A Service Design Case Study on University Library Services

Peter Daniel Vandor || 499508
Master thesis || Media & Creative Industries
Erasmus University Rotterdam || ESHCC
Dr. Sven-Ove, Horst || Thesis supervisor
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ABSTRACT

Introduction: User experience, within every service industry, became the center of attention with regards to developing and maintaining a positive customer experience. Moreover, as the existing literature argued, an ongoing management of user needs is required to develop these positive experiences. Arguably, these positive experiences can lead to beneficial outcomes for both the users and the service providers, such as user satisfaction, decreased incentives for switching services, as well as positive WOM and boosted loyalty. Additionally, previously conducted research has also pointed out that library services, specifically in university settings, are more complex than simply offering a study space or renting out books. Therefore, this study is aiming at identifying the various unsatisfied user needs as well as the causes of the different positive and negative experience within the library setting of Erasmus University Rotterdam. In more details, the study is concentrating on how can the student experiences be well-managed in a university library from a service design perspective. In this matter, service design refers to the methodology and point of view of the user experiences by mapping the disparate user behaviors throughout the service. Service design also offers a holistic view over the entire service which can greatly support the elimination of negative experiences and the enhancement of positive ones.

Method: On the basis of the correlated literature, in-depth and semi-structured interviews appeared to be the most appropriate methodology to determine user needs and experiences and hence potentially create library personas and user journey. Interviewees, who actively use the EUR library services were randomly selected to participate. The analysis (data synthetization) illustrated that the library users have varying behavioral attributes, in addition to the unsatisfied needs and unfavorable experiences. Moreover, these negative experiences showed to be in a high correlation with the further user needs.

Results: The key findings suggest that the students who use the library have a significant unpleasant experience with not finding a seat or not knowing the library's availability beforehand. Furthermore, other feasible user needs were associated with infrastructural elements, such as personalized desk lamps or comfortable furniture. The main results show that a continuous management of user needs is demanded to reach an overall positive experience and user satisfaction.

Conclusion: A compelling future recommendation is made with regards to satisfying user needs whilst tackling the most significant pain point. This suggestion entails a mobile application that shows real-time availability of the library and serves as a reservation system for study spaces. Finally, further research is recommended in terms of prototyping the aforementioned mobile application and examining the differences between varying study spaces at EUR, as well as the interconnectedness and relationships between the different library users.

Keywords: Service design, Library services, User experience/needs, Customer/user journey, Persona

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List of abbreviations:

CE – Customer Experience

CS – Customer Satisfaction

ESE – Erasmus School of Economics

ESHCC – Erasmus School of History, Culture & Communication

ESSB – Erasmus School of Social & Behavioural Sciences

EUR – Erasmus University Rotterdam

IBA – International Business Administration

IBCoM -International Bachelor Communication & Media

IBEB – International Bachelor Economics & Business Economics

IT – Informational technology

RSM – Rotterdam School of Management

SD – Service Design

Chapter 1:

Introduction

1. Introduction

Libraries are not only study spaces, but also more complex services which require to continuously satisfy its users' needs (Applegate, 2009). Therefore, such as every service provider, libraries need to focus on creating pleasant experiences for users, such as user-friendliness, access and positive experience as a whole. This development arose from Parker and Heapy (2006); Brown (2008) and Gudi and Paradkar (2016), who have shown that by focusing on the users' experiences and needs, both the users and service providers can have significant benefits. In the same time, more exploration seems to be needed about library services and the way its users' needs and experiences can be well-managed.

Since, customer satisfaction (CS) became a buzzword in the late 20th century due to the increased possibility to switch services or products, therefore numerous academics have been discussing its nature (e.g. Oh & Jeong, 1996; Bagozzi, 1980). Since, satisfying customers' needs led to customer-centrism, which concentrates on the maximization of customer satisfaction, numerous scholars have pursued to develop a general framework for positive customer perception. For instance, Oh (1999) focused on customer satisfaction by looking at post-purchasing behavior and decision-making processes (for instance by looking at satisfaction, repurchasing motives, recommendation and word of mouth (WOM)). This research showed that the satisfaction by customers is highly correlated with service qualities and the value that customers represent in services. Another research indicated that through favorable experiences magnified loyalty and increased profitability could be reached (Frow & Payne, 2007).

