronic screens can cause strain and eye complications (Aparna, 2019). Travellers embarking on an air-travel journey are subjected to excessive on-screen interactions through mobile applications, SST machines and information consoles. In a life already filled with an alarming rate of ICT usage, travellers are obligated to face additional electronic interactions in today's service environments (e.g., ACI, 2017; Gheorghe, 2013, 2016). Such excessive conditions can be recipes to user frustration and stress. Thus, SST research must address such biological matters in order to maintain digital well-being.



**Figure 1:** Airports racing for digital transformation, (ACI, 2017). In most airports across the world, the direction of digital transformation seems to be taking shape towards functional values. These values lack emphasis on positive emotional engagement. The more a service journey becomes digitised, the harder it will be to ensure positive engagement.

## 2.5 Developments in Self-Service Technology (SST)

To identify the role of technology in services, we must understand the user's needs and why it was important to measure quality from a customer's perspective. In the nineteen fifties, people started demanding more value to their products (Mukhtar, 2017). The paradigm of consumerism started shifting away from traditional goods (tangible products) and more towards service oriented products (e.g. activity services). Throughout the following thirty years, questions would arise in doctoral dissertations on matters of service evaluation; and thus, the service marketing discipline was born

(Mukhtar, 2017). In order to improve quality in a competitively emerging service market (Grönroos, 1988), Grönroos (2007) argues that knowledge from a consumer's perspective must lead the approach to quality evaluation. Hence, the nineteen eighties witnessed marketing scholars debating the importance of customer-centered quality models by the likes of Parasuraman (1985) and Grönroos (1984). Respectively, The North American and the Nordic Schools of thought would become the most widely adopted and established theories in service quality research (Polyakova, 2015; Seth, 2005). It is thus recommended that one of the schools would conceptualise the framework of service research (Brady, 2001). Since both theories offer attributes that compliment each other, to target the quality of SST interactions, a synthesis of both schools can be the ideal backbone to a service framework (Dabholkar, 1996; Seth, 2005).

## **2.6 Media Education as a Service**

Technology plays a pivotal role in media education. As we come to realise the necessity of distance learning in the 21st century, it becomes apparent that education is shifting to become primarily a self service affair. Quality of engagement is what defines the experience. For instance, in a traditional learning environment, the experience is as important as the content being taught (Mahoney, 2017). The rapid shift towards distance learning can have its adverse effect when it is prematurely implemented. Application of service quality models can transform traditional learning to a well perceived virtual experience, defining the impact of digital well-being and emotional engagement in perspective of the user. For example, service design tools allow teachers to prototype the curriculum into the virtual environment, testing the student's literacy, technology skills and learning outcome. Service designers, on the other hand, are able to identify gaps of well-being throughout the student's digital experience (Kuure, 2014). As a result, when distance learning courses are fully implemented,



teachers are able to express and create virtual experiences with confidence and efficiency (Mahoney, 2017).

Identity is one of the most crucial aspects of well-being. It is also what service design thinking is based on. Similar aspects between the customer's engagement and the student's 21st century learning skills are found. For example, to be able to achieve engagement in education, the following attributes are examined to understand how they can affect the learning outcome: students' skills in problem solving, creativity, analytical literacy, collaboration, communication and ethics (Cash, 2017). Therefore, teachers place a great effort to understand the student's individuality, learning preferences and cultural background. Similarly, service design thinking emphasises problem solving techniques and offers digital solutions in perspective to the user's unique personality (Miettinen, 2009; Stickdorn, 2012). As distance learning requires more autonomy, media literacy and technology skills, service design can promote "thinking skills" that are able to benefit both the teacher and the student. By identifying the student's unique psychosocial aspects, engagement of the virtual learning environment can be designed to incorporate well-being.

## **2.7 Research Aim**

By utilising the service design tool of role-play, I was given access to a deeper more profound understanding of how emotions play a vital role in digital well-being. As a result, this research will evidence the emotional engagement users experience whilst traveling. Thus, it attempts to construct the identity of users by visualising their psychographic behaviour, e.g., psychosocial attributes. Review of literature indicates a lack of empirically proven quality models, capable of explicitly evaluating the user's perception of SST interactions (e.g., Dabholkar, 1996; Kang, 2004, 2006; Parasuraman, 2005; Wolfinbarger, 2003). Thus, the synthesised model of this study (DesiQual) attempts to fill in such assessment gaps and highlight problems affecting digital service interactions. The model is generally based on the Nordic School of perceived service

quality. Nevertheless, the core dimension of engagement assumes values of emotional engagement in education (Cooper, 2011). The concept of psychosocial well-being and internet use is further incorporated into how the user perceives quality from a commercial aspect. These principles are the core from which SST engagement will be based on.

The process and outcome of this research are important for media education in the 21st century. It demonstrates how to discover hidden problems in digital services when human interactions are limited. Since distance learning relies on digital media and technology, the process of this research can contribute to an innovative approach, focusing on the user's emotional state during media interactions. Hence, by adopting the theoretical background of service quality and value creation, the field of psychosocial well-being in media education can benefit from the procedure of the study, offering improved implementations to digital education.

### 3 Theoretical Framework

This chapter illustrates the following: criteria of emotional engagement in learning, the theoretical bases and synthesis of the Nordic model, and finally introduces the features of Destination In Motion Service Quality model (DesiQual). Hence, concepts of learning engagement, psychosocial well-being and service quality are synthesised to construct DesiQual, a quality model for digital services.

#### 3.1 Emotional Engagement Criteria: Learning Achievement

The goal of service engagement is to generate positive emotions from which well-being, trust, and satisfaction can be expected (e.g., Ryff, 1995). Similar to a learning experience, the quality of engagement will affect the customer perception (Pandey, 2011). By referring to emotional engagement in education, the criteria of the learning experience during a services journey is defined. Hence, aiming for a positive engagement outcome, the following adopted criteria (Cooper, 2011, p. 87; Reeve, 2011, p. 260) should be emphasised within the journey: 1- Learning is personalised. 2- Curiosity is generated and learning becomes enjoyable. 3- Interactions and communication promotes emotional intelligence. 4- Learning is a “holistic process of [environmental] adaptation” and mastery (Kolb, 2005, p. 194). Ideally, implementing the above criteria can lead to emotional fulfillment, resulting in a positive engagement. Nevertheless, positive engagement can be hindered when emotions are suppressed during times of stress and anxiety (Taylor & Statler, 2014, p. 594), creating a “mental block” that prevents the acquisition of new information (Krashen, 1981). Empathic interactions during the learning process of the journey can possibly resolve such issues as they take place.



**Figure 2:** “How empathy supports values, engagement and achievement” (Cooper, 2011, p. 121).

In order to implement the above engagement criteria, “empathy” in educational interactions is single handedly the most powerful and effective tool, leaving long-term profound learning benefits (Cooper, 2011, p. 119). When used throughout the interpersonal communication channels of services — empathy increases engagement which can result in more value creation and a positive outcome (Virtanen, 2015). Value-in-use occurs when customers are willing to open-up and express themselves.

### 3.2 The Theoretical Bases of Service Quality Models

In the previous century, marketing economics was focused on the act of product exchange, and value was created on the bases of value-in-exchange; namely, value is provided for an immediate financial exchange (Grönroos, 2008); however, in the modern sense, the logic behind value creation for long-term economic prospect has shifted towards a service oriented marketing scheme (Almquist, 2016; Grönroos, 1998; Hunt, 1991; Mukhtar, 2017). Prior to any customer interactions, physical goods are produced in manufacturing facilities; hence, consumption happens after production (Grönroos, 1998). In services however, consumption and production are often simultaneously performed. Service marketing is therefore centralised during a specific period. It is when the customer and provider are engaged in the creation of “values-in-use” rather than immediate economical exchanges (Grönroos, 2008). This critical period is referred to as “the moment of truth”. Values are co-created and

performed within the service environment, i.e., experiencing the service (Grönroos, 1988, 1990; Vargo & Lusch, 2004, 2008). Level of performance has the deepest impact on the customer; thus, poor performance during such periods is difficult to mitigate (Grönroos, 1988). Hence, to create value-in-use, the goal is to promote psychosocial values during the consumption period (Grönroos, 2008).

Aside from other contributing service dimensions, the creation of value during “how” the service is being performed is where the customer’s perception of quality is mostly anchored (Grönroos, 1988). In marketing literature, since the nineteen seventies, the moment of truth has been labeled as “interactive marketing” (Grönroos, 2001). The nineteen eighties eventually witnessed a surge of attention by research scholars who focused on customer-centred service quality models (Mukhtar, 2017). Correspondingly, attention to co-created interactive environments — how a service is being performed — has led researchers to explore the psychological attributes of service interactions (Grönroos, 1988). In other words, service is rather meaningless if a customer’s background and skills does not apply to the intended value of the service (Dabholkar, 1996; Grönroos, 2008). Hence, knowing the customer’s psychographic construction becomes vital: user identity.

### **3.3 Synthesis: The Nordic School in Retrospect**

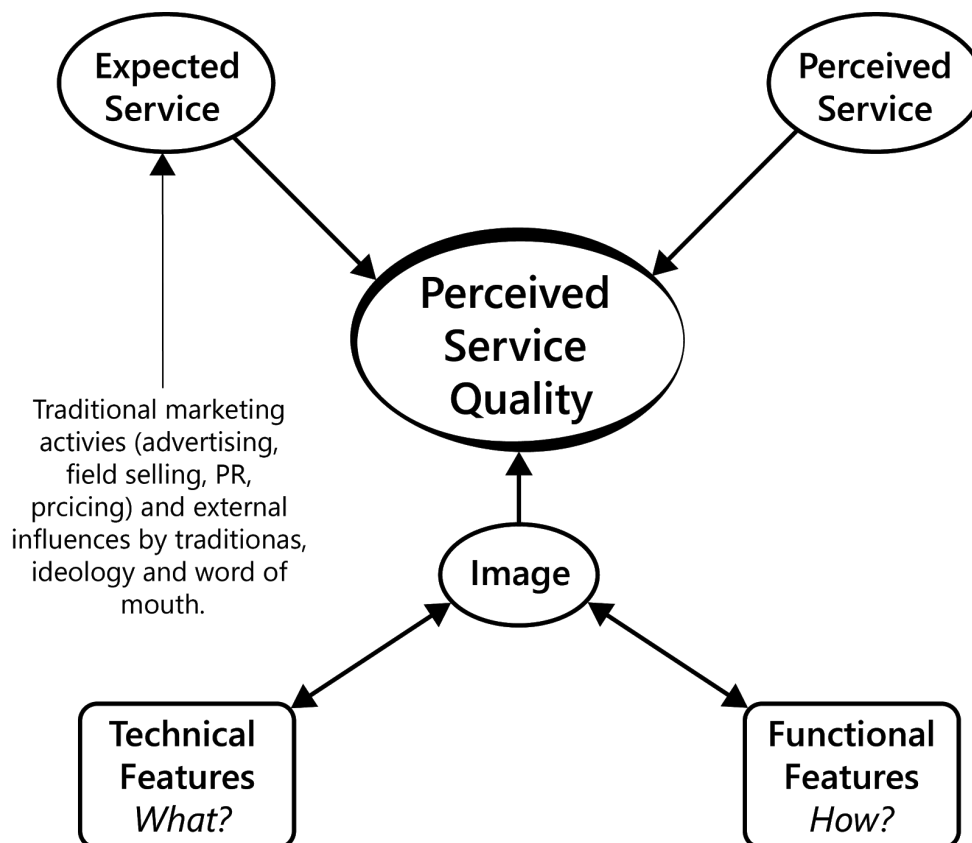
The Nordic School generally defines the functional dimension, otherwise known as functional qualities, as “how” the service process is being performed (Grönroos, 2008). In accordance, this dimension of service is also governed by the expectations a customer has before the service takes place (Grönroos, 1984). Both the expected and experienced quality will shape the image of the service and the company (Grönroos, 2008). According to the Nordic School, to influence a positive image, the provider must project the following determinants: professionalism and skills, attitudes and behaviour, accessibility and flexibility, reliability and trustworthiness, recovery (provider’s readiness in case of unexpected events), reputation and credibility (Grönroos, 1988).

Similarly, the American School SERVQUAL determines the quality of service interaction with the following: reliability, responsiveness, empathy, assurances and tangibles (Parasuraman, 1985). Between the expected quality and the perceived experience lies a “gap” from which the above determinants are able to be filled and improve overall quality. The level of performance from each of these determinants affects customer satisfaction (Ganesh, 2014; Kang, 2004; Parasuraman 1988; Polyakova, 2015).

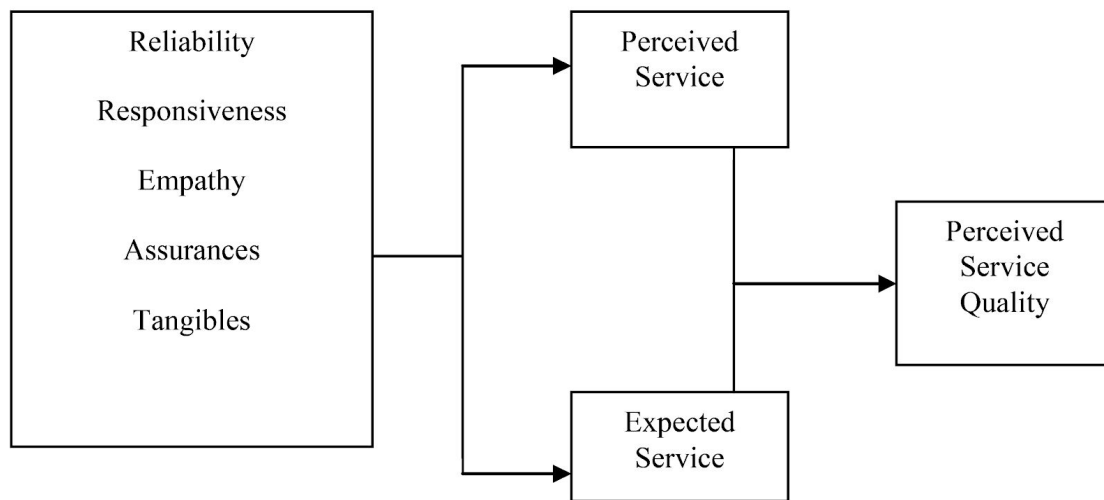
Currently, service quality research is generally dominated by derivatives of the Nordic and SERVQUAL models (Ganesh, 2014; Kang, 2004, 2006; Polyakova, 2015). Both of these concepts emphasise the role of “functional features”. Namely, service performance is the core influence of quality perception (Grönroos, 1982, 1984; Parasuraman, 1985, 1988). As a result, service quality literature frequently directs researchers to adopt one of the above schools (Brady, 2001; Kang, 2006).

To evaluate the perceived service experience, the nature and type of the service should determine which school can be favoured over the other (Pisnik, 2010; Seth, 2005). What sets these two schools apart is the added utilisation of the technical dimension within the quality model. The Nordic model has established what is referred to as the technical dimension, i.e., “what” the service is offering (Grönroos, 2007). The model makes a clear indication of such dimension (instrumental performance) and its significance to the perceived quality (Grönroos, 1984). For example, an airline service transports a customer from point A to point B. Arriving at point B precisely on time or alternatively with a delay is the technical-quality outcome. This may impact the overall perceived quality; the technical dimension must thusly be considered for quality evaluation (Grönroos, 1984). On the other hand, every interaction that happens between point A and B is the “functional dimension” of a service. SERVQUAL addresses some issues regarding the technical dimension (e.g., Babic-Hodovic, 2017);

however, the school has been deemed unreliable to explicitly employ such a factor within its model (Grönroos, 1990; Kang 2004; Richard, 1993). See below (figures 3 & 4). However, SERVQUAL has been observed to perform better within contexts of service-products, i.e, services that are accompanied with the sales of a physical product such as retail (Mehta, 2000), whereas the Nordic model has been observed to perform better at pure-services such as the “airline” industry, car rental services and the general travel industry (Seth, 2005, p. 941). Equivalently, since distance learning can also be considered as a pure-service, education services can utilise the Nordic model to evaluate students’ satisfaction level. Nonetheless, SERVQUAL is predominantly supported and favoured by researchers in the service quality market (Asubonteng, 1996; Buttle, 1996).



**Figure 3:** The Nordic Model Of Service Quality. Rendered from (Grönroos 1984, 2001). Customer's perception of quality is majorly affected by the “function dimension” of the service, i.e, how a service is performed and problems resolved at the moment of truth. DesiQual adopts the function dimension to primarily evaluate well-being, the learning experience and service engagement.



**Figure 4:** The North American School Of Service Quality: SERVQUAL (Ganesh, 2014; Parasuraman, 1985). In service marketing, empathy as a determinant is more precisely defined in the above model. From the field of marketing, DesiQual additionally adopts the determinant of empathy from SERVQUAL.

The Nordic model has projected some limitations. There is no clear definition on how researchers can measure the “functional and technical dimensions” which the theoretical concept has established (Seth, 2005). In my opinion, there is a lack of emphasis on the role of empathy as a determinant to service engagement and Customer Relationship Management (CRM) (e.g., Finne, 2017; Grönroos 2007; Tan, 2019). Empathy in service models is referred to as the personalised and individual attention to the customer (Ikechi, 2019). It is when employees have knowledge of the



customer's personal attributes (Zins, 1998) and have their interest at heart (Rasyida, 2016). In such sense, SERVQUAL and its successive analytical model SERVPERF (Cronin, 1994) have both underlined the role of empathy (Rasyida, 2016) more so than their Nordic model counterpart. This attribute places SERVQUAL in a better position for emotional engagement and learning achievements. Moreover, the Nordic model has also been rated as a concept without any operationalisation to empirically back it up (Ekinci, 1998; Polyakova, 2015).

Nevertheless, Kang (2006) demonstrates one of the few studies that have provided empirical evidence to the reliability of the Nordic model. Findings point to an overall support, qualifying the Nordic concept as a reliable measurement tool. In comparison to SERVQUAL, results indicate that the Nordic model is more appropriately suited for mobile data service evaluation. Thus, I believe that the empirical payoff provided by Kang has been a stepping stone, initiating confidence to adopt the Nordic model for studies in contemporary services (e.g, Sahul, 2016). Researchers that have utilised the Nordic School tend to do so because of its scalable properties which can evaluate beyond customer interactions. Therefore, the model has empirically demonstrated how multiple dimensions can affect the overall quality perception (Kang 2004, 2006; Sahul, 2016), e.g., backstage performance of employees and SST hardware/software performance.

As digital assistants expand beyond commercial use, and as users demand values and personalisation in digital education, quality models can be utilised for distance learning services. For instance, some researchers in education have employed the Nordic model to assess quality of learning (Ganesh, 2014). When the Nordic model was used in academic disciplines, results confirmed the relationship of the bidimensional properties (functional and technical) on the quality perception of students in “distance education” (Sahul, 2016). Paradoxically, even though this review has indicated that the Nordic model is more suitable in terms of pure-services, SERVQUAL

remains the predominant model adopted by academic disciplines (e.g, Green, 2014; Sultan, 2010; Yousapronpaiboon, 2014). This can be due to the abundance of other service fields offering referential and empirical background to SERVQUAL, despite indications that the model does not perform well under pure-service circumstances (Polyakova, 2015).

Moreover, the Nordic model is able to highlight the bilateral dynamics of the user/provider “relationship” (Grönroos, 2017). As the theoretical realm of service marketing deepens, and as the economics of all industrial countries dramatically shift from products to IT services (Miettinen, 2009, p. 28), service marketing will be constantly developing and evolving (Taylor & Hunter, 2014). Since it was inception, the Nordic model has demonstrated its theoretical adaptability and emphasis on customer relationships (Grönroos & Gummesson, 1985; Polyakova, 2015); thus, it can be acquired into today’s rapidly transforming digital services without compromising user well-being. On the other hand, SERVQUAL has “largely failed” to be integrated or conceptualised in contemporary services (Brady, 2001, p. 34).

Empathy through engagement channels is created when the provider is able to establish genuine links with the customer. Empathy is exchanged when the provider is able to initiate “friendship” (Cooper, 2011, p. 107) that is reciprocated beyond the service exchange platform. The concept of value-in-use promotes the relationship of the user/provider to go above the financial exchange; it allows the user to be viewed as a value-creator (Grönroos, 2008). For example, when providers focus on the wider “interest communities” of customers rather than being limited to the company’s brand-interactions, providers are able to develop a more beneficial relationship that can increase the customer’s value-creation (Heinonen, 2018). Similarly, being in tune to the learners’ emotions permits understanding of their “inner lives”, improving relationships and learning achievements (Cooper, 2011, p. 110). Empathy creates a trickling effect:

when users feel valued, the quality of engagement rises, and they are able to give value back to the community. Hence, through empathy, value-in-use is achievable.

Since the most significant moments of pure-services are created during the functional period, value-in-use becomes important to observe in regards to SST service performance. In cases of services that solely rely on SST, the seller's relationship with the customer during consumption will be limited to digital interaction. Along an extensive history, the Nordic model has built logic to how value is created through buyer/seller relationships, and how value creation is the single most important asset a company can obtain (Grönroos, 2008). It is thus safe to assume that the model can be adopted to evaluate SST concepts that do not include direct human assistance. Accordingly, DesiQual will generate qualitative evidence that highlights SST values in aviation services. The Nordic model's bidimensional attributes will offer this study future scalability (Ganesh, 2014). Thus, I am able to aspire towards future studies that are also designed to quantitatively measure services from a wider perspective.

In summary, the main attributes of the nordic model have been highlighted in relation to digital well-being. Literature by the founder of the Nordic School and associated peer review has led me to conclude two major outcomes. The first outcome is that the user's perception hierarchy pertains to the "functional dimension", i.e., performance and consumption. Interactions lead to a learning experience, and empathy improves quality of engagement. Thus, to achieve psychosocial well-being, it is important to include the "human" consideration in every step of SST interactions (Eason, 1991). The functional dimension has the ability to mitigate limitations and shortfalls that might have been caused by the technical features. Moreover, a negative expected service can be improved through empathic engagements during service consumption (Cooper, 2011; Gronroos 1984, 2007). The second outcome highlights value-creation. Value-in-use happens during consumption; customer's skills and know-how will extract and define values (Grönroos, 2008). Hence, with the absence of

the user's digital literacy skills — knowing how to apply the features of a service in their everyday life — service interactions will yield poor benefits (Dabholkar, 1996; Grönroos, 2008).