Moreover, as Oh (1999) identified, "[…] customer value is an important variable (or construct) to be considered in service quality and consumer satisfaction studies or vice versa" (p. 78). Another implication by Oh (1999) was the meditator role of combining service quality and customer value, which potentially satisfies customer needs within varying services.

Defining customer experience

The aforementioned customer experience (CE), has been described differently by many authors within academia, although this paper takes the definition by Meyer and Schwager (2007) due to its easy understandability. This definition clearly argues that "customer experience is the internal and subjective response customers have to any direct or indirect contact with a company" (p. 2). In their definition direct contact could be seen in cases of product purchases or service usage. While indirect contact could also occur through some unexpected convocations with companies' products or services via word of mouth, different advertisements, or even criticisms by others.

Moreover, according to Berry, Carbone and Haeckel (2002), customers will have an experience at any time when they encounter a service or a product. The authors further argued that these experiences could be seen as "[…] good, bad or indifferent" by the purchaser or user (p. 5).

Additionally, Meyer and Schwager (2007) also introduced customer experience as a strong competitive advantage of a particular company, thus justifying the customer experience's relevance for every service sector.

Customer experience in different fields

Customer experience has its own clues that could be a significant help for indicating and creating those experiences into favorable ones (Berry et al., 2002). These clues for instance could be understood as physical design or settings of the specific places, while a more personal element could identified as the way the staff members treat the existing or potential customers. They further argued that these specific clues possess different messages that could be perceived by purchasers, and as a totality they unconsciously synthesize the overall user or customer experience. This being said, every single service has its own unique clues and thus perceived experiences. This idea was further supported by Frow and Payne (2007), since they stated that the conscious management of positive customer experiences are increasingly applied throughout disparate sectors.

Seemingly, diverse research has been done on the previously mentioned customer experience in highly different sectors. For instance, varying research has been conducted on the retail business with brands such as Starbucks by Verhoef et al. (2009), in hotels and the hospitality industries by Ali, Hussian and Ragavan (2014), in banking and financial industries by Levesque and McDougall (1996) or in educational sectors, such as in libraries or study spaces by Gudi and Paradkar (2016). Consequently, the varying research and the previously cited academic papers indicate the relevance for researching and thus applying the theory of customer experience in every sector in the field of services.

Focus of the research

Although, as it has been aforementioned, every service's customer experience appears to be relevant to study, this research will focus on the educational sector. More specifically, I chose to concentrate on university library services. To explore and exemplify this theme I will analyze the context and user perception of the main library at Erasmus University Rotterdam (EUR).

Why is it relevant to research? Sine, according to Lincoln (2002), libraries need to create and maintain up-to-date strategies to make users feel that library is a place for intellectual community and thus increase their overall positive experience. Nevertheless, the author also explained that customer-friendly concerns, for instance well-planned furniture, the availability of computers or better informational technology (IT) access can significantly and positively influence the satisfaction that is being perceived by the users or customers.

Subsequently, Gudi and Paradkar (2016) recommended that the managers of libraries need to invest in the facilities of services to increase their users' satisfaction. As well as, Lincoln (2002)

argued that every library has its own unique culture, therefore identifying some particular aspects that are closely related to the concept of customer experience, specifically in the library services Erasmus University Rotterdam, seem to be a compelling addition to the existing research. This could also mean attracting new students and better satisfying the existing ones, for instance through better tailored learning experiences, increased service circumstances and library structures.

How to identify customer needs? Guiding the research

In terms of guidance for the research, Zomerdijk and Voss (2010) pointed out that a service design (SD) perspective is an appropriate solution for designing positive customer experience for desperate services. In details, this means that this method not only identifies the so called *pain points* that are causing negative experiences for the users, but it also potentially identifies areas that are significantly influencing the overall perceived service and thus experience. Therefore, this paper will analyze the library services at EUR, from a service design perspective. The particular service design tools and procedures that are guiding the research process, will be in-depth elaborated in the theory and methodology section, as well as throughout the following chapters.