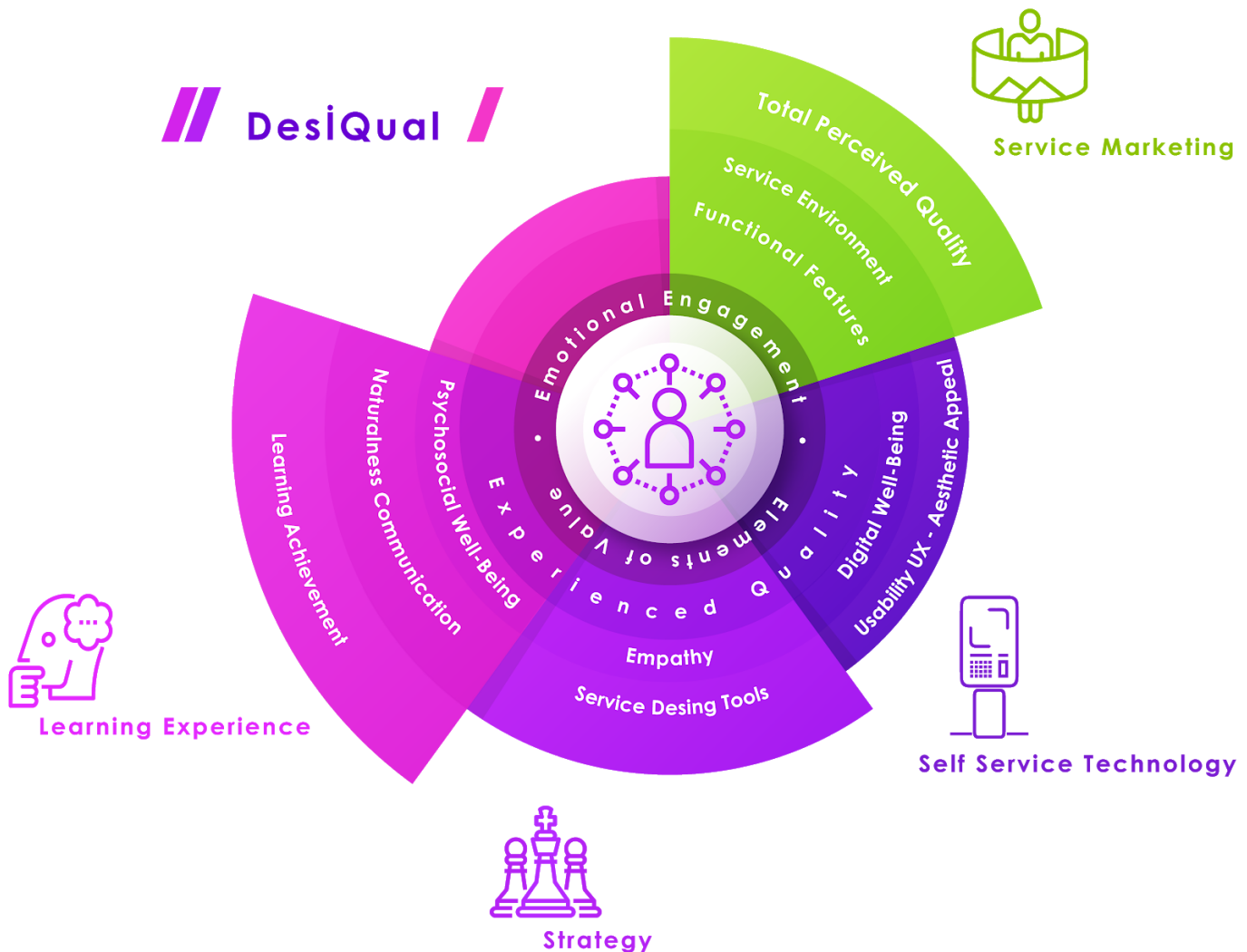
### **3.4 DesiQual**

DesiQual is a model designed to observe digital interactions, emotional engagement, and the psychographic attributes of the customer. The interconnected dimensions of the learning experience and the perceived service quality are governed by emotional engagement and empathy (Battarbee, 2014; Cooper, 2011). From the perspective of two personas, a multiple case study will provide data for the “experienced” journey (Creswell, 2013, p. 100; Grönroos, 1984). The strategy employs several service design tools to probe user interactions. These tools, ethnographic in nature (Miettinen, 2009, p. 15; Stickdorn, 2012, p. 137), will be used to gather data from both the customer and the service provider. Furthermore, in case of service gaps, additional design tools will provide solutions through a future service roadmap.

Well-being attributes such as functional, emotional, and life-changing needs are explored according to the Elements of Value (Almquist, 2016). To assess whether value creation or emotional engagement has the strongest effect on satisfaction, DesiQual evaluates the level of dramatic engagement (Stickdorn, 2018, p. 48) and learning experience (Cooper, 2011) on the perceived service quality.

Self-service technology (SST) interactions are pivotal in aviation services. SST and digital information tools can enhance the functional features of a service (Furey, 1991; Grönroos, 2007; Miettinen, 2009; Oertzen 2018). Since the nineteen eighties, which initiated service quality in research, service models have gradually incorporated the role of information technology tools into the equation (Bogicevic, 2017; Broderick, 2002; Santos, 2003; Soteriou, 2000; Zhu, 2002). Some models are industry specific; for example, Bogicevic (2017) has developed a tailored instrument to measure customer

satisfaction within SST services of airports. DesiQual is similarly designed to focus on aviation service quality; however, unlike Bogicevic's model, DesiQual is designed to explore the quality of SST along the entire day of travel. Namely, functional and technical outcomes of each transportation service will affect one another; it is important to evaluate all digital channels associated with the journey. The door-to-door experience is defined by every transportation means the customer uses during the day of aviation travel.



**Figure 5:** DesiQual is an instrument model designed to investigate the digital well-being of service environments.

## **4 Expansion of Framework:**

### **Principles Affecting Engagement**

This chapter demonstrates principles that may affect the travellers expected, experienced and perceived service quality (Grönroos, 1988), a closer look into the dimensions of DesiQual. Hence, expectations, anticipated values, and user skills will affect well-being in aviation related services (Dabholkar, 1996; Hemdi, 2016).

There are various principles that can affect a customer's perception of service quality in aviation journeys. Conditions related to the moments of digital interactions will shape the perceived service — e.i., experienced quality. Self Service Technology (SST) is defined here as any electronic device that assists travelers to complete their door-to-door journey, without the aid of live-human-agents. The operation of SST can be separated into two major aspects: 1- What happens in the background such as the technical hardware capabilities of the electronic device. 2- How the customer interacts with the media software of SST, i.e., design of the User Experience (UX). Hence, interactive media has a significant role in translating complex algorithms and augmenting the user's abilities (Jylkäs & Rajab, 2018). Thus, UX simplifies transactions by personalising the experience; in turn, it empowers and guides to value-in-use (e.g., Grönroos, 2008). Moreover, in the moment of truth, when the digital experience is being consumed, visual communication promotes positive customer behaviour (Kujur, 2019). Namely, when SST check-in kiosks display pleasing visuals, customers are encouraged to engage with such electronics (Ku, 2013). Interactive visual media can cause “emotional appeal” which is crucial to service engagement (Rietveld, 2020, p. 36).

Personalisation identifies the user's skills and mental filters (e.g. Krashen, 1981). Information And Communication Technology (ICT) is challenged to deliver the demanded value within a precise moment (Google, 2018). Hence, value delivery through ICT depends on external variables such as timing, the user's filtration system and education (Civan, 2017). If values are designed to correspond with the user's psychographic needs, the UX experience should be able to identify values that can impact personal well-being. Thus, in context of aviation journeys, providers should have an understanding of principles that directly and indirectly affect the traveling archetype.

#### **4.1 Principle One: Expected Quality**

From various sources, a customer can build expectations for an anticipated service. Firstly, internal and value targeted marketing communication such as online advertisement and promotions can directly control the customer's expectations of a service (Finne, 2017). On the other hand, external factors such as word of mouth and ideology are not controlled by the service provider — and they can also significantly affect the customer's expected service (Grönroos, 1984). In this first principle, the ecological impact of air-travel is an external source that can be crucial to the customer's expected service. Thus, this section will explore ways to reconcile the image of today's aviation industry in regards to air pollution.

Global economic improvements have led the way for the aviation industry to grow and prosper. Demand for air travel has significantly grown along the way. This means more demand on aircraft in operation (Tozer-Pennington, 2019). For example, for the past twenty three consecutive years, Nordic Aviation Capital, a commercial aircraft leasing company headquartered in Denmark, has become the largest aircraft leasing company in the world, and has marked another growing sales record in 2019 (Overgaard, 2019). This surge of growth has caused airports within the region such as Helsinki Airport to also witness a record increase of ten percent in passenger volume

(Finavia, 2019a). Moreover, aviation traffic is expected to grow two folds from its current statistics, catering to more than eight billion travelers by the year 2037 (IATA, 2018). Even though the largest regional market in aviation traffic is expected to shift eastward towards Asia, Europe will remain the second largest in the world (European Commission, 2017; IATA, 2018). According to such developments, infrastructure and SST is likely to mirror such growth because technology aids airports to process higher volumes of passengers (Bruno, 2019). For example, SST has already evolved to process customers without any documents or physical input transactions. By simply recognising the traveler biometric attributes, within seconds, SST is able check-in the traveller all the way to the gate (Biometrics, 2019; Finavia, 2017).

However, with such leaping technologies in aviation, what is the impact on the natural environment ? The answer according to environmental institutions is a surge in “air-pollution”. From 1990 until 2017, commercial flights originating from the EU/EFTA have caused an increase of 171 million tonnes of CO<sub>2</sub> emissions, an increase of more than ninety five percent. From air traffic alone, by the year 2040, growth trends will inject an estimated twenty one percent further emissions into the environment (European Aviation Environmental Report, 2019). Simultaneously, the UN is urging rapid and unprecedented actions to lower CO<sub>2</sub> levels, targeting transpiration and other industries in question. Namely, the UN declares that unless emissions are drastically lowered, by the year 2050, the current rate of CO<sub>2</sub> levels will cause a global temperature increase of 0.5°C. This change will trigger worldwide climate related devastations and catastrophes (IPCC, 2018). Nonetheless, the report indicates that by limiting global warming, human health and biodiversity can improve. On such note, the EU is spending twenty billion euros per year to treat health conditions caused by air pollution (Carmichael, 2018).

Therefore, it is no surprise that the term “flight-shaming” has taken momentum in the Nordics. For example, international air travel originating from Sweden has increased by more than sixty percent since 1990 (Ledel, 2018). Swedish climate scientists are



urging people to reduce their dependence on air-travel, stating that per kilometer, air travel emits close to three hundred grams of CO<sub>2</sub> as opposed to 158 by train. This has led flight-shaming to become a growing phenomenon. As a result, in 2018, commercial aviation in Sweden witnessed its first decline since 1990 by more than three percent (Ledel, 2018). On the other hand, neighboring Finland does not seem to have caught up with the trend. Ironically enough, even though the Finnish prime minister has echoed the UN report by demanding faster actions towards emission cuts (Yle, 2019), Finnish airports across the nation have witnessed an unprecedented growth in traffic (Finavia, 2019a).

Nevertheless, the need for air-travel and its consequences can perhaps be reconciled. Globally, a new segment of environmentally conscious travellers has clearly emerged (Davison, 2014; Ledel, 2018). The negative environmental image of aviation has influenced psychological factors that are causing a new wave of consumer behaviorism. For instance, even though Kuwait International Airport (figure 6) is aiming to be the first with LEED gold credentials in environmental sustainability (Foster + Partners, 2019), to the contrary, this move does not seem to directly target the emotional aspects of such a segment. It is rather a competition amongst airport technologies and developments; namely, it is not a cost effective measurement to win over the psyche of environmentally conscious travellers. Approaches to mitigate the image of aviation in this concern must first take the segment's behaviour into perspective.



**Figure 6:** Kuwait International Airport for LEED Gold Certification in Energy and Environmental sustainability (Foster + Partners, 2019). How does this affect the customer's expected quality and their ecological concerns ?

Commercial aviation, trains and subways are all within the umbrella of mass-transportation. And clearly, mass-transportation emits much less pollution into the air in comparison to single-occupant automobiles (National Express Transit, 2017), making environmentalist “more likely” to choose public and mass-transport over other means (Kahn, 2007). This is a positive point in regards to mass-transportation. Since the door-to-door aviation concept is composed of shared and mass-transport means, it has an optimistic potential to promote a positive environmental image. Hence, by combining air and ground travel into a single Mobility as a Service, digital solutions through mass-transportation can possibly offer a reconciling answer to air-pollution concern.

The following will illustrate Mobility as a Service (MaaS) and the nudge approach. Firstly, MaaS has turned ground transport from a tangible product, such as ownership of

a car, into a pure service that allows the individual convenient transport benefits without having to own a product. Thus, MaaS is an integrated service system of various transportation means under a single digital platform (MaaS Alliance, 2019). Through mass-transportation and shared cars, MaaS has proven to be extremely successful by simplifying the customer's journey process across all ground-transport systems. For example, with a virtual ticket on a mobile device, HSL Reittiopas is a mobile application and an online site that allows to plan, book and access combined journeys through trams, trains, subways, buses and even ferries within the greater Helsinki area (Reittiopas, 2019). Secondly, the “nudge” can encourage users to choose the most viable solution in terms of climate suitability. By employing the power of default according to the nudge theory — without restricting a person's right to choose or limiting alternative options — psychographic behaviour can be altered into actions that reinforce positive benefits to the individual and societies as whole (Thaler, 2009). For example, in 2012, pension programmes in the UK decreased to an alarming level. The nudge strategy was applied by the government, having employees automatically enroll in a pension saving scheme, unless they opt out of the programme. In 2016, the pension scheme rose from 2.7 million to 7.7 million (Chu, 2017). Environmental programmes can be similarly introduced to customer aviation services.

To bring MaaS and the nudge concepts into digital well-being perspective, the first approach is to create a unified platform system from which planning and paying for the combined aviation journey is possible, offering the entire door-to-door journey as one single convenient service (MaaS Alliance, 2019). From a list of available air and ground transportation means, the second approach is to have the system nudge travellers to choose journeys emitting the least environmental footprint. Theoretically, by combining the two approaches during service consumption, and projecting visual evidence of MaaS environmental efforts, e.g., indicating routes with low footprint (Burr, 2020, p. 16), the customer may start to associate environmental sustainability with aviation journeys.

For example, in 2019, to address customers' climate concerns, advertisements from KLM airlines were actually promoting their customers not to fly. Meanwhile, if customers find it necessary to do so, the same promotion encourages them to join a “carbon-offsetting” online programme (Wilson, 2019). Such a programme is an appropriate candidate to utilise the MaaS and nudge system. Unfortunately, this theoretical approach can be complicated to implement at current times. Convincing companies to merge their hard-earned data is not an easy task; merging ground and air data to create a MaaS system can be cumbersome since several independent stakeholders are involved. Nevertheless, for the greater good, the will to implement such a scheme is visible (e.g. Finavia, 2019b). And preliminary actions from major Nordic airports to share flight-data will possibly lead the way to such schemes being implemented in the future (Finavia, 2018a).

## **4.2 Principle Two: Experienced Quality**

Attributes found in this principle are likely to affect the customer's perceptions during the experience, i.e., moment of truth. In these moments, the following is under critical examination: the performance of “how” the functional features are being produced and “how” the service is being consumed (Grönroos, 1988). Accordingly, this section will illustrate three aspects affecting SST interactions: 1- Timing. 2- The spatial environment. 3- Agency and brand representation.

### **4.2.1 Timing: Micro-Moment Needs**

Attention to customer concerns during the Micro-Moment Needs is essential in digital services. The purpose of SST through hand-held devices is to offer assistance at the precise time of need. As a traveler, the customer goes through four steps: dreaming, planning, booking and experiencing (Google, 2018). Information clutter or lack of proper assistance, especially during the experiencing moments, can have an adverse effect on

the perceived quality. For example, customers who have just missed a flight will probably need an alternative flight or a hotel to stay at. The challenge here is to intelligently predict any surprises that might occur and offer precise and personalised solutions on the spot (Stickdorn, 2012, p. 45).

The process of time and engagement differs from one service to another. For instance, with digital services for physical products such as online retail shopping, UX is intended to increase general exposure and engagement (Parasuraman, 2005; Wolfenbarger, 2003), whereas in pure services such as mass-transportation, precise timing of engagement is limited and can be extremely critical, i.e., overexposing the user to numerous options can have an adverse outcome. Therefore, interactions at the time of micro-moment needs can significantly alter a customer's journey process (Google, 2018). Furthermore, travelers' archetypes are diverse. For example, "explorers" do not necessarily plan the entire trip ahead of the experience. Their behaviour is more impulsive; they would rather choose their means of transport depending on how they "feel" during the experience (Pihlajamaa, 2018). Hence, SST can empower such psychographic groups with tailored interactions at the precise time of need.

As for the physical environment, unlike some digital services where users can choose the physical place of engagement (e.g., Parasuraman, 2005), during the transport experience, SST interactions are happening under designated and controlled physical environments (Bruno, 2019; Ku, 2013). In this sense, trust and perception is influenced by the provider's investment in its buildings and transport facilities (Doney, 1997). Quality models SERVQUAL and its successor SERVPERF have defined the "tangible dimension" as physical facilities of the service; they range from equipment, employee appearance and communication materials (Cronin, 1994; Parasuraman, 1988). Brady (2001) empirically presents the service environment — facility design, ambiance, social conditions — as a factor that affects customers' assessment of quality.

Hence, in order to evaluate the SST environment during interactions, I have divided the physical environment into three aspects: spatial perception, SST agency, and AI solutions.

#### **4.2.2 The Spatial Environment**

Spaciousness is a human fundamental need. Larger rooms are more positively perceived than smaller ones (Barucha-Reid, 1982). Contrary to small crowds, rooms that are socially dense are labeled as “annoying” (Nagar, 1987). A positive perception of spaciousness is essential for both humans and animals alike — especially whilst under stressful or threatening situations. Namely, having the perception of ample “flight distance” can lower anxiety (Hediger, 1950, 1955). Considering busy airports and the common configuration of seats on commercial flights, providing ample space is a necessity that is not always attained. Increased passenger aggression “air-rage” has been linked to the confined spaces travellers are subjected to whilst onboard a flight (Diederiks-Verschoor, 2012). On the other hand, social settings that provide adequate and positive spaces contribute to “psychosocial” well-being, and this can affect the learning experience (Zandvliet, 2005). Thus, when the spatial environment supports learning, SST interactions become more effective (Virtanen, 2015, p. 02).

Regardless of the actual physical attributes, the perception of space can be altered and enhanced. In confined spaces, human impression of spaciousness can change depending on the placement of objects (Stamps, 2009). Findings have provided proof that an area’s spaciousness is usually judged by horizontal factors; thus, areas that seemed horizontally larger were perceived as more spacious than those with narrower horizontal offsets. For example, even though the height of buildings remained the same, ancient Kyoto streets with wide and shallow setbacks (figure 7) were judged as more spacious than those with narrow and deep setbacks (figure 8) (Stamps, 2009). Rather than the amount of vertical space, the visual perception of spaciousness is

judged on the amount of peripheral space a human can recognise. Accordingly, to accentuate cabin space, new aircraft craftsmanship echoes the above by applying “tricks of the eye” through strategic object placement and dynamic lighting (Ornan-Stone as cited in Seeker, 2016).



↑ **Figure 7:** Wide and shallow setbacks are perceived to be more spacious.



↑ **Figure 8:** Narrow and deep setbacks are perceived as less spacious.

### **4.2.3 Agency and Brand Representation**

As more airlines rush to replace ground employees with the implementation of SST (Ku, 2013), machines are challenged to show similar positive attributes in retrospect to human agents. For example, human verbal interactions, employee uniforms, and traditional service desks represent the brand's physical dimension (Brady, 2001; Cronin, 1994; Parasuraman, 1988); the SST outwardly appearance, media software interactions and the placement of SST machines will likewise represent the brand's physical dimension. Thus, in contemporary terms, attention to such SST attributes is vital to the brand image.

Airport services such as facial-recognition check-in gates (Biometrics, 2019; Finavia, 2017) and AI processing services (The Japan Times, 2017) exhibit an arguable degree of agency (Jylkäs & Rajab, 2018); however, unlike employees, the lack of empathy between the digital agent and the customer can lead to negative engagement. For example, digital service environments have conditioned the user to be self reliant and quick (Gheorghe, 2016); however, when SST is placed in an authoritative position and the user is facing a problem, the forced implementation of non-human services can jeopardise digital well-being, leading the user to resist further interactions (Feng, 2019).

Surprisingly, in AI interactions for educational purposes, it is not entirely "trust" that drove users to disclose and exchange information, it was rather the length of the relationship with the AI agent (Savin-Baden, 2015, p, 311). Other factors that may influence resistance to digital agency can be the generation and skills of the user (Gures, 2018). Traveling archetypes such as the "explorer" are keen on unique learning experiences driven from social interactions (Pihlajamaa, 2018); through artificial empathy (AE), future developments can open up doors for AE and social characteristics to be integrated within the SST experience. This in turn can encourage longer relationships to occur and "positively" influence acceptance of AI agency (Leite, 2013).



Consequently, AI technologies provide intelligent solutions, assisting the traveller to achieve airport tasks more coherently (Kilian, 2019). During the day of travel, especially to non-digital-natives, the workflow and the numerous requirements of SST interactions can be overwhelming. What sets digital assistants and AI apart is the ability of AI to support a natural flow of “language communication”, simplifying the process (Jylkäs & Rajab, 2018), whereas in typical SST interactions, the system relies on non-verbal inputs that do not resemble a human-like conversation. This allows AI and humans to exchange information more effectively. For airline companies, the current trend is to simplify the cognitive process a user goes through from “booking” to “experiencing” the journey (Google, 2018). For example, KLM’s “Blue-Bot” is an AI chatbot that is powered by both artificial and human intelligence. The more a user interacts with the chatbot, the more the system is able to provide specific and personalised transactions (KLM, 2019). Hence, combining AI and human intelligence can “augment” the AI’s ability to provide a faster and more reliable service (Jylkäs & Rajab, 2018).

During the passenger’s airport experience, latest AI studies demonstrate the ability of chatbots as a step-by-step interactive assistant. AI tracking sensors can physically monitor a passenger’s whereabouts and provide proactive information at the time of need (Kilian, 2019). The challenge is to learn and understand the passenger’s airport workflow. Empirical evidence suggests that the “AIRBOT” system had decreased passengers' waiting time, walking distance, and anxieties associated with time pressure. Nonetheless, other than ubiquitous information at airports, current AI developments in aviation does not seem to provide noticeable psychosocial well-being. AI does not demonstrate empathic attributes during times of stress or confusion, e.i., understanding the passenger’s unique emotional situation and offering concerns (e.g. The Japan Times, 2017).

### **4.3 Principle Three: Perceived Quality**

Quality is always seen in the eyes of the customer; hence, the customer is the essence of a service (Grönroos 1984). In such a sense, this final principle illustrates how values are categorised in perspective to the customer's day to day life. Namely, how service design can facilitate value-creation, well-being and emotional engagements.

#### **4.3.1 The Elements of Value**

Firstly, why should the provider seek to create “value” for the customer ? Values in consumerism cater to the benefits of four types of psychosocial needs: functional, emotional, life changing, and social impact (Almquist, 2016). Along each area of needs various elements of values are acquired. By outlining the customer's psychographic identification, the process of value-creation — value-in-use — is more attainable (Grönroos, 2008). For example, by highlighting needs of the explorer archetype (Pihlajamaa, 2018), services that offer “group-affiliation” will most likely have such an archetype perceive the service with satisfaction (Almquist, 2016). On the other hand, for the business traveller archetype, their major needs lay around functional values (State of Business Travel Report, 2016); offering a simplified traveling process, saving time, and reducing risk will have the archetype redeem the service more favourably (e.g., Finavia, 2018b). This is not to say that each archetype is explicitly in need of one value over the other, it simply means that when the most appropriate needs have been provided, service outcome will be better perceived.

## The Elements of Value Pyramid

Products and services deliver fundamental elements of value that address four kinds of needs: functional, emotional, life changing, and social impact. In general, the more elements provided, the greater customers' loyalty and the higher the company's sustained revenue growth.

### SOCIAL IMPACT



Self-transcendence

### LIFE CHANGING



Provides hope



Self-actualization



Motivation



Heirloom



Affiliation/belonging

### EMOTIONAL



Reduces anxiety



Rewards me



Nostalgia



Design/aesthetics



Badge value



Wellness



Therapeutic value



Fun/entertainment



Attractiveness



Provides access

### FUNCTIONAL



Saves time



Simplifies



Makes money



Reduces risk



Organizes



Integrates



Connects



Reduces effort



Avoids hassles



Reduces cost



Quality



Variety



Sensory appeal



Informs

**Figure 9:** The Elements of Value. DesiQual case studies explore the functional, emotional, and life-changing needs according to The Elements of Value Pyramid.

Notably, both the spontaneous social wanderer “explorer” and the time conscious business traveller will intersect each other when emotional needs are observed. In their travelling journey experience, both archetypes are likely to demand the following emotional values: reduced anxiety, rewards, well-being, pleasing media interactions, fun, entertainment, attractiveness, therapeutic values and empathy. Hence, companies that have spiked with the provision of such emotional needs have attained more loyal customers, as opposed to those who were only able to provide functional needs (Almquist, 2016). Most importantly, in the general four areas of psychosocial needs, the more a company is able to inject value elements within the service, the higher service quality perception has been scored (Figure 9). For example, Apple Inc. is one of the most profitable companies in the world. It also ranks as the world's most powerful and valuable brand (Forbes, 2019). According to the Harvard business school, Apple Inc. had scored the highest ratings in more elements than any other company (Almquist, 2016).

#### **4.3.2 Service Design for Value Creation**

Service design is an academic approach to maintain or develop services that are friendly, enjoyable and meaningful to the customer (Miettinen, 2009; Stickdorn, 2012). Marketing strives to achieve effectiveness, efficiency and standardisation through technology-centred services (Miettinen, 2009). Service design, on the other hand, strives for human-centeredness by highlighting the user’s personalised narrative, focusing on the service experience (Stickdorn, 2012). A melting pot of engineering, IT, architecture and psychology, service design is an interdisciplinary approach connecting various fields to conceptualise and facilitate a meaningful user experience. By examining the values both humans and technology are able to offer, design is about harmonising the objectives of the service provider and the needs of the customer (Stickdorn, 2012, p. 50). Hence, design envisions solutions to new emerging service needs. Focusing beyond the technical outcome, it is a systematic process that allows

everyone involved to identify problems, brainstorm solutions, create service prototypes and examine the functional performance of the service. In this sense, design thinking is inline with the same principles that govern the Nordic model of perceived service quality — to create meaningful values within service interactions (Grönroos, 1984; 2008).

In a multidisciplinary environment, the designers' artistic process and skills will co-ideate, co-value, co-design, co-test and co-launch a service (Oertzen, 2018). The process is evidenced and communicated through visuals that are able to illustrate the idea; consequently, research and iterative refinement will produce a meaningful service. The most challenging aspects of design is to offer reconciliation rather than compromising the needs of one stakeholder over the other. To achieve such a goal, the design process generally comprises four main iterative stages (Design Council, 2015). The first, is the discovery stage where data is explored and collected through multiple tools. This opens up many avenues for research. Respectively, the second stage is about defining and focusing on the most viable solutions. The third stage is utilised to reflect and create dialog amongst the stakeholders. Finally, the fourth stage is the implementation of the service. Since service design production is an iterative process, research activities take place between multiple stages in a non-linear manner (Miettinen, 2009, p. 11). Interchangeably, prototypes are produced and roleplay is performed to see if new concept services are worth full public implementation (Stickdorn, 2012, p. 187, 2018).

According to Stickdorn (2012), design thinking and method tools are fundamentally used to achieve five objectives:

- 1- Customer-centred: the customer's journey is experienced by the designer.
2. Co-creative: every stakeholder is included in the design process.
3. Sequencing: visualising the service through interrelated user actions.

4. Evidencing: providing physical artefacts and visualising the intangible nature of services.
5. Holistic: The entire service environment is taken into consideration; thus, touchpoint integration should be seamless.

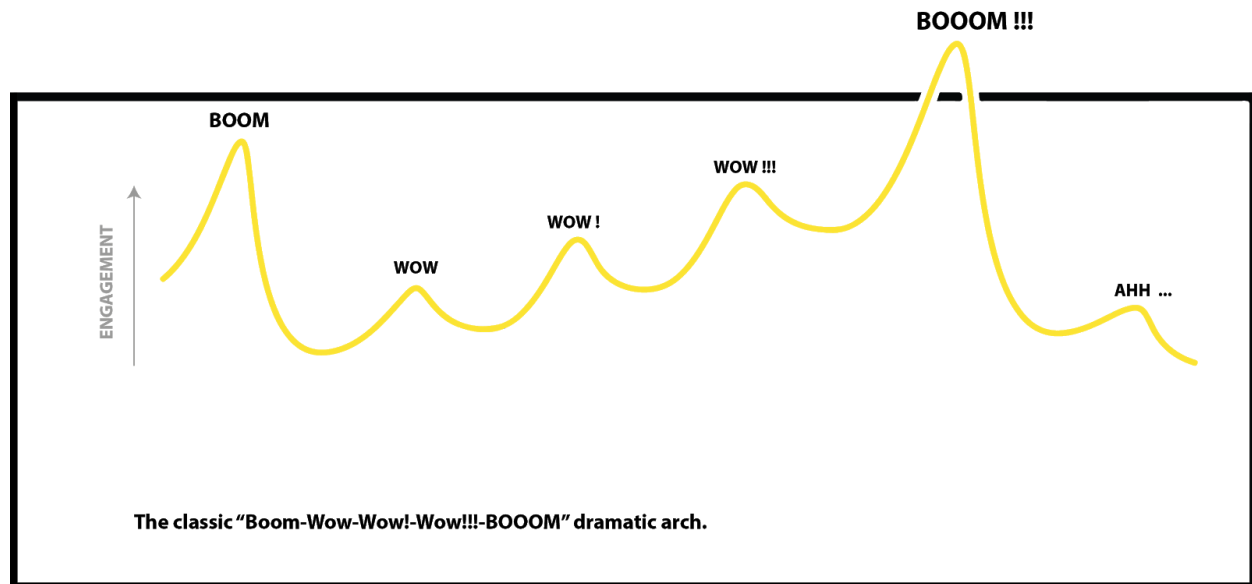
Human Computer Interactions (HCI) can be considered the forerunner of User Experience Design (UX) (John, 2014). HCI has five major attributes: effectiveness, efficiency, engagement, error recovery, and user friendliness (Fallman, 2010). Since the nineteen eighties HCI studies have been evolving; it includes disciplines of computer science, cognitive science and human-factors engineering (ergonomics). Therefore, HCI is rather academically driven. Nonetheless, the rise of the internet and consequently smart devices allowed online services to flourish, pushing HCI to partake in the visual user interface, e.i., UX (Forlizzi, 2008). Hence, UX has emerged from HCI with aims that are more industry focused (John, 2014). It can be concluded that UX demonstrates both academic and practical attributes. In this sense, SST UX should hold multiple properties in order to provide user value and digital well-being. (Stickdorn, 2012, p. 75).

### **4.3.3 Service Design for Emotional Engagement**

A service journey is a chain of intricate alliances linking multiple touchpoints to create an experience. User Experience maps are the visual representation and the tangible evidence of the experience. In a manner that is accessible to all stakeholders and researchers, such a map identifies interaction points, the user's emotional perception, and highlights opportunity points. (Stickdorn, 2012, p. 151).

Similar to a film scenario, a dramatic arch is the customer's emotional engagement with the tempo and rhythm of the service. This theatrical approach allows to highlight moments of high and low engagement; as a result, ideation and opportunities are offered more effectively. Both high and low points are forms of engagement, and not all engagement points indicate satisfaction. Thus, an emotional

experience is one that offers several rhythmic “wow” factors. For example, a high climactic “boom” moment followed by an “ahh now I understand” moment can create an intense emotional engagement (Stickdorn, 2018, p. 48). Thus, depending on the service industry and the respective archetype, a personalised service tempo can create an effective engagement.



**Figure 10:** The dramatic arch of service engagement (Stickdorn, 2018, p. 48).

Designing the customer’s experience is not a luxury, it is a necessity. Design is often linked to tangible products such as elegant architecture or a well tailored name-brand suit. Whereas in reality, design is embedded in every functional item and service we interact with. Design is what empowers individuals to do what was once impossible. For instance, it is what allows the secure and orderly process of millions of passengers in confined limited spaces. Without design, functional features and value-in-use are obstructed. Service design is finding the perfect tempo to seamlessly integrate multiple services in one journey, providing customers with “interaction fluency” that can lead to satisfaction (Cassab, 2006). How the user feels towards the SST system reflects service satisfaction; hence, positively perceived SST interactions may lead to loyalty (Chen, 2016).

Functionality and the artistic value can easily be identified in tangible products. For example, in architectural design, each individual brick creates a unified physical structure; its functional purpose is to create a habitable space. When the space is well integrated within the environment — pleasing to the user — the byproduct or side effect is “beauty” (Stickdorn, 2012, p. 68). Similarly, functionality should also be placed on top of all determinants in any service design approach. However, in order to create a “beautiful” service, well-being must be integrated within the interactions. In other words, a positive emotional engagement can lead the user to perceive a service as beautiful. The purpose of transportation is to get the customer from point A to point B; a beautiful experience is what separates one service from another.



**Figure 11:** Human-agents of JAL Airlines express apologies due to a delay, mitigating the emotional rhythm of service engagement (WhereInBacolod, 2018).



## 5 Methodology

Digital well-being is subjective to the user which means that satisfaction towards technology depends on the particular lifestyle of the user (Amichai-Hamburger, 2009, p. 210). Positive computing, autonomy and self-determination occurs when the HCI experience is “personalised” (Burr, 2020, p. 12). Therefore, in order to find digital well-being, the method approach must generate knowledge of the user’s needs, skills, behaviour, and expectations. Such knowledge leads to interaction design that is based on the individual’s attitude (Burr, 2020, p. 15). When the user is observed beyond the point of interaction, e.i., a broader viewpoint that includes the user’s “whole-life”, behavioural aspects and attitude towards digital interactions can emerge (Hewson, 2018). Therefore, methodology tools in the following approach are not designed for a one-size-fits-all average scheme. It is rather to create knowledge that is individually based.

Similarly, to discover what creates a successful learning experience in services, the full potential of the individual user must be examined. According to Rose (2017), traditional education assumes that by creating a system on the basis of the average student, most students will be able to benefit from such a system. For example, textbooks and curriculums are designed as age appropriate with a standardised time frame for the average student to learn from. This system was designed to fit within the industrial era; indeed, it was able to accomplish the objectives of standardisation. However, because economies have changed and industrial countries have shifted from factory production to IT services (Miettinen, 2009, p. 28; Rose, 2017), Rose mentions, to overcome research obstacles, students must be understood as individuals rather than an average group. He argues that by adopting “the science of the individual” all students will be able to reach their full potential, claiming that “averaganism” is unable to accomplish the diverse goals of today’s world.

To place the individual in the contemporary context of education, e.g., distance learning, technology can be designed to personalise the experience, and empower the user to express their identity (Vasalou, 2008). Digital education can tailor media interactions to fit in the skills and weaknesses of the user. Therefore, theoretically, all students in distance learning are able to reach the goals of the programme. For example, in natural science courses, the language barrier can be overcome by digital solutions such as instant translation, allowing the user to progress within the same pace as other students with higher language skills. Moreover, biometrics designed to measure stress and anxiety levels will be able to identify the student's unique “mental blocks” (e.g. Krashen, 1981), overcoming distance learning obstacles by nudging the user to engage with online support communities, which can solve emotional barriers such as loneliness (Burr, 2020, p. 8; Kurtz, 2009).

Previous studies that have utilised service design for education have demonstrated the importance of design thinking, co-creation and simulation to create new academic programmes, i.e., allowing education to be viewed as a service that can be improved before implementation (Kuure, 2013). Hence, experimental design can give way to innovative solutions for new learning techniques. Design thinking allows daily life problems to be understood. It creates a better understanding of the user's needs, offering solutions to improve skills of media management in education (Lugmayr, 2014). This can be especially vital to distance learning where the process of teaching and learning is not as conventional, requiring greater media and technology skills. Hence, media education research can find guidance within the process of data collection and analysis of this chapter. By observing the traveller's journey and SST touchpoint interactions, a similar method approach can be applied to non-conventional learning programmes that require “transformational changes” (Kuure, 2014). Consequently, the procedure of this chapter can be enacted through role-play at “SINCO”, a service prototype lab at the University of Lapland where technology-aided “academic” programmes can be simulated and placed to the test (Kuure, 2013, 2014).

## **5.1 Research Questions**

The following is a recap to major principles previously discussed at chapter 4:

1- Mobility as a Service (MaaS) provides ecologically optimised traveling solutions.  
2- Digital interactions are able to deliver customer needs at the right moment, providing well-being at critical times such as anxiety. 3- The spatial and social environments are perceived as comfortable. 4- User values are created by personalised interactions.  
5- Emotional engagement leads to learning achievements and well-being. These principles create the fundamental background from which the following research questions have been formulated:

- 1- What values can be obtained during the door-to-door aviation journey ?
- 2- What is the impact of values, digital well-being, and emotional engagement on satisfaction and loyalty ?
- 3- Negative engagement is inevitable; how can digital well-being mitigate and promote positive emotional engagement ?
- 4- MaaS combines transportation services into one digital solution. What is the impact of MaaS on the quality of transport connectivity at Helsinki Airport ?

## **5.2 Methods and Objectives**

Methodology aims to explore the amount of value elements a customer is able to obtain during a door to door journey. Along the way, levels of emotional engagement is taken into account. Psychographic attributes and SST interactions are examined according to journeys through Helsinki Airport. A combination of methods from social-science research and service design tools have been utilised: narrative research (storyboards), case study (role-play), and ethnography (observation). Hence, methodology can be categorised into the following three groups: 1- Non-participant observation. 2- Contextual Interviews. 3- Participant observation — role-play.

Non-participant observation focuses on SST interaction of two archetypes: the explorer traveller and the business traveller (see Appendix 1). Contextual Interviews, on the other hand, aim to extract information from actual travellers and service providers — while they are engaged with the service (see Appendix 2: Contextual Interviews). To place this in a social science approach for education, it is to examine the learner's interaction process within a certain context or event. Data is collected by examining individuals and their behaviour whilst interacting at the research site (Creswell, 2013, p. 95). In other words, what the user is saying and doing.

As for the participant observation, the majority of the data-collection has relied on this category. Since emotional needs are the most highly valued in services and can cause loyalty (Almquist, 2016, p. 08), “roleplay” as a method can have the researcher acquire an in depth psychological impression of how the user “feels” (Lewis-Beck, 2004 p. 976; Stickdorn, 2018, p. 204). Thus, this radical approach was needed in order for me to simulate — step into the shoes of the individuals — and explore the narrative of engagement from the perspective of the archetype, experiencing emotional details that are otherwise overlooked (Stickdorn, 2012, p. 204). For example, role-play enhances engagement in education, when used to simulate real-life problems, emotions are significantly elevated (Hewson, 2018; Wolfe, 2006).

A narrative — short stories expressed at the very moments of each interaction — has been chosen because it focuses on the individual's experience (Creswell, 2013, p. 70). Shedding light on identity, personality and behaviour, a narrative can be a chronological story intended as a “performance” (Creswell, 2013, p. 71). Hence, two individual personas with opposing psychographic characteristics have been placed under observation. Through text and imagery, documentation is conducted in chronological order. The narrative temporal changes are captured through the “Thinking Aloud” protocol, which is a technique developed to identify problems within HCI (Lewis,

C., 1982). This protocol is particularly useful because it focuses on the very initial behavioural actions and the psychological aspects of the persona. Thus, before I would have the chance to allow my personal conditioned behaviour to take over, the Thinking Aloud protocol allowed me to document the initial thoughts according to the characteristics I was personifying (e.g, Cherry, 2019).

Note, from this time forward, “persona” will refer to the role-play enactment of the two individual cases. As I analyse the narrative of the cases, I am completely detached from the two personas I once enacted; thus, personas will be referred to as a third person, and their narratives are analysed objectively without any association to my personal beliefs or values. Therefore, even though the stories have been personally formulated, the narrative type is not “autoethnography” since the social identity and consciousness was placed into the character’s beliefs and not the self. Hence, the narrative type is rather “biographical” because it depicts the behaviour and needs of other individuals.

### 5.3 Participants

- Participation is categorised into two groups: customer and service provider.



#### **Group One: Customer**

This group focuses on the user. Literature research was conducted to purposefully sample the most appropriate traveller archetype in perspective of the research objectives and principles. Service design tools were applied to obtain an ethnographic background of the two archetypes in question. A persona is an individual that represents an archetype group. I have assumed the role of each persona, referred to as participant observation. Process of role-play starts with highlighting the psychographic characteristics of the archetype; consequently, it formulates the

personified character and simulates role-play in real-life traveling journeys. A multiple case study places the two characters into similar airport tasks and door-to-door digital service activities. Additionally, contextual and Skype interviews were further conducted on two actual travellers, each resembling one of the archetype groups.

Contextual interviews are set within the vicinity of airports. The casting process aimed to find the closest resemblance to the psychographic characteristics of the sampled personas. Note, the two actual travellers are not the sample or subjects of the case studies; they are part of the archetype background research that has established parts of the persona characteristics. The major background of the personas are adopted through literature review. Customer interviews were further aimed at obtaining information for opportunity points and solutions.

Casting process: firstly, Raul who reflects the explorer archetype and the main representative case study was interviewed twice. Raul was chosen because of a comment he had left on a Google Maps destination, a location frequented by explorer travellers in Lapland. Raul's online photos were typical of such archetypes. Therefore, I established communication through the public comment section. I posted my email for further private communication; arrangements were made to meet at Helsinki Airport arrival hall. The second interview with Raul was conducted through a skype video call.

Secondly, the subordinate case study focuses on the business traveller. "Matchmaking @ ITS World Congress Copenhagen" is an online business platform dedicated for users to network and grow their business (B2B Matchmaking, 2018). Through this platform, I had the ability to search for user profiles and request a face to face meeting. By reading the general biography descriptions of the users, I was able to narrow down several candidates matching the characteristics of the business traveller. Over the course of three days, I met with multiple candidates. As a result, Nicholas, a business traveler from Denmark was chosen for a contextual interview. He is a frequent

business traveller who resembles the same characteristics established in the literature review; his participation added further structure to the personification of the business traveller archetype. Therefore, by utilising the data collected from the above participants and incorporating it with the literature fieldwork, the two persona characteristics have been anchored. These characteristics are the foundation of the roleplay method.



## **Group Two: Service Provider**

In regards to Helsinki Airport (HEL) digital service management, through a series of email exchanges with Finavia, two keyfiguer candidates were suggested according to the study's objectives. In order to create a service, transactions will take place in both frontstage and backstage (Stickdorn, 2018, p. 53). Frontstage is the immediate environment from which the user interacts with. Backstage is the digital operation of the system, away from the vicinity of the user. For the forngstage, HEL Customer Experience and Relationship manager Ilkka Kinnari was contextually interviewed throughout the airport's SST facilities. For the backstage, Matti Lehto, Head Of Operations And Digitisation at Finavia Corporation was interviewed by email, discussing HEL future developments and digital transformation.

Nichlas is a consultant for MaaS data merger and integration. He was interviewed face to face in regards to data communication and MaaS for aviation journeys (e.g., MaaS Alliance, 2019). His company employs over fifteen thousand people, a global service that provides data for MaaS purposes. Their customers are usually governments and large private transport companies. The company currently runs large-scale operational projects within the nordic region. His practical knowledge in MaaS added an empirical reference to the door-to-door concept of the case studies. Note, Nichlas had also participated in the customer group. He was part of the business-traveler background research. Thus, his interview was conducted for two purposes.