Relevance of the paper

This research appears to be compelling from three different perspectives. Firstly, there is relevance for social contribution, since socio-economic benefits could be reached for students and service providers as well, in terms of better experience and thus for instance potentially higher level of loyalty (Gudi & Paradkar, 2016). Moreover, this aforementioned loyalty should be in the interest of the management of the EUR library, since increasing the service quality could be in correlation with increased user experience and satisfaction.

Secondly, the research also offers theoretical contributions in terms of understanding how a service design perspective could be used to create and advance the experience in library services. Furthermore, their potential consequences on better learning experience and service interactions could be drawn as conclusions of the research. However, numerous research has been done on both service design methodology and library experiences, the scholar seems to lack the SD perspective on libraries, hence the interlacement of these concepts. Hence, this paper could increase the understanding of library user needs, while readers could also learn about the service design methodology within library structures.

Finally, the findings could offer practical implication, both for service providers to increase not satisfaction, but experiences as well, and further library managerial implications could be drawn from generated insights from users, to better satisfy their needs.

Therefore, after establishing the focus, approach and relevance of the research, the following research question was thoroughly formulated: *How can university student needs be well-managed in*

the library services through a service design perspective? Moreover, this research question could be seemingly further divided into two sub-questions that are focusing on the perception of the students (users), and the university perspective as well. Thus, the following sub-questions were created: *How do university students perceive library services?* and *How can their experiences be well-managed?*

Chapter 2:

Theoretical framework,

Methodology,

& Findings
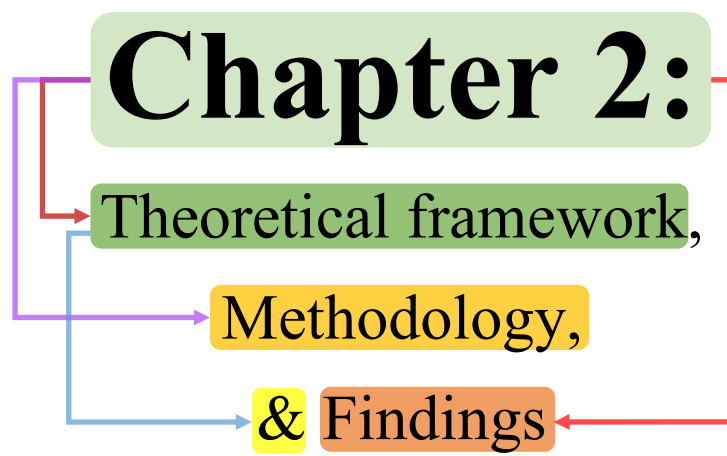
2.   Previous research and theory development

In this section the relevant theories, approaches and existing studies are being introduced and elaborated in order to gain a deeper comprehension of the nature of service design as theory and its connected methodologies. Moreover, for the purpose of thoroughly understanding the concepts that are closely related to this thesis, the most important theories are presented below. Also, the purpose of this section is to grasp the already existing research within the field of customer experience, library services and service design, and therefore identifying the future contribution of this research.

Customer experience

Customer experience and satisfaction seem to receive high attention within both products and services as well. However, as Chuan and Manhas (2014) exhibited, generating positive customer experience appears to be significant in broad markets for products and services, they seemingly lack the perspective of negative service experiences. Furthermore, in another study, Chahal and Dutta (2015) measured the influence of customer experience on the overall satisfaction by the service users. Although, they specifically focused on user experience in banking industries and financial sectors, other authors concentrated on broader and varying services. Berry et al. (2002) also stated that every customer has a type of experience when encountering a service, regardless the sector where the company operates.

According to Chahal and Dutta (2015), the first appearance of term 'customer experience' was noted by Holbrook and Hirschman (1982), which specifically took place within the marketing industry and its literature. Besides, Otto and Ritchie (1995) have already recognized that customers tend to form different types of reactions, such as varying feelings, emotions or satisfaction, when confronting specific services. Yet, it only later became a managerial matter that companies need to pay attention for, due to the late switch from service based economy to the latter experience based economy (Pine & Gilmore, 1998).