### **5.3.1 The Psychographic Profile: Personification of an Archetype**

Essentially, each archetype has a different mind-set that drives it to engage with a service (Grönroos, 2008). Hence, it is necessary to measure the quality of service interactions from a behavioural point of view — reason of interaction. A psychographic approach is when individuals are qualitatively observed according to behaviour and attitude rather than demographically (Saunders, 2016; Zins, 1998). Namely, this approach can customise the context to create user engagement (Claffey, 2019). Equivalently, in order to create emotional engagement in learning, a personal link must be established: “personal knowledge was central to the formation of positive relationships” (Cooper, 2011, p. 104).

Therefore, the DesiQual model is designed to evaluate well-being and offer solutions. Accordingly, a multiple case approach observes two different programmes within the same case boundaries. Firstly, during a conceptualised air and ground door-to-door journey, interactions of the two personas are documented in accordance to the narrative approach. Secondly, personas will refrain from intentionally seeking the assistance of live-human-agents.



### **5.3.2 Introducing Akí The Explorer**

For the main representative case, the major characteristics of Akí are inspired from an archetype that has been identified during my involvement with the Technical Research Centre of Finland (VTT), department of Intelligent Transport Systems and Mobility Services. A workshop had established five different archetypes based on their behavioural and transportation needs. The workshop provided details and visual

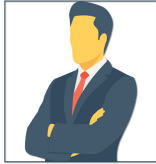


examples such as the typical attire of the explorer archetype; however, results can not be directly disclosed for confidentiality purposes. Nevertheless, for the same founded archetypes a sequential study by VTT was developed to investigate possible service solutions according to their psychographic behaviour (Pihlajamaa, 2018). The explorer archetype has been sampled from the above workshop and further developed through independent literature fieldwork (e.g., Figueroa, 2019; King, 2019; Waugh, 2019; Weaver, 2009).

For the explorer, travel is not always taken for the purpose of transportation. It is sometimes motivated by wanderlust: an urge to learn beyond the familiar surroundings. Desitiona In Motion is influenced by the following verse "If travel is searching, and home has been found, I'm not stopping. I'm going hunting" (Björk, 1997). The explorer is a growing segment group of individual travellers (Waugh, 2019; Weaver, 2009). During the journey, this archetype searches for uncommon experiences — events where local customs and traditions are expressed (Pihlajamaa, 2018, p. 06). Namely, within a series of spontaneous journeys, explorers hunt for unique and joyful memories (Lee, I., 2018). Memories that have captured their emotions become their home. But, they are not stopping there. Explorers will continue to hunt for such experiences each time they step out of the door. Hence, the element of discovering new societies and establishing a deeper connection to foreign worlds is of extreme value to such archetypes.

Interviews with Raul were conducted to validate the workshop findings and literature review. The following has been confirmed: 1- The explorer can be an individual that projects high interest in social interactions, affiliation with foreign groups, unique experiences, and special artifacts. 2- These types of travellers like to plan their journey on the go; thus, they value flexibility. See [Aki's](#) storyboard (Appendix 3). Compared to live-human interactions, it is hypothesised that SST offers inadequate social and emotional values for such travellers; hence, the purpose of sampling the

explorer is to discover the perception of service quality when highly sought values are possibly unfulfilled.



### **5.3.3 Introducing Philip The Business Savvy**

For the subordinate case, sampling the individual was set on attributes that would contradict the psychographic behaviour of Akí The Explorer. "The Business Savvy" values time more than any other travelling archetype (State of Business, 2016). Needs of this archetype are mainly geared towards functional and reductional values rather than emotional, social, or forieng-group affiliation. See [Philip's](#) storyboard (Appendix 3). This approach has been chosen to provide a comparative platform (Cole, 1981), offering a cross-case comparison that can be analysed in relation to the representative case (Creswell, 2013, p.101).

### **5.3.4 Ethics**

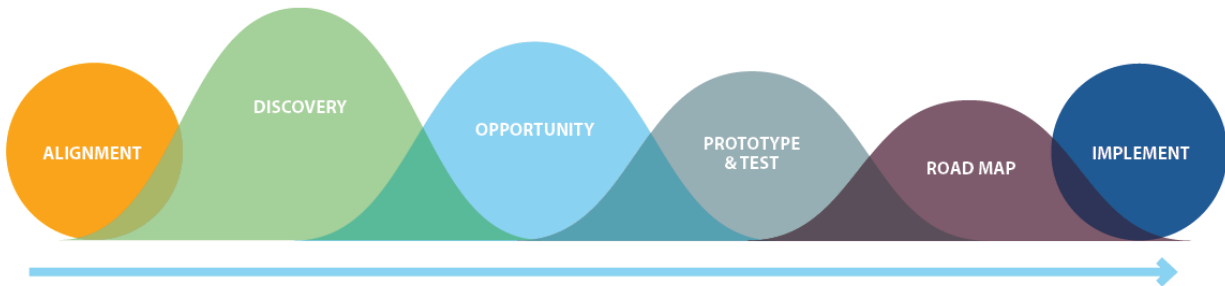
Before the data collection process, all participants were thoroughly informed of the purpose and nature of the study. Participants have consented to use the provided data for the purpose of this research. Agreements have been documented through email conversations and chat logs. All have agreed to disclose their names, titles and affiliation except for Nichlas who chose for his last name and company affiliation to be concealed. Note, according to airport management, photo and video documentation is allowed for personal use at HEL and Copenhagen Airport (CPH). Nonetheless, airport management and the respective airline companies were notified by email and verbally about the nature of the research, e.g., visual documentation. Permission was granted; visual data was majorly used in storyboards. Any photos with recognisable facial features have been concealed.

## 5.4 Data-Collection Procedure

Intent of the research design is to explore psychographic behaviour and its effect on the perception of well-being. Thus, emotional engagement, type of value, and the amount of values are explored throughout the conceptual MaaS journey. Consequently, it is to understand which of the above reflects a higher likelihood of service quality perceptions. Research design aims to investigate whether the analysed level of emotional engagement or the amount of values lead to digital well-being. *Data collection started in June of 2017 and ended in April of 2019.*

The case study method has been adopted because of its advantages: acquiring an in-depth understanding of psychological manners that affect the individual's identity (Creswell, 2013, p. 97). Moreover, in order to cross-examine the different perspectives of well-being, a collective approach of multiple cases studies has been chosen. The programme of both cases is set within boundaries of HEL airport. Arriving and departing from an airport requires multiple journeys and touchpoint interactions; thus, the boundary is multi sited. It involves transitioning to physical stages beyond the airport's premises. Both cases demonstrate a real-life event; nevertheless, an "intrinsic" theme (Creswell, 2013, p. 98) will be carried out: the personas will refrain from interactions with live-human-agents. In service design, an intrinsic technique is referred to as "What If ..." (see Appendix 2: What If ...).

### 5.4.1 Service Design Process





**Figure 12:** To offer a dynamic overview of the journey and a multidimensional perspective, the five steps of data collection include three major categories: what the user is saying, doing, and feeling (Sanders, 2002). These steps are designed to explore value and service engagement, offering opportunity points and presenting a preliminary roadmap to future services.

In particular, the service design tool of roleplay has allowed me to “feel” a deeper connection with the customer and the service environment. This radical approach was needed in order for me to emotionally witness well-being from the user’s perspective. Consequently, “storyboards” represent the narrative of roleplay (Miettinen, 2009 p. 23). Namely, storyboards are designed to evoke emotional response from the reader “the story serves as a starting point for the emergence of feelings” (Dessart, 2019, p. 193). Thus, step 04 (Figure 12) was extensively performed and took the longest to prepare and achieve. Inevitably, step 05 is the analysed outcome of all previous steps.

#### **5.4.2 Case Context and Boundaries**

Narratives of the storyboards were collected during a multiple case study approach. During the day of travel through HEL, each case follows the traveller within the boundaries of five sites (physical stages). These sites represent interactions of the service environment. Within-case followed by cross-case analysis are used to examine the persona’s perspective of well-being (Creswell, 2013, p. 100). Each case demonstrates an arrival and departure journey process. Namely, the door-to-door MaaS experience ends and starts from a ground location in Finland, proceeds through HEL, and onto the aircraft cabin experience. Akí interacts with the following: 1- HEL service

environments and SST services from SAS airlines. 2- Helsinki's HSL Reittiopas for local transport. 3- VR intercity train services for national transport. Philip interacts with the following: HEL service environments and SST services from Finnair airlines.

2- Helsinki's HSL Reittiopas for local transport. The boundaries are divided into five physical stages (figure 13). Both cases represent stages that are linked to the dynamics of HEL digital services. Other originating and destination airports are not part of the case boundary. Results will illustrate the different types of SST interactions pertaining to each of the stages: service channel touchpoints.



**Figure 13:** Boundaries. Case boundaries are represented in a circular motion to indicate the interlinked stages of aviation travel.

## 5.5 Analysis Procedure

In general, the goal of the analysis is to visualise the following: process of the journey, digital interactions, psychographic behaviour, needs, and values. The theme focuses on how the above can be achieved if digital assistants were explicitly used without seeking human assistance. Hence, features of SST service environment and the effect it has on well-being is analysed. Results will demonstrate quality perception according to the number of value elements (Almquist, 2016) and levels of dramatic engagement (Stickdorn, 2018, p. 48). The respective opportunity solutions are matched to the service gaps of each individual case. And finally, well-being is analysed according to the psychographic needs, e.i., which persona will perceive the service with higher quality. To achieve the above, a series of three steps will be performed.

### Step 1

Post-it speech-bubbles and visuals were used to illustrate the storyboard narratives. From each storyboard, the analysed within-case data output will be visually represented through a journey experience map (Stickdorn, 2018; p. 43). Each map represents one case study and its thematic tensions. Hence, pertaining to each persona, analysis interprets behaviour “narrative” in relationship to the context “events”. In this step, analysis aims to “define” the journey process, SST features, user’s behaviour during the journey, and obstacles (e.g, Design Council, 2015).

Accordingly, storyboard narratives (texts and photos) are analysed by ATLAS.ti software. Each of the five physical stages is analysed separately and then linked to formulate the within-case analysis, i.e., experience map. The storyboard is analysed through two major categories: customer needs and emotional engagement.

1- In the category of customer needs, subcategories include functional, emotional, life-changing, and social impact values. These subcategories reflect the research principles “analysis theme” and place tension on well-being. The type and amount of value elements each persona collects is noted.

2- In the category of emotional engagement, three subcategories are created. Two of these subcategories involve emotional high and low points (delight versus pain points). The third one will specifically target any direct empathic interactions. This reflects the customer’s learning experience during the service. The well-being theme tension is placed on the following: 1- Understanding the passenger’s unique emotional situation at times of need. 2- offering solutions whilst keeping the customer’s emotional state at heart. Thus, for each service stage, results of the emotional engagement category will formulate a visual arch. This arch can also be interpreted as the rhythm of the service.

## **Step 2**

Depending on results from the previous step — where gaps and obstacles have been defined — analysis of the second step focuses on opportunity points and solutions. Data collected from the customer and provider groups, and findings from the literature fieldwork, are sources for potential solutions. Hence, the category of opportunity points will be created by processing the entire data of this research. By concluding Step 2, two experience journey maps pertaining to each persona will be completed.



### **Step 3**

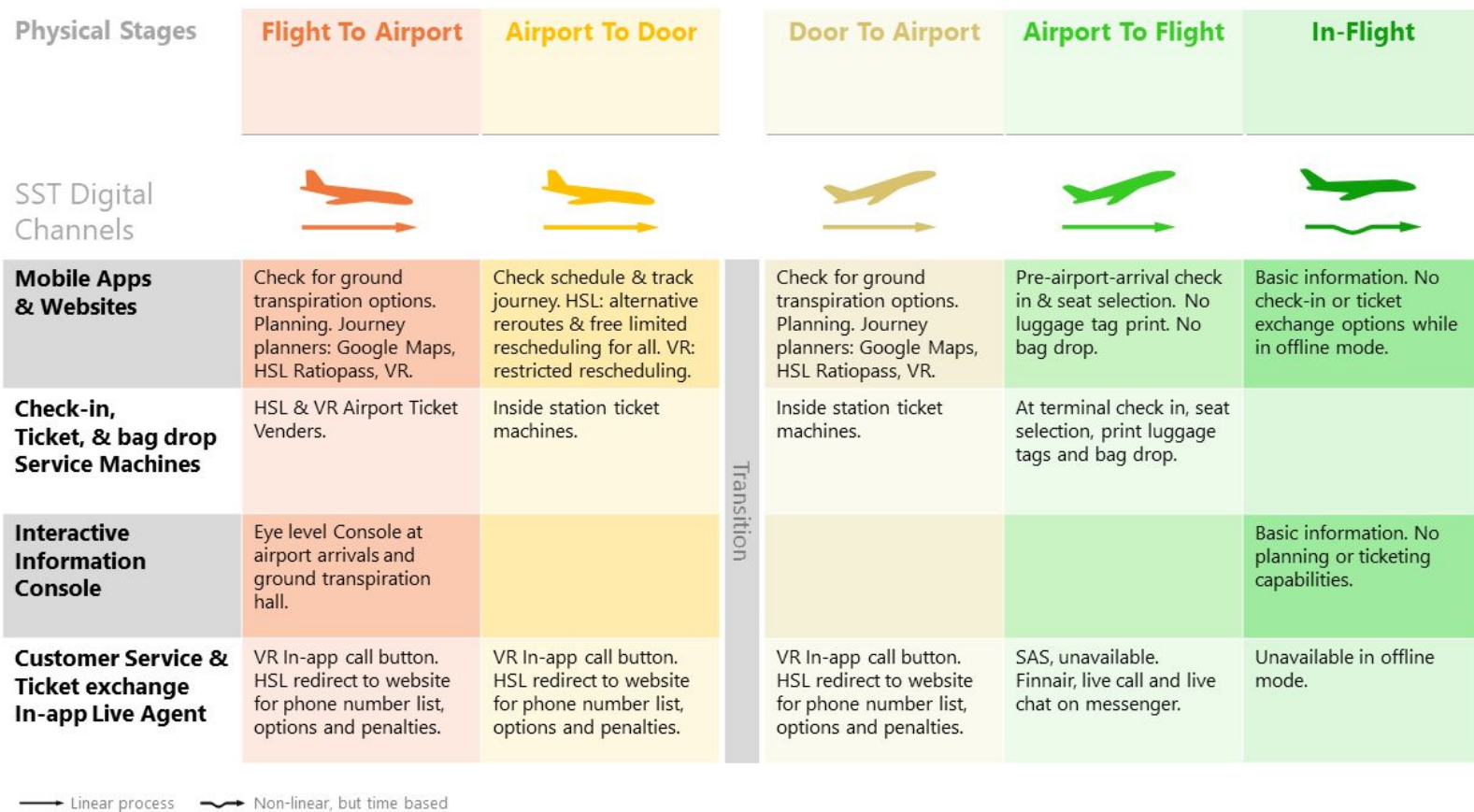
Finally, to determine which archetype is likely to perceive the journey with higher quality and satisfaction, a cross-case analysis will examine the level of emotional engagement and the amount of value elements in each individual case. This step is designed to provide key knowledge in concern to the primary research inquiry.

## 6 Analysis

In regards to the major finding, the emotional engagement score is the only reflection that has echoed the predominant nature of the two case narratives, resonating that “the emotion of the occasion” is what governs customer satisfaction (Lashley, 2005). On the other hand, the number of values collected in the categories of functional and emotional needs have not indicated the general storyline of the case narratives. Thus, to provide a high number of values, as suggested by Almquist (2016, Figure 9), may not be the only answer to customer satisfaction. Both cases demonstrate that it is the quality of emotional engagement in services that can lead to digital well-being. Nevertheless, specific stages that offered higher positive engagement were also the stages where value-in-use was higher. This indicates that emotional engagement and value creation are correlated.

Through each digital channel (touch point), this chapter will present the type and number of values that have been collected by Akí and Philip. Individual analysis consists of a dedicated experience map for each of the above personas. Cross-case analysis dissects and compares the personas’ collection of values: functional, emotional and life-changing. Finally, the personas’ emotional engagement is also cross analysed.

## 6.1 Touch Point By Channel



**Figure 14:** Touch Point By Channel. Helsinki Airport. User's SST interaction points.

Touchpoints are identified as SST digital channels. Four categories of digital services are offered throughout the door-to-door MaaS journey. More than any other category, the portable nature of mobile devices allow assistant channels to be applicable in almost every stage of the journey. However, during the in-flight experience, such a channel becomes extremely limited. For example, the functional and rather fundamental need of booking ground-transportation is inaccessible due to limited onboard internet accessibility and reliability.

## **6.2 Within Case Individual Analysis: Experience Map**

Experience maps (figures 15 & 16) are a result of an extensive narrative and visual analysis scheme that has been conducted through Atlas.Ti software. The “guiding principles” of the map are extracted from the background and framework chapters. The following sections of the map pertain to the individual-case analysis: stages, SST role, doing/value-in-use, emotional engagement, thinking, and feeling. Finally, by identifying service gaps, opportunities are accordingly presented.

# Alí The Explorer Experience Map

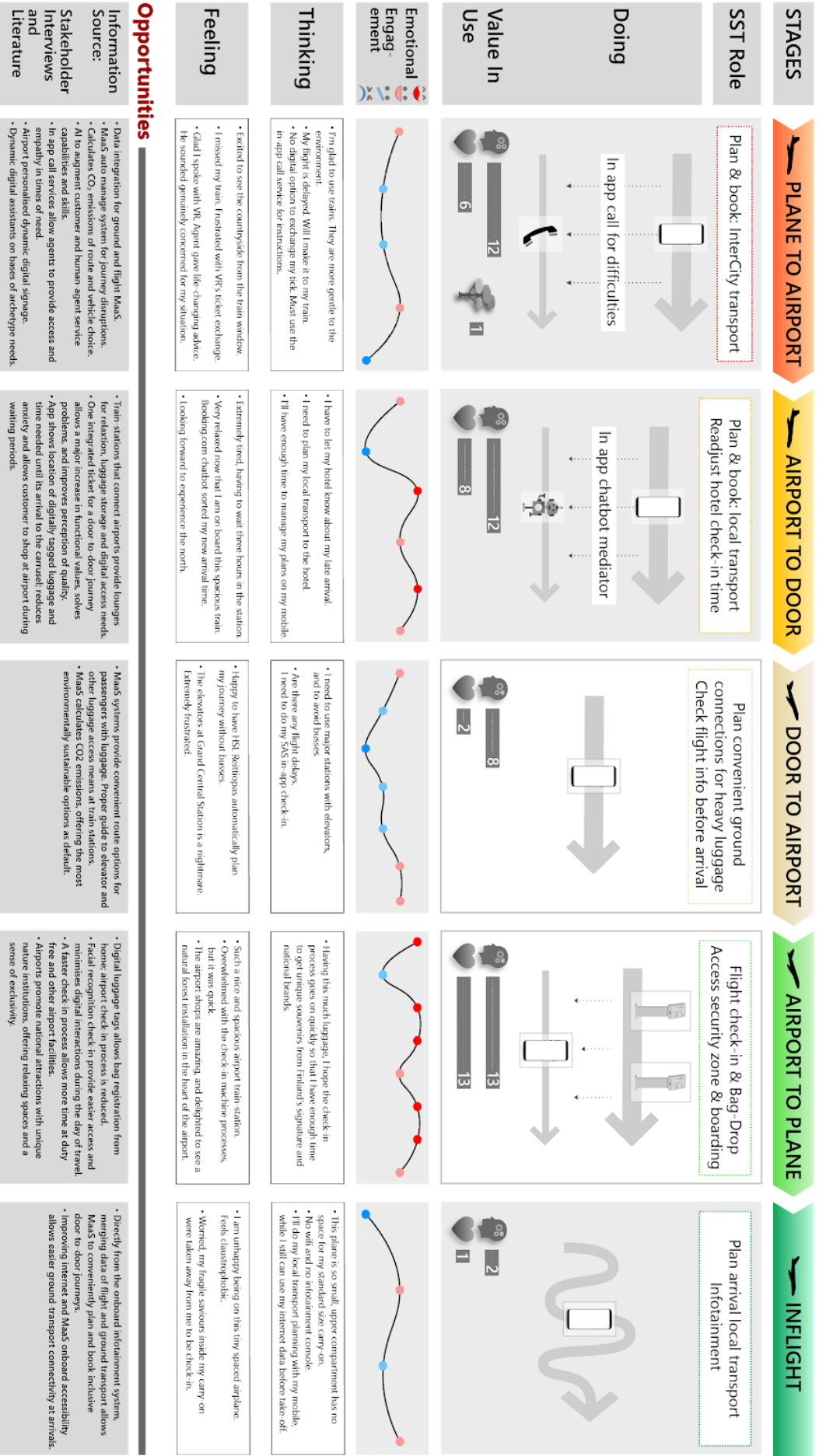
## Guiding Principles

Chooses Maas technology to find the best Eco-friendly transport option.

SST interactions give assistance and empathy at the exact time of need.

The spatial environment is ideal for SST interactions.

Service environment allows group affiliation and flexible planning.





# Philip The Business Savvy Experience Map

## Guiding Principles

Chooses Maas technology because it is convenient and fast.

SST gives assistance at the exact time of need and speeds up the process.

The spatial environment is ideal for SST interactions.

SST is simple, quick and does not require unescery inteactions.

## STAGES

### PLANE TO AIRPORT

### AIRPORT TO DOOR

### DOOR TO AIRPORT

### AIRPORT TO PLANE

### INFLIGHT

## SST Role

Inform, book transport to Hotel

Guid & track journey to the city

Plan quickest way to the airport

Flight check-in, access security zone & Boarding

Entertainment & Arival info

## Doing

## Value In Use

## Emotional Engag-ement

## Thinking

## Feeling

## Opportunities

## Information Source:

- AI and airport robotic ubiquitous transport information.
- Data integration for ground and flight Maas booking and planning while onboard.
- Inflight information system informs the customer about HSL and other Maas transport apps.
- AI to augment customer and human agent service capabilities and skills.
- Airport personalized dynamic digital signage.
- Dynamic digital assistants on bases of archetype needs.

- One integrated ticket for flight and ground transport avoids hassle of air to ground transport connectivity.
- Maas apps Calculate CO<sub>2</sub> emissions of route option and vehicle choice.

- Maas systems provide leisure information along a journey and at connection points. Customers are able to sight see while connecting through a journey. They are able to utilise free time. Local business along airport routes benefit from customer traffic.

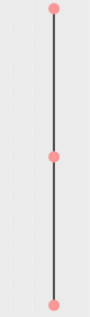
- Location of the SST interaction is crucial to the perception of the service environment. Centred SST machine placement positively affects customers' perception of the service and spatial environment.
- Facial recognition check in provide quicker access, minimising digital interactions during the day of travel.
- A single AI enabled app learns and understands the workflow of passengers at the airport, offering appropriate assistance at the right time and location.

- Onboard Maas planner for flight and ground inclusive journeys will automatically manage and book ground transport according to the passenger's arrival data.



- First thing to do is look for mass transport information.
- I will plan and book the quickest route to my hotel.
- Why is the transport info console hidden behind these pillars in the most crowded spot of the airport.

- Culture shocked and confused. So many people around the info console.
- Frustrated and tired of looking around for digital information. The info console location is not intuitive.



- When I knew about this HSL Maas planner before arrival. It would have saved me so much time and hassle.
- Connecting between the train and the train was easy.
- The trains are very convenient when travelling light and a short walk from my hotel.

- I am repiced with a sense of spaciousness at the Airport station and trains.
- I am happy to contribute with less air pollution, especially when mass transport is this comfortable.



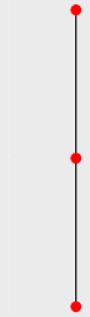
- HSL Maas planner is so logical and easy to use. Any information I need for airport transport is all here.
- While waiting at the central station for my airport train, I'll check in for my flight using the Finnair app.

- Arriving quickly to the central station. I will enjoy some piece of mind whilst waiting for my airport train.
- The airport station is like a large art gallery. Delighted to see such interesting art in this spacious soundings.



- I am able to see the entire terminal whilst at this Finn air check in machine, right at the centre.
- The security check is slow. I need this check in process to be as quick as possible, so that I can spend my free-time at the lounge, relaxing before my long flight.

- Being at the centre whilst checking in, I was able to easily see and comfortably plan my next move.
- Delighted for being allowed to skip through duty free.
- Relaxing at my lounge, digital services at HLT made the process quick, and HLT app easily showed me the way.



- I have rested well at the lounge, but I do hope this long flight will be just as relaxing.
- This plane is digitally equiped, and it has WiFi. I hope to get some work done and plan for my arrival's transport.

- I am extremely delighted with the spacious seats, homely atmosphere and friendly service. Feeling loyal to Finnair.
- Happy to use WiFi onboard and chat with my family.
- The entertainment is so much fun and engaging.
- The visual time-line design makes it easy to follow.

→ Linear process      → Non-linear, but time based

↑ **Figure 15:** Akí The Explorer Experience Map (page, 68).

↑ **Figure 16:** Philip The Business Savvy Experience Map (page, 69).

Quality of emotional engagement governs value-creation (Cooper, 2011; Heinonen, 2018). In the stage *Airport To Plane*, both Akí and Philip recorded the highest amount of values compared to any other stage. In that same stage, Akí also witnessed the highest amount of positive engagement, with five high markers indicating maximum positive engagement. As for Philip, his emotional level at that stage was the second highest in terms of positive engagement. This indicates that when analysing each stage separately, there is a correlation between positive engagement and the amount of values. See value-in-use and emotional engagement (figure 15 & 16).

### **6.3 Cross-Case Analysis**

The following tables are a breakdown of value-in-use and emotional engagement. For each persona, it visualises and compares the element of value as well as the quality of emotional engagement. Cross-case analysis indicates that digital well-being is determined by the quality of engagement.

#### **6.3.1 Functional Needs ↓**

STAGES	PLANE TO AIRPORT	AIRPORT TO DOOR	DOOR TO AIRPORT	AIRPORT TO PLANE	INFLIGHT
 Saves time	2 1	0 1	0 2	4 2	0 1
 Simplifies	2 0	3 2	0 2	4 3	0 2
 Reduces risk	0 0	0 0	0 0	1 2	0 0
 Organizes	2 0	2 1	2 1	0 3	1 0
 Integrates	0 0	0 0	0 0	0 0	0 1
 Connects	1 0	1 1	1 1	0 1	0 0
 Reduces effort	1 1	4 2	2 3	2 1	0 1
 Avoids hassles	2 0	1 0	1 1	1 3	1 0
 Reduces cost	1 0	0 0	0 0	0 0	0 0
 Quality	0 0	0 0	0 0	0 0	0 2
 Sensory appeal	1 0	1 0	2 1	1 2	0 1
 Informs	0 2	0 0	0 0	0 0	0 1
47 48 Σ Σ	12 4	12 7	8 11	13 17	2 9



↑ **Figure 17:** Functional Needs Score. Akí:  $\Sigma = 47$ . Philip:  $\Sigma = 48$ .

Emotional engagement is correlated with value creation, and time plays a factor in the amount of values experienced. In Akí's case, the lengthiest two stages have been *Airport To Door* and *Door To Airport*. Unlike Philip, Akí's ground transportation included an intercity train experience that took about fifteen hours, whereas Philip's ground transportation took less than one hour. This is because Philip's accommodation was within the local area of the airport. On the other hand, Philip's inflight experience took over ten hours, whereas Akí spent less than two hours at the *inflight stage*. Thus, the tables of functional and emotional needs indicate two correlations. Similar to the analysis of the experience maps, the most significant correlation indicates that the amount of value creation is linked to the quality of emotional engagement. Positive emotional engagement yields to a higher number of values, whereas negative emotional engagement yields to a lower number of values. The second correlation is associated with time. Even though the time factor was not precisely observed throughout the two cases, the general view indicates that the more time spent at a service environment the more likely for values to be created. Nevertheless, the time factor does not insure positive emotional engagement. For example, at the *Airport To Door* stage, Akí's storyboard narrative was generally unsatisfactory. A flight delay had caused him to arrive late; he was unable to catch his booked VR intercity train. The train ticket was automatically canceled requiring him to purchase a new one. The trickling effect of the flight delay caused him to wait over three hours for the next train to arrive. Therefore, even though Philip's narrative at the *Airport To Door* stage was more satisfactory, Akí was still able to collect five extra value elements compared to Philip. This indicates that the duration of engagement is an additional factor that must be taken into account.

### **6.3.2 Emotional Needs ↓**

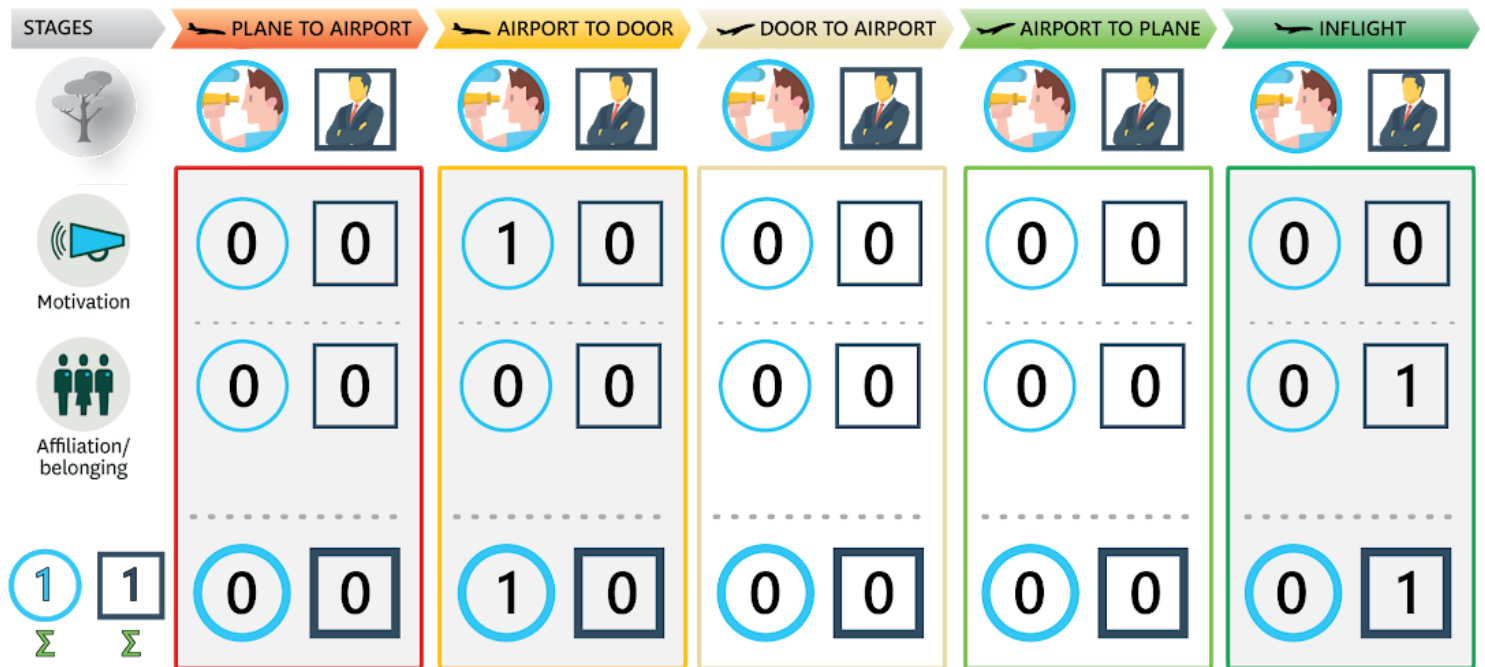
STAGES	PLANE TO AIRPORT	AIRPORT TO DOOR	DOOR TO AIRPORT	AIRPORT TO PLANE	INFLIGHT
					
 Reduces anxiety	20	31	11	13	10
 Rewards me	00	00	00	21	02
 Nostalgia	00	00	00	10	01
 Design/aesthetics	10	20	02	11	01
 Badge value	00	00	00	11	02
 Wellness	10	00	00	20	00
 Therapeutic value	10	00	10	11	00
 Fun/entertainment	00	10	00	11	01
 Attractiveness	10	10	01	21	01
 Provides access	00	10	00	11	00
<b>Σ 30</b> <b>Σ 23</b>	<b>6</b> <b>0</b>	<b>8</b> <b>1</b>	<b>2</b> <b>4</b>	<b>13</b> <b>10</b>	<b>1</b> <b>8</b>

↑ **Figure 18:** Emotional Needs Score. Akí:  $\Sigma = 30$ . Philip:  $\Sigma = 23$ .

Generally, the nature of the narrative does not correlate with the amount of values. According to [Akí's](#) narrative, he experiences numerous mishaps and dissatisfaction. In three of the stages, he experiences extreme pain points (negative engagement) on multiple accounts. To the contrary, Philip does not experience any extreme pain points at any of the stages. In other words, [Philip's](#) narrative indicates higher satisfaction stories than Akí. Accordingly, it was predicted that Akí's "emotional need values" would score significantly lower than that of Philip's. However, in (figure 18) this prediction is contradicted, with Akí significantly leading a higher number of emotional values. Hence, similar to the Functional Needs category the amount of emotional values has not reflected the general narrative of the two cases.

Note, emotional needs (values) are not to be confused with the emotional engagement (dramatic arch). Providing emotional needs is when the customer and service provider are able to exchange elements of emotional values (Almquist, 2016). Any values, emotional or otherwise, collected during a service will possibly reflect towards service quality perception. Emotional engagement on the other hand, is the tempo and rhythm of a service that has supposedly been designed by the provider (Stickdorn, 2018, p. 48). This rhythm is also affected by the interactions of each customer's unique circumstances. Thus, emotional engagement is an arch that represents how the customer "feels" towards the service interaction and can vary between high and low, i.e., pain versus delight points.

### 6.3.3 Life-Changing Needs



**Figure 19:** Life-changing Needs Score. Akí:  $\Sigma = 1$ . Philip:  $\Sigma = 1$ .

In relation to the quality of emotional engagement, no correlation has been observed in the category of Life-changing Needs. Notably, values within this category are more difficult to achieve and are more significant than the previous need categories. Akí received the “motivation” value at a stage where negative engagement was experienced (missing his train). Due to a direct communication feature within the VR mobile application, Customer Relationship Management (CRM) was able to mitigate the negative experience of the user, leading engagement levels to improve. When a communication channel is created at times of “mental block” and anxiety (Krashen, 1981), empathy through a naturally perceived conversation (Cooper, 2011; Kock, 2005), can motivate the users and lead to well-being. According to Marino (2018) “emotional engagement dimension has an effect on the behavior-based CRM performance”. In contrast, Philip's “affiliation” and sense of loyalty was experienced during an

exceptionally positive engagement. Hence, life-changing values can occur during both positive and negative engagements.



**Figure 20:** Summary of all values combined. Akí:  $\Sigma = 78$ . Philip:  $\Sigma = 72$ .

Regarding the relationship between the narratives and the experience maps, Akí's narrative was faced with more disappointments than Philip's. However, contrary to predilection, Akí managed to collect a higher overall value score than Philip's — despite Philip's superior emotional engagement. This negates the statement “more is clearly better” which emphasises that the more values customers experience the more likely they are to perceive the service with satisfaction (Almquist, 2016, p. 06-08). For the Helsinki Airport door-to-door MaaS journey, the cross-case analysis indicates that the number of values created is not an indication to customer satisfaction.

### 6.3.4 Emotional Engagement

Score of service engagement (figure 21) is the final outcome of the emotional experience: engagement quality. Namely, a customer might interact with numerous engagement points along the service; it does not indicate a higher chance of quality perception because negative interactions (blue bars) will compromise positive interactions (red bars). Hence, even though Akí's engagement is longer, with more marker points than Philip's, the validated overall score ( $\Sigma$ ) indicates a higher satisfaction

result towards Philip. Thus, positive engagement can also be achieved when touchpoints are minimal. Most significantly, in comparison to the amount of overall values, the emotional engagement score seems to be more inline with the general nature of the narrative.



**Figure 21:** Emotional Engagement. Four levels of engagement in each physical stage. Top marker: 😄 ultra delight point. Second marker: 😊 delight point. Third marker: 😞 pain point. Bottom marker: 😡 extreme pain point. Blue line-plot pertains to Akí. Orange line-plot pertains to Philip.

Akí encountered thirty emotional interaction points. Philip encountered twenty two emotional interaction points. The following is the final score of engagement: Akí  $\Sigma = 8$ , Philip  $\Sigma = 12$ . Philip's final score is an indication that his perceived quality of engagement is significantly higher than Akí's.

## 7 Discussion

In the wake of a technological evolution and transformation in the aviation industry (ACI, 2017; Gheorghe, 2016), user experience has been saturating with digital transactions in every step of the journey, whilst live-human-agent assistants have been reduced in retrospect. The values a customer is expected to receive seem to be limited to “reduction values” i.e, time, cost, hassle, effort, and risk (Almquist, 2016). Even though these featured values offer benefits of organising an otherwise complicated and costly process (Almquist, 2016), allowing more profit to the service-provider, to the explorer archetype however, the switch from human-agents to digital-agents has changed the social fabric of traveling.

### 7.1 Elements of Value: Needs

Results have indicated a strong direction towards the provision of functional needs over any other in aviation. Functional values are almost one fold superior to the emotional ones. And as expected, life-changing values recorded a mere fraction in comparison to other need categories. In general, the MaaS door-to-door concept seems to lack emotional engagement principles, e.g., “how empathy supports values, engagement and achievement” (Cooper, 2011, p. 121). Customers are lured into aviation services that offer the largest amount of functional values. In the short-term, this might seem more rewarding (e.g, Almquist, 2016), and airline companies that are unable to match such functional values are likely to fail in the market. Nevertheless, functional values alone are unable to solve all problems during the moment of truth. In the long-term, the lack of emotional engagement strategies — unfulfilled criteria of emotional engagement and learning achievement — might gradually diminish customer loyalty, jeopardising the survival of the company. Digital services must exhibit positive levels of emotional engagement to a wider variety of archetypes to ensure customer well-being and service satisfaction (Claffey, 2019; Gheorghe, 2013).

## 7.2 Emotional Engagement: Satisfaction and Loyalty

What separates one door-to-door experience from another can be the amount of emotional and life-changing elements one may collect. Nevertheless, in consideration to the general nature of the service experience, the amount of values are still not an indication of satisfaction or that loyalty has been achieved. It was expected that the more a company is able to inject value elements within the service, the more likely the service would be perceived positively (Almquist, 2016, p. 08). This study finds otherwise. In Philip's case, the narrative reflected an outstanding level of satisfaction in almost every stage of the journey. Nonetheless, the total amount of values received by Philip was lower in comparison to its counterpart. On the other hand, Philip's emotional engagement score was significantly higher than the representative case. Namely, the only analysis that has interpreted the cause of service quality perception is the engagement score. As a result, designing a rhythm where a service is able to "wow, boom and ahh" the customer (Stickdorn, 2018), will encourage emotional engagement and enhance perception of quality.

Therefore, emotional engagement is a strong indicator to quality perception and goes beyond pleasing a single individual. Boeing is the world's leader as a manufacturer of commercial aircrafts (Boeing, 2019). In an email conversation about customer behaviour, Rachelle N. Ornan, Director of Cabin Experience Research and Airplane Product Development at Boeing, mentions to me something that stood out from all the other information, something that would make me change the way I think of digital well-being. When I asked her about how she feels towards digital transformation controlling many aspects of our daily lives, she replied: "People will remember how you make them feel. Automated machines with no human touch... right now it's certainly not very inspired" (R.N. Ornan, personal communication, 04, April, 2017). This seems to be inline with how the emotional engagement score is the truest form of reflection to quality perception. How a customer "feels" towards a service is the strongest indication to



customer loyalty and resonates beyond the individual effect. For example, emotional contagion is when the level of engagement is reciprocated between the buyer and seller. This encourages co-creation and learning where the criteria of emotional engagement is fulfilled; thus, its effects can resonate to the surrounding environment and positively influence other groups of customers (Hatfield, 1993). The individual's emotional state of mind during the moment of truth is a major cause of quality perception. Services that demonstrate this type of engagement can lead to well-being and loyalty.

The most consistent and positive engagement was recorded at Philip's Finnair *inflight* stage. The cabin experience demonstrated the highest amount of human-agent interactions in comparison to other stages. Such interactions were obviously aimed for maximum quality perception. Similar to other stages, the persona did not seek the attention or assistance of any human agent. Nevertheless, amongst the five journey stages, this is the one stage that significantly created a heightened relationship between the customer and service environment. In particular, because of the personalised human interaction — recognising the customer's unique identity — the emotional engagement criteria of curiosity, and environmental adaptation were quickly witnessed by Philip. The positively perceived spatial environment eliminated anxiety which motivated well-being and engagement (Krashen, 1981; Stamps, 2009). Consequently, this led to a sense of environmental mastery (Ryff, 1995). Hence, even though Philip's primary needs are easily achieved by technology, the service performance "moment of truth" (Grönroos, 1984), rendered more benefits when human-agent interaction was in motion. The significance of the *inflight* stage is also noted because it is where Philip experiences his "group affiliation" value, which ranks as one of the highest types of values to have been reached in this study. Moreover, results indicate that similar to what has been claimed in the *Elements of Values*, companies that have spiked with the provision of "emotional needs" have attained more loyal customers than those who were only able to provide "functional needs" (Almquist, 2016, p. 6). Philip's *inflight*

experience, where the life-changing value of affiliation and belonging was witnessed, is also one of the highest stages in terms of emotional values. Concerning an airline company, the following can thusly be assumed: the quality of engagement within the inflight cabin experience has caused Philip to become affiliated with the brand. Hence, loyalty can be achieved when cabin service interactions are personalised and the spatial environment provides an engaging and relaxing tempo.

It can be further speculated that when one stage of the journey offers high quality interactions, other stages can be tolerated and positive “expected service” can be achieved (Grönroos, 2007). When something is highly valued, “pain/strain/discomfort” is endured (Cooper, 2011, p. 88); thus, when customers are happy, they invest resources, money and “time” (Spurway, 2011). This tolerant attitude allows service providers more prospect to mitigate problems as they arise.

The highly ranked “affiliation/belonging” value was created during Philip's *inflight* stage. This stage also illustrates the highest quality of emotional engagement, leading to the assumption of a correlation. But to the contrary, analysis of other stages from both cases do not seem to back-up such an assumption. Namely, when taking the entire door-to-door experience, there is no correlation that can link the type of value obtained with the quality of emotional engagement.

For Helsinki Airport (HEL), previous studies have shown utmost satisfaction from archetypes that belong to the business traveller (Finavia, 2018b). This seems to echo the individual case findings of “Philip The Business Savvy”. Business travellers account for almost one third of travellers using HEL. In a survey, resident business travellers have rated HEL as the best airport in the world (Finavia, 2018b). Hence, it can be concluded that the business traveller archetype is likely to perceive services through HEL with higher quality. Well designed digital airport services provide many of the functional values business travellers are seeking, and Finnair business class inflight

experience provides additional benefits through live-human-agent interactions, creating a positive thematic engagement rhythm (e.g., Seeker, 2016; Stickdorn, 2018, p. 48).

The spatial principle of this study has largely contributed to Philip's quality of engagement. The cabin spatial environment was designed in line with Stamp's (2009) foundation of positively perceived spaces, e.i., emphasise on width leads to a better perception of space and comfort. Similarly, at Philip's *Airport to Plane stage*, due to the centralised placement of check-in machines — allowing more physical access and a wider peripheral vision — positive spatial perception was also experienced at the SST check-in area of HEL Terminal 2. For example, see [Philip's](#) spatial perception at the *Inflight stage* and the *Airport to Plane stage* (Appendix 3).