Additionally, Pine and Gilmore (1999) attempted to define the aforementioned customer experience with the fact that when a service is being bought or used, not only the service itself is purchased, but an overall experience as well. They refer to the enjoyment and positive memory creation throughout a specific service, thus they refer to a service that has better engaging aspects with their customers' needs. Critically, Pine and Gilmore (1999) seem to have a deeper focusing on the positive side of user experiences, while only mentioning negative cues for users as unfavorable service experience.

Subsequently, Kim et al. (2008) pointed out that creating these positive and influential experiences are significant for companies to reach a higher level of monetary value, in terms of sales activities and elevated sales ratios.

When customer experiences are well-managed

Among others, Chahal and Dutta (2015) recommended that services have potentials to influence customers in varying ways. For instance, they mention the satisfaction by customers, loyalty and word of mouth as advantageous aspects of beneficial outcomes for favorable customer experience. These elements are further supported by many scholars within the marketing, business and service related fields and industries. For instance, while Frow and Payne (2007) argued that a higher level of loyalty could be reached through positive CE, Shankar, Smith and Ragaswamy (2003) have earlier introduced, that an already loyal customer has a greater likelihood to have and maintain favorable experiences or views on a specific service.

In terms of beneficial outcomes, when the users' experiences are well-managed, an overall customer satisfaction can be reached. Meyer and Schwager (2007) supported this notion that the overall CS towards a service represents the differences between the negative and positive experiences. Hence creating, (or at least maintaining) a prosperous experience seems to be significant in order to reach customer satisfaction. Moreover, Shankar et al. (2003) observed that the higher is the degree of positive service experience, the greater is the overall satisfaction by the individuals using or purchasing the service.

While in terms of word of mouth, services could lead to positive and negative consequences. Evidently, positive WOM is beneficial for companies, since as Keiningham, Cooli, Andreasseen and Aksoy (2007) elaborated, positive word of mouth countersigns beneficial loyalty, satisfaction and thus an overall preferential experience. On the other hand, it has been also argued by Keiningham et al. (2007), that negative WOM can increase the incentives for switching to other service providers.

As a consequence, satisfying already existing users of the EUR library appears to have a beneficial side effect of attracting new users through well-satisfied user needs and positive word of mouth. Consequently, a beneficial side effect could appear of satisfying already existing users of the EUR library. This in details means well-satisfying current needs and thus creating and increased positive word of mouth, new users could be attracted for the library services.

Defining customer needs

Even tough, customer needs are defined in various ways throughout the marketing and related scholar, I chose to employ the definition by Camilleri (2018) due to its simple comprehensibility. Camilleri (2018) described customer needs as "[…] a conscious feeling of deprivation in a person." (p. 31). Particularly, this means something that a user or a customer expects, in order to encounter comfort or customer satisfaction. As an example, he cited Peterson, Neels, Barczi and Graham (2013), in which customer need is explained. The instance they chose was in connection with airline travelers in business classes. These business class passengers tended to have a high need for a punctual and

precise service. Therefore, customer needs appear to be necessities for reaching customer satisfaction and thus creating a favorable experience for the service or product users.

In this specific paper, user needs, in terms of library service usage, will be sought throughout the in-depth interviews and will be further analyzed. Understanding the library users' needs seems to be beneficial from the actual users' perspective, in terms of better satisfaction and experience. Moreover, it also seems to be favorable from an organizational or the service provider point of view, since magnified loyalty and positive word of mouth could be achieved. Both loyalty and positive WOM are explained by Chahal and Dutta (2015) as beneficial outcomes of positive customer experience and satisfaction. Hence, identifying these needs, specifically the unsatisfied needs seems to be a compelling addition, as well as it seems to justify the relevance of this topic.