### **7.3 Digital Well-Being: Mitigating a Negative Engagement**

Akí was able to witness a highly ranked element of value in the life-changing category. This “motivational value” was reached mainly because the persona was able to feel valued through an empathic conversation that led to a learning experience. Notably, this value was witnessed when the customer was directly communicating with a live-human-agent through a telephone call, a feature embedded within the digital assistant application of VR intercity trains. The human-agent was able to motivate the customer and give precise information at the exact time of critical need. Akí received this highly appraised value-element at a stage where the emotional engagement was mostly unfavourable. Through an empathic tone, the agent was able to reflect genuine concern towards the customer's situation. In media studies, this can be interpreted as the Media Naturalness effect: “human beings have been engineered by evolutionary forces to communicate primarily in a co-located and synchronous manner, as well as through facial expressions, body language, and speech” (Kock, 2005, p. 119). Media with higher degrees of naturalness such as face-to-face and direct voice conversations are preferred in electronic communications. Due to the natural course of

human-evolution, communication is more trusted and the experience is more fulfilling when customers experience naturalness. In this scenario, emotional engagement can be mitigated, and customer frustration is more manageable.

In aviation, current AI chat-bots and digital assistants seem to lack complex but pivotal “human” interactions. In comparison to natural-empathy provided by human-agents, even though artificial empathy (AE) can add a layer of psychological benefits in future digital interactions (Leite, 2013), customers are still likely to perceive AE as less genuine (Feng, 2019). Nevertheless, studies have shown that when AI robotic characters have presence on social-media and are subjected to the daily-lives of people’s media interactions, public-awareness and engagement can be created (Zeller, 2019). Further speculating that the long-term effect of AI social presence can lead to improved audience reception and the acceptance of information disclosure (Savin-Baden, 2015, p, 311). However, in the present time, if the goal is to provide well-being through communication, create psychographic personalisation, mitigate a negative situation during a moment of need, human-agents pose a much higher degree of effective service engagement compared to any other digital form.

In line with Ornan’s earlier statement concerning the “human-touch” for inspirational services, human-agent communication allowed Aki’s emotional engagement to improve in midst of negative circumstances. Without the human-touch, it is doubtful that automated digital services would have been able to provide the same level of empathy, mitigating Aki’s unique circumstances on the spot. Thus, especially in stressful situations where time is of essence and the customer is experiencing a mental block, it can be assumed that digital platforms offering a form of natural communication are likely to provide higher levels of digital well-being.

In contrast to Philip’s experience, customers within Aki’s archetype are less likely to perceive the HEL door-to-door concept with higher quality. Nevertheless, with more

personalised and tailored services, the “explorer” archetype is a tremendous business potential that can be won over. “Acquiring new customers is important, but retaining them accelerates profitable growth” (Myler, 2016). Accordingly, reaching to satisfy current customers is the first step. This can be achieved by the provider’s awareness of each archetype’s unique travel needs. For example, Akí is a social learner; by creating an enjoyable interactive learning atmosphere, emotional engagement can be achieved and satisfaction is more probable (e.g, Kangas, 2017). Moreover, communication that demonstrates empathy during the exact moment of need can achieve positive emotional engagement (Cooper, 2011, p. 104). Hence, with improved services that are focused on value-creation and proper marketing communication (Grönroos, 2009), such archetypes can also be turned into loyal customers.

#### **7.4 MaaS for Quality Perception**

In order to bring the door-to-door MaaS concept into reality, data merger under one centralised entity must first be attained. Nevertheless, it does not directly guarantee an improved perception of quality. The data merger approach of airport and ground traffic caters to the technical dimension of services (transporting the customer from point A to point B). The technical dimension of a service is easily replicated amongst the competition (Grönroos, 1984, p. 41). Hence, for MaaS transportation purposes, airport management and airline companies that will accomplish the tedious task of data merger will soon be replicated by other competitors. During the service-provider interview, this was similarly echoed by Nicholas, stating that if Finnair decides to provide MaaS capabilities through digital onboard services (inflight infotainment console), it will not be long until rivals such as SAS follow lead. Regardless of his skeptical view on such a strategy, he also mentions the following: “but I definitely agree that there is a gap in air to ground transportation where fixing it will increase the traveling experience”. For example, in the door-to-door journey at HEL, choosing to connect a flight with an intercity train has proved to be far more complicated in comparison to transit flight connections, especially in midst of unforeseen circumstances such as flight delays.

Even though current developments indicate that HEL is inevitably headed towards air and ground data-transport-merger (Finavia, 2019b), if the aim is to increase quality perception in the short run, the strategy of data merging does not seem to be cost effective and will not yield immediate quality perception. In comparison, providing a medium that offers naturalness communication through electronic touchpoints, increasing human-agent interactions during critical periods such as air to ground transportation, will possibly yield faster positive results.

Current airport digital transformation efforts, such as non-interactive facial recognition check-ins, are perhaps focused on managing the influx of passenger traffic rather than promoting emotional engagement. With such a transformation, which is exclusively amplifying the functional values, it can be assumed that aviation services will mirror each other, leaving less performance features to be distinguished. On the other hand, in regards to the user's emotional engagement and well-being, analysis indicates more certainty towards the positive effects of human-agent interactions and naturalness communication.

## **7.5 Experience Maps: Self-Evaluation for Media Education Research**

This study has demonstrated engagement by visualising the emotional process throughout the service journey: the experience map. The process of creating such maps requires tedious manual input; however, maps shed light on important aspects of the individual's psychosocial construction, allowing service gaps to be better assessed. Emotional engagement is vital to any digital service that aims for well-being. Similarly, in distance learning, the individual's well-being and learning achievement can occur when users are able to identify their own psychographic and emotional attributes. Luckily, current software technology allows easier access to construct an experience map. This can simplify the process and allow effective self-evaluation, enhancing media research

for distance learning services. For example, when users are asked to self-report media exposure through conventional surveys, it can be difficult for them to remember details of media interactions. Instead, they would use a “heuristics” process that may yield to inaccurate evaluation (Valkenburg, 2013, p.5). A similar result may occur when students of distance education are to evaluate digital media learning tools through surveys. Moreover, survey methods are perhaps better suited for the average mean rather than how each individual is affected by distance learning. On the other hand, with an experience map software, students have been able to self-project a more personalised evaluation (Micheaux, 2019), encompassing the dynamics of everyday life on the emotional engagement of learning (Hewson, 2018). As a result, teachers and institute personnel can confidently invest in innovative learning tools, effectively enhancing the student's personal engagement and learning goals. Such an evaluation method might seem radical; however, it is necessary to take these measures in the wake of a rapidly changing learning environment.

Allowing students to self assess with a service design approach gives the opportunity to create emotional intelligence and improve media literacy skills. Self-evaluation through experience maps train users to identify the specific type of emotions they are experiencing. With that comes better awareness to psychosocial well-being and the assessment of personal problems. Consequently, when the user is dynamically observed (saying, doing, feeling), media literacy and skill levels can be forecasted, allowing media research to evaluate and offer empathic digital solutions tailored to the individual's unique circumstances.

## 8 Limitations

### 8.1 Methodology

Combining Social-sciences research and service designs tools has posed noticeable limitations. In terms of social science research design, the roleplay method poses a limitation to the analysis approach that I have chosen. In social-science technical terms, this would be considered as “ethnographic personal-observation” and needs to be analysed according to an autoethnographic narrative. However, in my experience with multiple service design workshops, it is common for the researcher to take the role of the personified user to evidence the psychographic behaviour. Therefore, even though service design tools are majorly developed from a social science origin (Stickdorn, 2012, p. 102), when viewed from a social science research perspective, roleplay poses contradictions to how analysis should be approached (Creswell, 2013, p. 90). Namely, in social sciences, roleplay is an ethnographic approach; in service design however, role-play is more fitting to be a “second-person biographical” narrative approach. This can particularly cause confusion towards which social science analyses should be acquired. Nevertheless, since this study stresses on the emotional and empathic interactions of digital communication, as a researcher, it was important for me to personally witness engagement from the archetype’s psychological perspective (Lewis-Beck, 2004 p. 976). To provide an analysis procedure that is more academically supported, I have decided to acquire a traditional social science approach. Hence, documentation of roleplay (narrative of case study) was analysed according to biographical narratives and case studies (Creswell, 2013).

The multiple-case approach has also caused obstacles to arise. An ideal multiple-case study should impose similar if not identical boundaries, examined from different perspectives (Creswell, 2013, p. 99); however, since the emphasis was to follow two opposing customer archetypes, maintaining identical boundaries throughout



the entire journey was challenging. If identical boundaries were to be maintained in all of the stages, the persona psychographic impulses would have been jeopardised. In other words, depending on the archetype, behaviour and plan preferences differ; thus, the boundary has varied from one case to another. Nevertheless, Helsinki Airport, where most digital interactions take place, remained to be the focal point of the two cases. In this sense, adopting a multiple-case approach seemed to be the most viable approach.

## **8.2 Analysis**

The duration of each stage interaction was not precisely taken into account. In future observations, the time spent in each particular service environment (stage) will be specifically taken into account. There is an assumed correlation between value-in-use and the duration of the service stage. For example, Philip's *inflight* values are drastically higher than Aki's. This can be due to the higher occurrences of service interactions at Philip's long-haul flight. He spent over ten hours onboard, as opposed to the one hour and a half at Aki's *inflight* stage. A lengthy service stage can be a chance to create more values. Thus, multiple-case studies need to demonstrate similar time-frames for more accurate cross analyses.

## 9 Conclusion

Aviation digital services are packed with values that cater to the functional needs. However, it is the level of emotional engagement that can predict well-being and the perception of service quality. A service journey is a learning experience. Each individual processes information differently. Therefore, learning outcomes must be individually evaluated. Positive service engagement leads to the co-creation of values. Hence, with proper service engagement, a wider variety of emotional and life-changing values can be attained.

Throughout the consumption phase of a service, a moment of truth is when a provider is able to facilitate optimum services tailored to the unique situation and psychographic needs of a customer. The provision of service values is fundamental; combining values and a positive level of service engagement optimises service perception, i.e., loyalty. The most prominent pattern indicates that when emotional engagement is at peak, a higher degree of values can be provided. Service quality studies attempt to rationalise the amount of values as a determinant to satisfaction, whereas results of this study point to a much more primitive reality: customer satisfaction is a reaction to emotions that were experienced during service consumption. In other words, people remember how the environment made them feel. Thus, to maintain well-being, service environments must be ready to demonstrate natural empathic interactions when negative engagement occurs.

In terms of improving quality perception of the door-to-door journey, the current digital fragmentation of each stage creates a situation where service providers are unable to facilitate effective solutions. This study shows how each journey stage is interconnected and dependent on one another; however, ground and air transportation data are currently unlinked. In the absence of a dedicated team that focuses on the customers holistic journey and problem solving, customers find themselves having to

communicate with multiple channels to mitigate the trickling effect of a problem caused in earlier stages. For instance, this fragmentation can affect the service perception of airport train services even if the problem was caused by the airline company. Nonetheless, negative engagement can be reconciled if the digital assistant provides a communication channel capable of demonstrating natural empathy. When customers are allowed to express themselves naturally, levels of anxiety and mental block can be reduced. This can turn a negative situation into a learning experience, improving service engagement and Customer Relationship Management.

The destination might inspire the soul, but it is the motion that keeps it afloat. Technology has conditioned most of us to view the traveling journey as a quick instantaneous affair, as if the only reward to the journey is the destination. However, in perspective to the nineteenth century poet Constantine Cavafy, the secret to reaching the shores of the Greek island Ithaca is to enjoy the journey. The wisdom each island has taught us — along the way — is the achievement. And if Ithaca has nothing to give, then it is the motion that has given us the true reward.

Thus, attention to the emotions that lead to enjoyment can be the secret to service quality. With digital transformation rapidly increasing in our daily lives, technology must incorporate more than just reduction values. AI holds answers to future solutions for digital well-being. It has proven its efficiency in providing functional reduction values. With more targeted research, AI development can additionally focus on the advancements of artificial empathy (AE) — enhancing the customer's emotional engagement with the digital service. Whilst the technical features of aviation are constantly improving, the competition is placed on which company is able to provide the best “enjoyment” during the journey: an experience that creates wisdom. In future scenarios, when media naturnless communication is no longer an option, AI services capable of reflecting the most acceptable AE interactions can possibly provide better results to digital well-being.

## 10 Recommendation

Incorporating the disciplines of media education and service design has been demanding. However, by expanding the horizon of my research approach, I was able to find answers to many limitations I have faced. This multidisciplinary process has improved my critical skills, showing me the strengths and weaknesses of each approach in my perspective. It has also paved the way towards my future PhD study plan. My advice to students who are willing to take the challenge of a multidisciplinary approach is to be a mediator between the respective departments. To employ “design thinking” that can open up communication lines and co-creation between faculties. University faculties are diverse; each has developed approaches that are well established. Mediating between such faculties allows more opportunities of innovation and problem solving, further developing methodologies and creating unity.

The concept of distance learning was combined with service quality studies, providing a background to the travelling journey as a learning experience. The emerging field of digital education can focus on the user’s personal attributes to create engagement and learning achievements. Service design tools are versatile and can be utilised in education. Future studies can exclusively focus on distance learning in relationship to the student’s academic goals.

Typical of the archetypal approach, this study has primarily focused on the behavioural, psychological and emotional aspects of the user. It has not addressed segmentation through demographics, and it has not subjected actual travellers throughout the case study. Future studies can employ quantitative measures to how age, gender, and social status can also affect perception of quality. Such findings can determine priorities to which archetypes and service gaps should be addressed.

DesiQual is an experimental model; it aims to empirically evolve in each sequential study. This research has applied the model to cases of consumer behaviourism and engagement (e.g., Cooper, 2011; Zins, 1998). Thus, the model has achieved the first stage of its potential credibility by targeting the functional dimension of quality (service consumption). Nevertheless, to create a dynamic view of service quality, it is recommended that researchers employ the “technical dimension” into the current DesiQual model (Grönroos, 1984). Namely, matters such the door-to-door MaaS concept can be better assessed when the technical dimension of service quality is also included.

# References

- ACI (Airports Council International), (2017). Airport Digital Transformation. Version 1.02. Retrieved 16, May, 2020, from [https://aci.aero/Media/aabcf490-613e-44ab-b98c-339377de0cd0/ki\\_0Cg/Publications/2017/Digital%20IT%20Transformation/Airport\\_Digital\\_Transformation.pdf](https://aci.aero/Media/aabcf490-613e-44ab-b98c-339377de0cd0/ki_0Cg/Publications/2017/Digital%20IT%20Transformation/Airport_Digital_Transformation.pdf)
- Almqvist, E., Senior, J., & Bloch, N. (2016, 01, September). The Elements of Value. The September 2016 Issue Of The Harvard Business Review (pp.46–53).
- Amichai-Hamburger, Y. (Ed.). (2009). Technology and Psychological Well-being. Cambridge: Cambridge University Press. DOI:10.1017/CBO9780511635373.
- Aparna, J., Devi, R. G., & Jyothipriya, A. (2019). Eye complications in children due to excessive use of electronic gadgets. *Drug Invention Today*, 12(6), 1182–1184.
- Asubonteng, P., McCleary, K.J., & Swan, J.E. (1996). "SERVQUAL revisited: a critical review of service quality", *The Journal of Services Marketing*, Vol. 10 No. 6, pp. 62-81.
- B2B Matchmaking (2018). Matchmaking @ ITS World Congress Copenhagen 2018. Retrieved 16, May, 2020, from <https://its-world-congress-copenhagen.b2match.io/my>.
- Babic-Hodovic, V., Arslanagic-Kalajdzic, M., & Imsirpasic, A. (2017). Perceived quality and corporate image in mobile services: the role of technical and functional quality. *South East European Journal of Economics and Business*, 12(1), 114-125.
- Barak, A., Boniel-Nissim, M., & Suler, J. (2008). Fostering empowerment in online support groups. *Computers in Human Behavior*, 24(5), 1867–1883.
- Barucha-Reid, R., & Kiyak, H. A. (1982). Environmental effects on affect: Density, noise, and personality. *Population and Environment*, 5, 60-72.
- Battarbee, K. (2014). Empathy On The Edge - Scaling And Sustaining A Human-centered Approach In The Evolving Practice Of Design. IDEO. Retrieved 16, May, 2020, from [http://www.ideo.com/images/uploads/news/pdfs/Empathy\\_on\\_the\\_Edge.pdf](http://www.ideo.com/images/uploads/news/pdfs/Empathy_on_the_Edge.pdf).
- Biometrics. (2019, 30, May). Finnair deploys biometric boarding at LAX. Future Travel Experience. Retrieved 16, May, 2020, from <https://www.futuretravelexperience.com/2019/05/finnair-deploys-biometric-boarding-lax/>
- Björk. (1997). Hunter [Recorded by Björk. Homogenic [CD]. One Little Indian. El Cortijo Studios: Málaga, Spain.
- Boeing. (2019.). Our Company. Retrieved 16, May, 2020, from <https://www.boeing.com/company/>
- Bogicevic, V., Bujisic, M., Bilgihan, A., Yang, W., & Cobanoglu, C. (2017). "The impact of traveler-focused airport technology on traveler satisfaction," *Technological Forecasting and Social Change*, Elsevier, vol. 123(C), pages 351-361.

- Brady, M.K., & Cronin, J.J. (2001), "Some new thoughts on conceptualizing perceived service quality: a hierarchical approach", *Journal of Marketing*, Vol. 65, pp. 34-49.
- Broderick, A.J., & Vachirapornpuk, S. (2002). "Service quality in internet banking: the importance of customer role", *Marketing Intelligence & Planning*, Vol. 20 No. 6, pp. 327-35.
- Bruno, G., Diglio, A., Genovese, A., & Piccolo, C. (2019). A decision support system to improve performances of airport check-in services. *Soft Computing*, 23(9), 2877–2886.
- Budnick, P (2017). Study Links Mobile Hand-held Devices With Musculoskeletal Symptoms. *Ergoweb*. Retrieved 16, May, 2020, from <https://www.ergobuyer.com/blog/study-links-mobile-handheld-devices-with-musculoskeletal-symptoms/>
- Burch, G.F., Heller, N., Burch, J., Freed, R., & Steed, S. (2015). Student Engagement: Developing a Conceptual Framework and Survey Instrument, *Journal of Education for Business*, 90:4, 224-229, DOI:10.1080/08832323.2015.1019821.
- Burr, C., Taddeo, M., & Floridi, L. (2020). The Ethics of Digital Well-Being: A Thematic Review. *Science and Engineering Ethics*. Volume 26, Issue 2, April 2020.
- Buttle, F. (1996), "SERVQUAL: review, critique, research agenda", *European Journal of Marketing*, Vol. 30 No. 1, pp. 8-32.
- Carmichael, L. (2018, 30, January). EU summons France, Germany, UK to 'final chance' pollution talks. *PHYS.ORG*. Retrieved 16, May, 2020, from <https://phys.org/news/2018-01-eu-summons-france-germany-uk.html>
- Cash, R. (2017). *Advancing Differentiation: Thinking and Learning for the 21st Century*. Minneapolis, Minnesota: Free Spirit Publishing.
- Cassab, H., & MacLachlan, D. (2006). Interaction fluency: A customer performance measure of multichannel service. *International Journal of Productivity & Performance Management*, 55(7), 555–568.
- Chen, C. F., & Wang, J. P. (2016). Customer participation, value co-creation and customer loyalty—A case of airline online check-in system. *Computers in Human Behavior*, 62, 346–352.
- Cherry, K. (2019, 03, June). History and Key Concepts of Behavioral Psychology. Summary of The Everything Psychology Book 2Nd Edition. Verywell-Mind. Retrieved 16, May, 2020, from <https://www.verywellmind.com/behavioral-psychology-4157183>
- Chu, B. (2017, 09, October). What is 'nudge theory' and why should we care? The Independent. Retrieved 16, May, 2020, from <https://www.independent.co.uk/news/business/analysis-and-features/nudge-theory-richard-thaler-meaning-explanation-what-is-it-nobel-economics-prize-winner-2017-a7990461.html>
- Civan, S., Dogerlioglu, O., & Koksall, T. (2017). Can Information and Communication Technologies Change Individual's Values? *International Journal of Information, Business and Management; Chung-Li*, 9(2), 104–121.
- Claffey, E., & Brady, M. (2019). An empirical study of the impact of consumer emotional

- engagement and affective commitment in firm-hosted virtual communities. *Journal of Marketing Management*, 35(11/12), 1047–1079.
- Cole, M., & Means, B. (1981). *Comparative studies of how people think: An introduction*. Cambridge Mass. USA, and London UK: Harvard University Press.
- Cooper, B. (2011). *Empathy in education: Engagement, values and achievement*. Continuum Group. London, UK.
- CPH (2018). Largest airport in the Nordics. SRS Analyser. Retrieved 16, May, 2020, from <https://www.cph.dk/en/cph-business/aviation/route-development/largest-airport-in-the-nordics>
- Creswell, J. W., & Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed). Los Angeles: SAGE Publications.
- Cronin, Jr, J. (1994). SERVPERF Versus SERVQUAL: Reconciling Performance-Based and Perceptions-Minus-Expectations Measurement of Service Quality. *Journal of Marketing*. 58. 125-131. 10.1177/002224299405800110.
- Dabholkar, P.A. (1996), "Consumer evaluations of new technology-based self-service operations: an investigation of alternative models", *International Journal of Research in Marketing*, Vol. 13 No. 1, pp. 29-51.
- Davison, L., Littleford, C., & Ryley, T. (2014). Air travel attitudes and behaviours: The development of environment-based segments. *Journal of Air Transport Management*. 36. 13–22. 10.1016/j.jairtraman.2013.12.007.
- Design Council (2015). The Double Diamond Design Process. Retrieved 16, May, 2020 from <https://www.designcouncil.org.uk/news-opinion/design-process-what-double-diamond>
- Dessart, L., & Pitardi, V. (2019). How stories generate consumer engagement: An exploratory study. *Journal of Business Research*, 104, 183–195.
- Diederiks-Verschoor, I. H. P., Leon, P. M., & Butler, M. A. (2012). *Unruly Passengers. An introduction to air law* (p. 308). Alphen aan den Rijn, the Netherlands: Kluwer Law International.
- Doney, P. M., & Cannon, J. P. (1997). An examination of the nature of trust in buyer–seller relationships. *Journal of Marketing*, 61(April), 35–51.
- Eason, K. D. (1991). Ergonomic perspectives on advances in human-computer interaction, *Ergonomics*, 34:6, 721-741, DOI:10.1080/00140139108967347.
- Ekinci, Y., Riley, M., & Fife-Schaw, C. (1998). Which school of thought? The dimensions of resort hotel quality. *International Journal of Contemporary Hospitality*, 10(2), 63-67. DOI:10.1108/09596119810207200.
- European Aviation Environmental Report 2019. (2019, 24, January). European Environmental Agency. EUROCONTROL. Retrieved 16, May, 2020, from <https://www.eurocontrol.int/publication/european-aviation-environmental-report-2019>
- European Commission (2017). *Annual Analyses of the EU Air Transport Market 2016*. Mott MacDonald House, UK., 28, March, 2017.
- Fallman, D. (2010). *A different way of seeing: Albert Borgmann's philosophy of*



- technology and human–computer interaction. *AI & Society*, 25(1), 53–60.
- Feng, W., Tu, R., Lu, T., & Zhou, Z. (2019). Understanding forced adoption of self-service technology: The impacts of users' psychological reactance. *Behaviour & Information Technology*, 38(8), 820–832.
- Figueroa, A. (2019, 03, June). FIT Travel: All About Independence. Tripsavvy. Retrieved 16, May, 2020, from <https://www.tripsavvy.com/fit-travel-3252289>
- Finavia. (2017, 02, May). Finnair and Finavia test face recognition technology at check-in. Finavia. Retrieved 16, May, 2020, from <https://www.finavia.fi/en/newsroom/2017/finnair-and-finavia-test-face-recognition-technology-check>
- Finavia. (2018b, 28, February). According to Finnish business travellers, Helsinki Airport is the best airport in the world. Retrieved 16, May, 2020, from <https://www.finavia.fi/en/newsroom/2018/according-finnish-business-travellers-helsinki-airport-best-airport-world>.
- Finavia. (2018a, 03, November). Finavia makes air traffic data available to partners and software developers. Finavia. Retrieved 16, May, 2020, from <https://www.finavia.fi/en/newsroom/2018/finavia-makes-air-traffic-data-available-partners-and-software-developers>
- Finavia. (2019a, 11, January). A record-breaking year in 2018 — Helsinki Airport. Finavia. Retrieved 16, May, 2020, from <https://www.finavia.fi/en/newsroom/2019/record-breaking-year-2018-helsinki-airport-hit-20-million-mark-and-passenger-volumes>.
- Finavia. (2019b, 12, September). Commentary: The future of Finland's accessibility is best ensured by combining different modes of transport. Finavia. Retrieved 16, May, 2020, from <https://www.finavia.fi/en/newsroom/2019/commentary-future-finlands-accessibility-best-ensured-combining-different-modes>
- Finne, Å., & Grönroos, C. (2017), "Communication-in-use: customer-integrated marketing communication", *European Journal of Marketing*, Vol. 51 No. 3, pp. 445-463.
- Forbes. (2019). The World's Most Valuable Brands. 2019 Ranking. Forbes. Retrieved 16, May, 2020, from <https://www.forbes.com/powerful-brands/list/>
- Forlizzi, J., Zimmerman, J., & Evenson, S. (2008). Crafting a Place for Interaction Design Research in HCI. *Design Issues*, 24(3), 19–29.
- Foster + Partners. (2019). Kuwait International Airport. Foster + Partners. Retrieved 16, May, 2020, from <https://www.fosterandpartners.com/projects/kuwait-international-airport/>
- Furey, T.R. (1991), "How information power can improve service quality", *Planning Review*, Vol. 19 No. 3, pp. 24-6.
- Frost, L. (2019, 04, October). Airline bankruptcies surge, leaving rivals vying for planes. Reuters. Retrieved 16, May, 2020, from <https://www.reuters.com/article/us-airlines-bankruptcy/airline-bankruptcies-surge-leaving-rivals-vying-for-planes-idUSKBN1WJ1JH>

- Ganesh, R., & Haslinda, A. (2014). Evolution and Conceptual Development of Service Quality in Service Marketing and Customer Satisfaction. *International Review of Management and Business Research*, 3(2), 1189.
- Gheorghe, C. M. (2013). The Role Of Smart Tourists In Shaping The Future Of Air Travel Sector. *Romanian Economic and Business Review*, 337-342.
- Gheorghe, C. M., Sebea, M., & Stoenescu, C. (2016). From Passengers To Airport Customers – How Should Airports Relate To Their Target Groups? *Romanian Economic and Business Review*, 86-97.
- Google (2018, July). How micro moments are reshaping the travel customer journey. Mobile, Consumer Insights, Travel, Micro-Moments. Retrieved 16, May, 2020, from <https://www.thinkwithgoogle.com/marketing-resources/micro-moments/micro-moments-travel-customer-journey/>.
- Green, P. (2014). Measuring Service Quality In Higher Education: A South African Case Study. *Journal of Research in International Education*. 10. 131-142.. 10.19030/jier.v10i2.8515.
- Grönroos, C. (1982), "An Applied Service Marketing Theory", *European Journal of Marketing*, Vol. 16 No. 7, pp. 30-41.
- Grönroos, C. (1984), "A Service Quality Model and its Marketing Implications", *European Journal of Marketing*, Vol. 18 No. 4, pp. 36-44.
- Grönroos, C., & Gummesson, E. (1985). The Nordic School of Services - An Introduction. In C. Grönroos & E. Gummesson (Eds.), *Service Marketing - Nordic School Perspectives* (pp. 6-11). Stockholm: University of Stockholm.
- Gronroos, C. (1988) Service Quality: The Six Criteria of Good Perceived Service Quality. *Review of Business*, 9, 10- 13. New York: St John's University Press.
- Grönroos, C. (1990). *Service management and marketing : managing the moments of truth in service competition*. Lexington Books, Lexington, Mass.
- Grönroos, C. (1998). Marketing services: The case of a missing product. *Journal of Business & Industrial Marketing*. 13. 322-338. 10.1108/08858629810226645.
- Grönroos, C. (2007). *In search of a new logic for marketing: The foundation of contemporary marketing theory*. Hoboken (N.J.): John Wiley.
- Grönroos, C. (2008). Service Logic Revisited: Who Creates Value? And Who Co-creates?. *European Business Review*, 20(4), 298-314.
- Grönroos, C. (2009). Marketing as promise management: Regaining customer management for marketing. *Journal of Business & Industrial Marketing*, 24, 351–359.
- Grönroos, C. (2017), "Christian Grönroos: I did it my way", *Journal of Historical Research in Marketing*, Vol. 9 No. 3, pp. 277-301.
- Gures, N., Inan, H., & Arslan, S. (2018). Assessing the self-service technology usage of Y-Generation in airline services. *Journal of Air Transport Management*, 71, 215–219.

- Harrie, E. (2018). Media Trends in the Nordic Countries. NORDICOM, University of Gothenburg. No. 3, 2018 (October). Retrieved 16, May, 2020, from [https://www.nordicom.gu.se/sites/default/files/mediefakta-dokument/Nyhetsbrev\\_Norden/nordicom\\_nordic\\_media\\_trends\\_2018-3.pdf](https://www.nordicom.gu.se/sites/default/files/mediefakta-dokument/Nyhetsbrev_Norden/nordicom_nordic_media_trends_2018-3.pdf)
- Hargrave, A. M., & Livingstone, S. M. (2006). Harm and offence in media content: A review of the evidence. Bristol: Intellect Press.
- Hargreaves, A. (1998). The emotional practice of teaching. *Teaching and Teacher Education*, 14(8), 835–854.
- Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1993). Emotional contagion. *Current directions in psychological science*, 2(3), 96-100.
- Hediger, H. (1950). *Wild animals in captivity: An outline of the biology of zoological gardens* (G. Sircom, Trans. 1964 ed.). New York: Dover.
- Hediger, H. (1955). *The psychology and behaviour of animals in zoos and circuses* (G. Sircom, Trans. 1968 ed.). New York: Dover.
- Heinonen, K. (2018). Positive and negative valence influencing consumer engagement. *Journal of Service Theory and Practice*, 28(2), 147–169.
- Hemdi, M. A., Rahman, S. A., Hanafiah, M., Adanan, A. (2016). Airport self-service check-in: The influence of technology readiness on customer satisfaction. 537-542.
- Hewson, E. R. F. (2018). Students' Emotional Engagement, Motivation and Behaviour Over the Life of an Online Course: Reflections on Two Market Research Case Studies. *Journal of Interactive Media in Education*, 2018(1), 10. DOI:10.5334/JIME.472.
- Hunt, S.D. (1991) *Modern Marketing Theory: Critical Issues in the Philosophy of Marketing Science*, South-Western Publishing Company, Cincinnati.
- IATA. (2018, Oct, 24). IATA Forecast Predicts. Retrieved 16, May, 2020, from <https://www.iata.org/pressroom/pr/pages/2018-10-24-02.aspx>
- Ikechi A., Anyanwu., Nnamocha, O., & Charles. (2019). Tangibles And Empathy Dimensions (Of Servperf Model) And Customer Satisfaction In The Use Of Atms. Retrieved 16, May, 2020, from [https://www.researchgate.net/publication/332252715\\_tangibles\\_and\\_empathy\\_dimensions\\_of\\_servperf\\_model\\_and\\_customer\\_satisfaction\\_in\\_the\\_use\\_of\\_atms](https://www.researchgate.net/publication/332252715_tangibles_and_empathy_dimensions_of_servperf_model_and_customer_satisfaction_in_the_use_of_atms)
- IPCC. (2018) *Global Warming of 1.5°C*. World Meteorological Organization, Geneva, Switzerland, 32 pp. Retrieved 16, May, 2020, from <https://www.ipcc.ch/sr15/chapter/spm/>
- John, M. C. (2014). *Human-Computer Interaction (HCI)*. Interaction Design Foundation. Retrieved 16, May, 2020, from <https://www.interaction-design.org/literature/topics/human-computer-interaction>
- Jylkäs, T., & Rajab, V. (2018). AI Assistants as Non-human Actors in Service Design.

- DMI: Academic Design Management Conference. London, UK. 1436-1444. 2018. Retrieved 16, May, 2020, from [https://www.researchgate.net/publication/326997609\\_AI\\_Assistants\\_as\\_Non-human\\_Actors\\_in\\_Service\\_Design](https://www.researchgate.net/publication/326997609_AI_Assistants_as_Non-human_Actors_in_Service_Design)
- Kahn, M. E. (2007). Do greens drive Hummers or hybrids? Environmental ideology as a determinant of consumer choice. *Journal of Environmental Economics and Management*, Elsevier, vol. 54(2), pages 129-145, September.
- Kang, G., & James, J. (2004), "Service quality dimensions: an examination of Grönroos's service quality model", *Managing Service Quality: An International Journal*, Vol. 14 No. 4, pp. 266-277.
- Kang, G. (2006), "The hierarchical structure of service quality: integration of technical and functional quality", *Managing Service Quality: An International Journal*, Vol. 16 No. 1, pp. 37-50.
- Kangas, M., Siklander, P., Randolph, J., & Ruokamo, H. (2017). Teachers' engagement and students' satisfaction with a playful learning environment. *Teaching and Teacher Education*, 63, 274–284.
- Kilian, M., Kattenbeck, M., Ferstl, M., Ludwig, B., & Alt, F. (2019), "Towards task-sensitive assistance in public spaces", *Aslib Journal of Information Management*, Vol. 71 No. 3, pp. 344-367.
- King, S. (2019). What Kind Of Traveller Are You?. CNTraveller. Retrieved 16, May, 2020, from <https://www.cntraveller.com/gallery/10-types-that-travel>.
- KLM. (2019). Meet BB KLM's smart assistant. KLM Royal Dutch Airlines. Retrieved 16, May, 2020, from <https://bb.klm.com/en>
- Kock, N. (2005). Media Richness or Media Naturalness? The Evolution of Our Biological Communication Apparatus and Its Influence on Our Behavior Toward E-Communication Tools. *Professional Communication, IEEE Transactions On*, 48, 117–130.
- Kolb, A. Y., & Kolb, D. A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education*, 4, 193-212.
- Krashen, S. D. (1981). The "Fundamental Pedagogical Principle" in Second Language Teaching. *Studia Linguistica*, 35(1–2), 50–70.
- Ku, E. C., & Chen, C.-D. (2013). Fitting facilities to self-service technology usage: Evidence from kiosks in Taiwan airport. *Journal of Air Transport Management*, 32, 87–94.
- Kujur, F., & Singh, S. (2019). Visual communication and consumer-brand relationship on social networking sites - uses & gratifications theory perspective. *Journal of Theoretical and Applied Electronic Commerce Research*, 15(1), 30-47.
- Kurtz, G., Amichai-Hamburger, Y., & Kantor, J. (2009). Psychosocial Well-Being of

- Israeli Students and Attitudes toward Open and Distance Learning. *International Review of Research in Open and Distance Learning*, 10(2), 1–11.
- Kuure, E., & Miettinen, S. (2013). Learning through Action: Introducing the Innovative Simulation and Learning Environment Service Innovation Corner (SINCO). In T. Bastiaens & G. Marks (Eds.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2013* (pp. 1536-1545). Chesapeake, VA: AACE. Retrieved 16, May, 2020, from <http://www.editlib.org/p/115095>.
- Kuure, E., Miettinen, S., & Alhonsuo, M. (2014). Change through Service Design – Service Prototyping as a Tool for Transformation and Learning. In Lim, Y.-K., Niedderer, K., Redström, J., Stolterman, E., & Valtonen, A. (Eds.). (2014). *Proceedings of DRS 2014: Design's Big Debates*, 469-482. Umeå, Sweden: Umeå Institute of Design, Umeå University. ISBN: 978-91-7601-068-6.
- Lashley, C., Morrison, A., & Randall, S. (2005). More Than a Service Encounter? Insights into the Emotions of Hospitality Through Special Meal Occasions. *Journal of Hospitality and Tourism Management*, 12(1), 80–92.
- Ledel, J. (2018, 10, April). 'Flight shame' has Swedes rethinking air travel. PHYS.ORG. Retrieved 16, May, 2020, from <https://phys.org/news/2019-04-flight-shame-swedes-rethinking-air.html>
- Lee, H., Doh, Y. Y. (2012). A Study on the Relationship between Educational Achievement and Emotional Engagement in a Gameful Interface for Video Lecture Systems. 2012 International Symposium on Ubiquitous Virtual Reality, 34–37. IEEE. DOI:10.1109/ISUVR.2012.21.
- Lee, I. F. (2018). *Joyful: The surprising power of ordinary things to create extraordinary happiness*. New York : Little, Brown Spark, 2018.
- Leinonen, J., & Sintonen, S. (2014). Productive Participation—Children as Active Media Producers in Kindergarten. *Nordic Journal of Digital Literacy*, 9(3), 216–236. idunn.no.
- Leite, I., Pereira, A., Mascarenhas, S., Martinho, C., Prada, R., & Paiva, A. (2013). The influence of empathy in human–robot relations. *International Journal of Human-Computer Studies*, 71(3), 250–260.
- Lewis, C. H. (1982). Using the "Thinking Aloud" Method In Cognitive Interface Design. Technical Report IBM RC-9265, IBM Watson Research Center, Yorktown Heights, NY, USA, 1982.
- Lewis-Beck, M. S., Bryman, A., & Liao, T. F. (Eds.) (2004). *The SAGE encyclopedia of social science research methods* (Vols. 1-3). Thousand Oaks, CA: SAGE Publications, Inc. DOI:10.4135/9781412950589.
- Livingstone, S. (2009). *Children and the internet: great expectations, challenging realities*. Polity Press, Oxford, UK. ISBN 9780745631943

- Lugmayr, A., Stockleben, B., Zou, Y., Anzenhofer, S., Jalonen, M. (2014). Applying “Design Thinking” in the context of media management education. *Multimed Tools Appl* 71, 119–157.
- MaaS Alliance. (2019). European Union's Transparency Register (ID: 140593628433-52). Retrieved 16, May, 2020, from <https://maas-alliance.eu/homepage/what-is-maas/>
- Mahoney, H.M. (2017). Using Design to Design Learning Experiences. Stanford d.School. Retrieved 16, May, 2020: <https://dschool.stanford.edu/news-events/using-design-to-design-learning-experiences>
- Malmlund, J., & Suortti, J. (2018). A Mobile World. A study on Nordic mobile consumer behaviour. Deloitte Global Mobile Consumer Survey 2018: The Nordic cut. Retrieved 16, May, 2020, from <https://www2.deloitte.com/content/dam/Deloitte/dk/Documents/technology-media-telecommunications/Downloads/GMCS-report-2018-final.pdf>
- Marino, V., & Presti, L. L. (2018). Engagement, satisfaction and customer behavior-based CRM performance. *Journal of Service Theory and Practice*; Bingley, 28(5), 682–707.
- McLaughlin, M., & DeVogd, G. (2020). Critical Expressionism: Expanding Reader Response in Critical Literacy. *Reading Teacher*, 73(5), 587–595.
- Mehta, S.C., Lalwani, A.K., & Han, S.L. (2000). Service quality in retailing: relative efficiency of alternative measurement scales for different product-service environments. *International Journal of Retail & Distribution Management*, 28(2), 62-72. DOI:10.1108/09590550010315106.
- Micheaux, A., Bosio, B., Crittenden, V. L., & Peterson, R. A. (2019). Customer Journey Mapping as a New Way to Teach Data-Driven Marketing as a Service. *Journal of Marketing Education*, 41(2), 127–140.
- Miettinen, S. & Koivisto, M. (2009). Designing services with innovative methods. Kuopio Academy of Design. Distributor: University of Art and Design Helsinki.
- Mukhtar, U., Anwar, S., & Ilyas, A. (2017). Evolution of service quality management and paradigm shift from product to service orientation: a historical review of literature. *International Journal of Business Forecasting and Marketing Intelligence*. 3. 201. 10.1504/IJBFMI.2017.084058.
- Myler, L. (2016, 08, June). Acquiring New Customers Is Important, But Retaining Them Accelerates Profitable Growth. *Forbes*. Retrieved 16, May, 2020, from <https://www.forbes.com/sites/larrymyler/2016/06/08/acquiring-new-customers-is-important-but-retaining-them-accelerates-profitable-growth/>
- Nagar, D., & Pandley, J. (1987). Affect and performance on cognitive task as a function of crowding and noise. *Journal of Applied Psychology*, 17(2), 147-157.



- National Express Transit (2017, 18. July). 9 Benefits Of Public Transportation. Retrieved 16, May, 2020, from <https://www.nationalexpresstransit.com/blog/9-benefits-of-public-transportation/>
- Oertzen, A., Odekerken, G., Brax, S., & Mager, B. (2018). Co-creating services—conceptual clarification, forms and outcomes. *Journal of Service Management*. 10.1108/JOSM-03-2017-0067.
- Overgaard, S. (2019, 02, September). Nordic Aviation Capital Delivers. Nordic Aviation Capital. Retrieved 16, May, 2020, from <http://www.nac.dk/news-and-press/nordic-aviation-capital-delivers-another-record-year-and-announces-its-23rd-consecutive-year-of-increased-profit/>
- Pandey, C., & Kapitanoff, S. (2011). The influence of anxiety and quality of interaction on collaborative test performance. *Active Learning in Higher Education*, 12(3), 163–174. DOI:10.1177/1469787411415077.
- Panova, T., & Lleras, A. (2016). Avoidance or boredom: Negative mental health outcomes associated with use of Information and Communication Technologies depend on users' motivations. *Computers in Human Behavior*, 58, 249-258, 252.
- Parasuraman, A., Zeithaml, V., & Berry, L. (1985). A Conceptual Model of Service Quality and its Implication for Future Research (SERVQUAL). *The Journal of Marketing*. 49. 41-50. 10.2307/1251430.
- Parasuraman, A., Zeithaml, V., & Berry, L. (1988). SERVQUAL: A Multi-Item Scale For Measuring Consumer Perceptions Of Service Quality. *Journal of Retailing*, 64(1), 12–40.
- Parasuraman, A., Zeithaml, V., & Malhotra, A. (2005). E-S-QUAL: A Multiple-Item Scale for Assessing Electronic Service Quality. *Journal of Service Research*, 7(3), 213–233. DOI:10.1177/1094670504271156.
- Peters, D, Calvo, R. A., & Ryan R. M. (2018) Designing for Motivation, Engagement and Wellbeing in Digital Experience. *Frontiers in Psychology*. 9:797. DOI:10.3389/fpsyg.2018.00797.
- Pihlajamaa, O., Eckhardt, J., Rajan, A., Kostiainen, J., & Kinnunen, T. K. (2018). Matching mobility services with tourist traveller archetypes in rural destinations. Paper presented at 25th ITS World Congress, Copenhagen, Denmark. EU-SP1617. Retrieved 16, May, 2020, from <https://cris.vtt.fi/en/publications/matching-mobility-services-with-tourist-traveller-archetypes-in-r>
- Pisnik, A., & Snoj, B. (2010). "Development, Validity and Reliability of Perceived Service Quality in Retail Banking and its Relationship With Perceived Value and Customer Satisfaction," *Managing Global Transitions*, University of Primorska, Faculty of Management Koper, vol. 8(2), pages 187-205.
- Polyakova, O., & Mirza, M. (2015). Perceived service quality models: Are they still

- relevant?. *The Marketing Review*. 15. 59-82.  
DOI:10.1362/146934715X14267608178721.
- Qikserve. (2018, 6, August). The evolution of self-service technology. QikServe.  
Retrieved 16, May, 2020, from  
<https://www.qikserve.com/self-service-tech-a-history>
- Rasyida, D., Ulkhaq, M., Priska, R., Setyorini, N. (2016). Assessing Service Quality: A Combination of SERVPERF and Importance-Performance Analysis. *MATEC Web of Conferences*. 68. 06003. 10.1051/matecconf/20166806003.
- Reeve, J., & Tseng, C. (2011). Agency as a fourth aspect of students' engagement during learning activities. *Contemporary Educational Psychology*, 36(4), 257–267.
- Reittipos. (2019). HSL. About this service. Retrieved 16, May, 2020, from  
<https://reittipos.hsl.fi/tietoja-palvelusta>
- Richard, M.D., & Allaway, A.W. (1993), "Service quality attributes and choice behavior", *Journal of Services Marketing*, Vol. 7 No. 1, pp. 59-68.
- Rietveld, R., Dolen. W., Mazloom, M., & Worrying, M. (2020). What You Feel, Is What You Like Influence of Message Appeals on Customer Engagement on Instagram. *Journal of Interactive Marketing (Elsevier)*, 49, 20–53.
- Rose, T. (2017). *The End of Average: Unlocking our potential by embracing what makes us different*. HarperCollins, 2017.
- Ryff, C., & Keyes, C. (1995). The Structure of Psychological Well-Being Revisited. *Journal of personality and social psychology*. 69. 719-27.  
10.1037/0022-3514.69.4.719.
- Sahul, H. F. (2016). Service Quality in Distance Education using the Gronroos Model. *The Social Science* 11 (Special Issue 6): 7199-7205, 2016. Medwell Journals.
- Sanders, E. (2002). From user-centered to participatory design approaches. In *Design and the Social Sciences*. J.Frascara (Ed.), Taylor & Francis Books Limited, 2002  
10.1201/9780203301302.ch1.
- Santos, J. (2003), "E-service quality: a model of virtual service quality dimensions", *Managing Service Quality*, Vol. 13 No. 3, pp. 233-46.
- Saunders, A. (2016). What is psychographic segmentation and how is it different from segmenting by customer demographics?. *Keep Business Success*. Retrieved 16, May, 2020, from  
<https://keap.com/business-success-blog/marketing/email-marketing/why-psychographic-segmentation-is-important>
- Savin-Baden, M., Tombs, G., & Bhakta, R. (2015). Beyond robotic wastelands of time: Abandoned pedagogical agents and new pedalled pedagogies. *E-Learning and Digital Media*, 12(3–4), 295–314. DOI:10.1177/2042753015571835.



- Seeker. (2016, 21, November). How Airplanes Are Designed To Feel Bigger On The Inside [Video report file]. Retrieved 16, May, 2020, from <https://www.seeker.com/how-airplanes-are-designed-to-feel-bigger-on-the-inside-2103409818.html>.
- Seth, N., Deshmukh, S., & Vrat, P. (2005), "Service quality models: a review", International Journal of Quality & Reliability Management, Vol. 22 No. 9, pp. 913-949.
- Slotnick, D. (2019, 08, October). 26 famous airlines that have gone out of business. Business Insider. Retrieved 16, May, 2020, from <https://www.businessinsider.com/airlines-that-go-out-of-business-2019-3?r=US&I R=T>
- Soteriou, A.C., and Stavrinides, Y. (2000), "An internal customer service quality data envelope analysis model for bank branches", International Journal of Bank Marketing, Vol. 18 No. 5, pp. 246-52.
- Spurway, P. (2011). Maximising non-aeronautical revenues: Making the emotional connection. Journal of Airport Management, 5(2), 102–107.
- Stamps, A. E. (2009). On shape and spaciousness. Environment and Behavior, 41(4), 526-548. DOI:10.1177/0013916508317931.
- State of Business Travel Report. (2016). Concur Technologies Inc. (a SAP Company), [2016, 19 July] (p.7). Retrieved 16, May, 2020, from <https://www.concur.com/newsroom/article/meet-the-faces-of-todays-business-traveler>.
- Stickdorn, M., & Schneider, J. (2012). This is service design thinking: Basics--tools--cases. Amsterdam: BIS Publishers.
- Stickdorn, M. (2018). This is a service design: Doing a job in the real world: a practitioner's Handbook. O'Reilly Media.
- Sultan, P., & Wong, H. (2010). Service quality in higher education – a review and research agenda. International Journal of Quality and Service Sciences. 2. 259-272. DOI:10.1108/17566691011057393.
- Tan, A., Muskat, B., & Johns, R. (2019), "The role of empathy in the service experience", Journal of Service Theory and Practice, Vol. 29 No. 2, pp. 142-164. DOI:10.1108/JSTP-10-2018-0221.
- Taylor, S., & Hunter, G. (2014). Value, Satisfaction, And Loyalty: An Evolving Conceptualization. Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior, 27, 19-23.
- Taylor, S., & Statler, M. (2014). Material Matters: Increasing Emotional Engagement in Learning. Journal of Management Education, 38(4), 586–607. DOI:10.1177/1052562913489976.
- Thaler, R. H., & Sunstein, C. R. (2009). Nudge: improving decisions about health,

- wealth, and happiness. Rev. and expanded ed. New York: Penguin Books.
- The Japan Times. (2017, 13, December) Robots to be 'scattered' about Haneda airport. The Japan Times Online. Retrieved 16, May, 2020, from <https://www.japantimes.co.jp/news/2017/12/13/national/robots-scattered-haneda-airport-help-visitors-2020-tokyo-olympics/>
- Tozer-Pennington, V. (2019). The Aviation Industry Leaders Report 2019. Aviation News Ltd. Aviation News Ltd. Registered in England & Wales: 7351543. Retrieved 16, May, 2020, from <https://assets.kpmg/content/dam/kpmg/ie/pdf/2019/01/ie-aviation-industry-leaders-report-2019.pdf>
- Tømte, C. (2018). Guest editorial. Nordic Journal Of Digital Literacy. Norwegian Directorate for Education and Training. Vol. 13, No. 1-2018, p. 5–8. DOI:10.18261/ISSN.1891-943X-2018-01-01. Retrieved 16, May, 2020, from <https://pdfs.semanticscholar.org/d480/37c919f37ee624d711c594d78652ddc11e2d.pdf>
- Van Dierendonck, D. (2004). The construct validity of Ryff's Scales of Psychological Well-Being and its extension with spiritual well-being. *Personality and Individual Differences*. 36. 629-643. DOI:10.1016/S0191-8869(03)00122-3.
- Vargo, S.L. & Lusch, R.F. (2004) 'Evolving to a New Dominant Logic for Marketing', *Journal of Marketing* 68(January): 1–17
- Vargo, S.L. & Lusch, R.F. (2008) 'Service Dominant Logic: Continuing the Evolution', *Journal of the Academy of Marketing Science* 36(1): 1–10.
- Valkenburg, P. M., & Peter, J. (2013). Five challenges for the future of media-effects research. *International Journal of Communication : IJoC*, 7, 197-215.
- Heuvel, A., Eijnden, R., Rooij, A., & Mheen, D. (2012). Meeting online contacts in real life among adolescents: The predictive role of psychosocial wellbeing and internet-specific parenting. *Computers in Human Behavior*. 28, 2 (March, 2012), 465–472. DOI:10.1016/j.chb.2011.10.018.
- Vasalou, A., Joinson, A., Bänziger, T., Goldie, P., & Pitt, J. (2008). Avatars in social media: Balancing accuracy, playfulness and embodied messages. *International Journal of Human-Computer Studies*, 66(11), 801–811.
- Virtanen, T. E., Lerkkanen, M., Poikkeus, A., & Kuorelahti, M. (2015). The relationship between classroom quality and students' engagement in secondary school. *Educational Psychology*, 35(8), 963–983.
- Waugh, J. (2019). Solo Travel Statistics and Data : 2018 – 2019. Solo Traveler. Retrieved 16, May, 2020, from <https://solotravelerworld.com/about/solo-travel-statistics-data/>.
- Washburn, A. (2017). *Body Language: Communication from age 18 - 88*. Mountain

- Plains Adult Education Association Conference (MPAEA), Salt Lake City, 2017, UT: UAACCE. Retrieved 16, May, 2020, from <https://canvas.instructure.com/courses/1034054/files/50403308/download?verifier=fU7CesZaJVEjlBHYMLjmyBb7ruzonVxwXoQVFouW&wrap=1>
- Weaver, P. (2009). Identifying Leisure Travel Market Segments Based On Preference For Novelty. *Journal of Travel & Tourism Marketing*, 26:5-6, 568-584, DOI:10.1080/10548400903163129.
- WhereInBacolod. (2018, 01, July). Japanese Airline Staff Bow Head To Their Passengers Due To Delayed Flight! Where In Bacolod. Retrieved 16, May, 2020, from <http://www.whereinbacolod.com/2018/07/japanese-airline-staff-bow-head-to.html>
- Wilson, A (2019, 11, July). Dutch airline KLM calls for people to fly less. *The Guardian*. Retrieved 16, May, 2020, from <https://www.theguardian.com/travel/2019/jul/11/dutch-airline-klm-calls-for-people-to-fly-less-carbon-offsetting-scheme>
- Wolfe, P. (2006). The role of meaning and emotion in learning. *New Directions for Adult & Continuing Education*, 2006(110), 35–41. DOI:10.1002/ACE.217.
- Wolfenbarger, M., & Gilly, M. C. (2003). eTailQ: Dimensionalizing, measuring and predictingetail quality. *Journal of Retailing*, 79(3), 183–198. DOI:10.1016/S0022-4359(03)00034-4.
- Yle. (2019, Jan, 31). Finnish PM demands faster climate action at European Parliament. Yle. Retrieved 16, May, 2020, from [https://yle.fi/uutiset/osasto/news/finnish\\_pm\\_demands\\_faster\\_climate\\_action\\_at\\_european\\_parliament/10623756](https://yle.fi/uutiset/osasto/news/finnish_pm_demands_faster_climate_action_at_european_parliament/10623756)
- Yousapronpaiboon, K. (2014). SERVQUAL: Measuring higher education service quality in Thailand. *Procedia - Social and Behavioral Sciences*. 116. 1088-1095. DOI:10.1016/j.sbspro.2014.01.350.
- Zandvliet, D.B. & Fraser, B.J. (2005). Physical And Psychosocial Environments Associated With Networked Classrooms. *Learning Environ Res*. 8:1. DOI:10.1007/s10984-005-7951-2.
- Zeller, F., Smith, D. H., Au Duong, J., Mager, A. (2019). Social media in human–robot interaction. *International Journal of Social Robotics*. DOI:10.1007/s12369-019-00573-4.
- Zhu, F.X., Wymer, W.J., & Chen, I. (2002), “IT-based services and service quality in consumer banking”, *International Journal of Service Industry Management*, Vol. 13 No. 1, pp. 69-90.
- Zins, A. H. (1998). Leisure Traveler Choice Models of Theme Hotels Using Psychographics. *Journal of Travel Research*, 36(4), 3–15. DOI: 10.1177/004728759803600401.

# Appendix

## Appendix (1): Nonparticipant Observation

### 1- Helsinki Airport


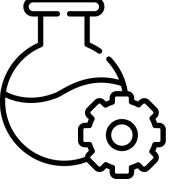

[https://docs.google.com/document/d/19o9cUtteJ1MjWWojLJfGG9YAuKege4NazfO5k\\_fJTEM/edit?usp=sharing](https://docs.google.com/document/d/19o9cUtteJ1MjWWojLJfGG9YAuKege4NazfO5k_fJTEM/edit?usp=sharing).

### 2- During contextual Interviews

[https://docs.google.com/document/d/1yO7QVLp3\\_CJ5nplp78rDw9OzXgFin\\_qjM1Tu15EkEol/edit?usp=sharing](https://docs.google.com/document/d/1yO7QVLp3_CJ5nplp78rDw9OzXgFin_qjM1Tu15EkEol/edit?usp=sharing)

## Appendix (2): Service Design Tool-Box

For an extensive look, starting with the earliest and elaborated in a semi chronological order, the table below shows which specific tools have been used. The Tool-Box was iteratively used during the following design stages: 1- To discover. 2- To define problems and opportunities. 3- To test. (Design Council, 2015). This collection of adopted methods (Miettinen, 2009; Stickdorn, 2012; 2018) has been purposefully selected to provide the best possible qualitative data — in respect to the case study and the narrative approach.

 <p><b>Objectives Principles</b></p>	 <p><b>Service Design Tool Definition</b></p>	 <p><b>Application Design stage</b></p>
<p>Purposeful Sampling</p>	<p><b>Literature Fieldwork</b></p>	<p>University of Lapland online and physical Library.</p> <p><i>Discover and align.</i></p>
<p>Inquiries into SST.</p> <p><i>See Appendix: Interviews and Transcriptions.</i></p>	<p><b>Service Design Lab</b></p> <p>University Of Lapland. Remote conference interviews: service provider</p>	<p>Video interviews and transcriptions.</p> <p><i>Align, discover and operotuny points.</i></p>
<p>SST interactions: in preparation to design the case study definitions.</p> <p>Service environment: HEL and CPH Airports. Airport train stations.</p> <p><i>See Appendix (1): Observation.</i></p>	<p><b>Observation Fieldwork</b></p>	<p>Visual and discreet note taking.</p> <p>Functionality, efficiency and aesthetic representation of the brand: physical attributes of SST consoles, media software and interface.</p> <p><i>Discovery stage.</i></p>
<p>Digital Interactions for customer needs.</p> <p>Airport technology transformation: what equipment is available for the customer, spatial environment of airport SST, airport train stations.</p>	<p><b>Benchmarking</b></p> <p>To measure the quality difference across a given industry: policies, products, programmes, and strategies of peers are examined and analysed to understand how high-performances have been achieved.</p>	<p>Note and visual documentation.</p> <p>HEL check-in process, and ground transportation have been benchmarked against CPH. CPH: competitive services at the largest airport in the Nordic region in terms of passenger capacity and direct flights</p>

		(CPH, 2018). <i>Discovery stage.</i>
<p>Psychographic behaviour.</p> <p>The archetypal approach: unlike a segment e.g, a group's gender and age, archetypes are described in a 'behavioural' fashion rather than statistical highlights.</p> <p>See <i>Appendix (3)</i></p> <p><a href="#">1- Aki The Explorer.</a></p> <p><a href="#">2- Philip The Business Savvy.</a></p>	<p><b>Personas</b></p> <p>Persona profile: visualising a sampled person who represents an archetype.</p> <p>Archetypes: a set of characteristics with needs to achieve a particular goal e.g, 1- Time-savers. 2- Unique experience seekers.</p> <p>This tool highlights the psychographic behaviour of the customer, acquiring a better understanding of their emotional needs.</p>	<p>Data aims to visually emphasise the personas' appearance, goals, values and concerns, in order to appropriately enact their behaviour through case study role-play. The visual approach aims to generate empathy and dialog amongst readers and viewers with the persona.</p> <p>Persona narratives focus on digital interactions within travel service enlevement.</p> <p><i>Discover, Prototype and test.</i></p>
<p>Narrate the persona's interactions, behaviour and raw emotions during the case study: Thinking Aloud Protocol.</p>	<p><b>Probes</b></p> <p>Tools or artifacts: empower researchers and participants to document their experience along the service process.</p> <p>"Individuals may be unable to recall the details of media exposure when asked in surveys and probably use heuristics to formulate a response" (Valkenburg, 2013, p.5). To combat such issues, the Thinking Aloud protocol has been employed to document the narrative and process of the case.</p>	<p>A mobile smart device is the single most capable probe tool I have used. It has allowed me to probe the service environment and collect viable data without disturbing the service process flow.</p> <p>Photos, videos, audio notes, text notes, GPS journey tracking technology, record log of interview location and SST locations have all been documented using a single mobile device.</p> <p><i>Discover, prototype and test.</i></p>
<p>Definition of the case</p>	<p><b>A Day in the life</b></p>	<p>Data merger for a MaaS</p>

study.	Each persona embarks on multiple interactions within the day of travel: using digital channels for all five stages of the case.	system concept: combined air and ground door to door service experience.  <i>Discovery and prototype.</i>
<p>Case study theme: discover customer needs and values.</p> <p>See <i>Appendix (3)</i></p> <p><i>Storyboards. Journey details.</i></p> <p><a href="#">1- Aki The Explorer.</a></p> <p><a href="#">2- Philip The Business Savvy.</a></p>	<p><b>What If ...</b></p> <p>Inquiry style: occasionally, service design explores the most outlandish scenarios before they actually get implemented into a service. It is to save companies from losing resources and customers before implementing a possible faulty service.</p> <p>Depicting future possible scenarios by enactment.</p>	<p>Data collection: mobile probe tools.</p> <p>During the journey day, what if SST and AI assistants are the only available entity to rely on.</p> <p>Both case-studies restrict the personas from interacting with a live-human-agent. The entire journey is designed to be completed through SST machines and mobile apps.</p> <p><i>Discovery stage.</i></p>
<p>An empirical approach to provide visual data of the persona experience: pain points and delight points.</p> <p>Documenting the narratives: state of mind, sequence of journey as it unfolds, unexpected circumstances affecting behaviour, and motivation.</p> <p>To observe the operation of existing services when the “What If ...” intrinsic theme is applied.</p> <p>See <i>Appendix (3): Storyboards.</i></p>	<p><b>Storyboarding</b></p> <p>Evidencing by visualising service interactions in a story-telling narrative style.</p> <p>Storyboards can provoke meaningful analysis: discussions, problem solving, offering opportunities, and allowing researchers to step into the shoes of the customer.</p> <p>Visual evidence allows the reader an empathetic connection with the persona.</p>	<p>Personas have been personally enacted. Design-thinking and user-profile visual schemes have allowed me to perform each interaction based on the person’s characteristics.</p> <p>I was aware that I did not have to maintain the persona’s behaviour, mannerism, or attire beyond the day of the case study; the emotions I witnessed, however, were very much psychologically true (Lewis-Beck, 2004 p. 976); hence, the case</p>

		narratives have been entirely circumstantial. <i>Prototype and test.</i>
<p>Validating persona psychographics: environmental concerns, spatial interaction, values and micro moment needs. SST emotional and empathic interactions.</p> <p>Collecting data from both groups.</p> <p>Customer group: <i>Contextual Interviews:</i> <a href="#">Nichlas</a>  <a href="#">Raul</a></p> <p>Service Provider group: <i>Contextual Interview:</i> <a href="#">Ilkka Kinnari</a></p> <p><i>Conventional Interview:</i> <a href="#">Matti Lehto</a></p>	<p><b>Contextual Interviews</b></p> <p>A contextual interview takes place in the same environment where the subject is interacting with a service. The approach is ethnographic by heart, where pleasures, interests and dissatisfaction are expressed either at the time of the interaction or briefly thereafter; yet, it is always focused on the same physical location where an interaction with a given touchpoint is happening.</p>	<p>On site interviews: audio and visual documentation for both the customer and service provider groups.</p> <p>During the process, three interviews took place in a contextual foreground manner: the interview theme followed each participant throughout the process of service interactions. Since some interactions can be lengthy, this strategy took more time and effort than a causal one on one interview; thus, contextual interviews are often about an active event.</p> <p><i>Discovery and opportunities.</i></p>
<p>1- SST Interactions for both the explorer and the business archetype are thoroughly observed.</p> <p>2- Observe frequency of interference from live-human-agents e.g, when digital assistance fails.</p> <p>3- Provide opportunity points.</p>	<p><b>Direct Observation: Shadowing</b></p> <p>Without influencing the participant to change their behaviour during service interactions, which can be a side effect of contextual interviews, shadowing, on the other hand, is to observe customers during their most uninterrupted state of mind.</p>	<p>Discreet hand-written digital notes.</p> <p>Active observation was carried: customer group.</p> <p>For each touchpoint channel (figure 14), the user's perception on how well SST was able to complete tasks is taken into account.</p> <p><i>Discovering.</i></p>
Validating persona psychographics:	<b>The Five Whys</b>	Online interviews: audio and visual documentation.



<p>investigating possible hidden problems.</p> <p><i>Interviews and Transcriptions.</i></p> <p><a href="#"><u>1- Raul. The Explorer</u></a></p>	<p>A strategy of sequential “why” questions that aim to find the problem at its core.</p> <p>To highlight hidden problems ordinary marketing research methods, such as surveys and questionnaires, might have missed.</p> <p>To explore beyond the surface: psychosocial attributes that can affect the motivational drive of all stakeholders, which includes the main provider and the customer.</p>	<p>The ‘WhyS’ strategy was applied on Raul, an actual traveller that reflects the persona of the main perspective case. The ‘WhyS’ dialog took place during the post-experience period of Raul’s trip to Lapland. He had settled back at his home in Barcelona. A period of three weeks was given between the time of Raul’s contextual airport interview and the ‘WhyS’ interview. This was to allow the participant adequate time to reflect on his past experience in coherent depth.</p> <p>Nonverbal facial expressions were particularly noted for further behavioural insight (Washburn, 2017). Raul gave consent to analyse the facial expressions of the interview.</p> <p><i>Discovery.</i></p>
<p>SST Interaction Principles: in-depth psychological connection. A deeper observation of the customer’s emotional engagement.</p>	<p><b>Roleplay</b></p> <p>During service interactions, the researcher steps into the shoes of the customer: evoke realistic emotions and psychological feelings.</p>	<p>Narrative research: Thinking Aloud protocol and visual documentation using a mobile device.</p> <p><i>Prototype and test.</i></p>
<p>Visualise the within-case analysis: psychographic needs.</p>	<p><b>Journey Experience Maps</b></p> <p>A visual analysis of the</p>	<p>To each individual case, data analysis produces two journey maps: Akí and Philip journey experience.</p>

<p>Based on research principles: 1- Customer empathy and emotional engagement. 2- Illustrating potential solutions to improve future services.</p> <p><i>See Analysis: 6.2 Within Case Individual Analysis: Experience Map</i></p>	<p>case studies.</p>	<p>A visual representation of the within-case analysis:</p> <p>1- The analysis theme is guided by the principles of this research (see section 2.2).</p> <p>2- Potential solutions and opportunity points are guided by literature review and data collected by this entire tool-box.</p> <p><i>Defining and roadmap.</i></p>
--	----------------------	---

## Appendix (3): Storyboards

### **1- Akí The Explorer**

<https://drive.google.com/file/d/10AavJNwQBS1qg8l1ivGJCmmAoJM8977k/view?usp=sharing>

### **2- Philip The Business Savvy**

<https://drive.google.com/file/d/1LKj5A3QndqR96uNieqC67ldpEMUH3gjY/view?usp=sharing>