Customer value as a service's key component

The customer experience in terms of value became center of attention only in the recent years of 2000s, according to Berry et al. (2002). As they argued, experience has been seen as a creative/entertaining engagement with customers, although they also stated that it is "far more complex than that" (p. 1). However, examples given by Berry et al. (2002) exhibited the traditional way of entertaining customers, such as hanging famous people's pictures on the walls in restaurants, these methods appeared to be outdated and they do not live up to the customers' expectations anymore, and hence does not necessarily lead to favorable experiences. On the other hand, Meyer and Schwager (2007) justified that the value of the customer while encountering a service is not always adequate, but through an ongoing management of experiences, positive results could be achieved such as maintaining or boosting the user satisfaction. This seems to be important due to the fact that users can be easily lost when they have negative service experiences (Keiningham et al, 2007). Yet, customers appear to have a relatively significant value in the service processes. Moreover, it seems to be important to involve the users into the service process, since it appear to create enhanced experiences

Defining the focus of the library experiences

Every service possesses a type of CE, which has the potential to satisfy customer needs. These experiences can be seen as positive, negative or neutral (Berry et al., 2002). There has been an abundance of research done on CE in different fields and industries, such as in hospitality (Berry, Wall & Carbone, 2006), aviation and air travel (Chuan & Manhas, 2014), banking and financial sectors (Chahal & Dutta, 2015), public transportation (Minser & Webb, 2010) or within working spaces and library services (Marino & Lapintie, 2018; Reynolds & Rabschutz, 2011; Berger, 2002; Biggs, Kember & Leung, 2001).

More specifically, in terms of this thesis' focus, numerous research have been conducted on the educational sectors and library services. For instance, by Berger (2002), who stated that "[…] the key to the success of libraries as an integrative force [,] is a combination of different service elements […]" (p. 86). She further argued that user-friendliness and variations of services are essential necessities for creating pleasant experiences for library users. This was also exhibited by Reynolds and Rabschutz (2011), whom initiated animals within university libraries in order to increase the experience and to support the students' wellbeing and personal growth. This justifies the purpose of increasing satisfaction, while also decreasing unfavorable experiences. Moreover, a seemingly early research has identified that meeting the users' needs is a critical element of a service (Lowry & Johnson, 1993). They further suggested that library users should be greatly involved decision-making processes, since their expectations and needs cannot be utterly met without their involvement. As an example, Lowry and Johnson (1993), demonstrated the notion of user needs for "greater speed, color monitors, graphics, downloading capability […]" with regards to IT and computers (p. 307). Although, the library service related literature seems to lack the investigation of user experiences, such as every service, libraries need to meet the customer expectations and desires to well support their satisfaction. Thus the main library at Erasmus University Rotterdam (as well as other study spaces) need to involve a student perspective into their service processes and development, since the user needs cannot be unconditionally met without the users' point of view.

The library is more than just a study space

Different approaches are present in the scholars in terms of libraries. For instance, as Marino and Lapintie (2018) indicated, libraries appear to be progressively accepted for working purposes, as well as for collaboration and learning experiences. Although, their paper focused on multi-local working in different spaces, they not only referred to public, but also to university libraries.

Another approach for library services and experiences was exhibited by Lincoln (2002), in which the illustration of libraries by university students were present as the 'third place'. In other words, Cook (2001) referred to the conception of 'third places' as the function of "[…] home away from home for the length of the academic day'' (As cited by Lincoln, 2002, p. 9). Moreover, Lincoln (2002) also found that the access for different materials could highly affect the overall experience and CS, since irritations or frustrations will reduce the comprehensive impression of the service and its unique quality.

Similarly, Applegate (2009) concluded, that libraries have to pay careful attention on student needs. Not only in terms of study spaces and group work areas, but the adequate supply of technological aspects, such as plugs for computers. Furthermore, one of the most significant implications that Applegate (2009) offered was the ongoing management and information seeking of the student needs, since different phases of an academic year car highly influence the demand for

study spaces. For instance, what seems to be appropriate at the beginning of a semester or academic year, it does not imply that it will by sufficient in later periods. Hence, a continuous investigation is needed for the libraries to constantly satisfy their users. She also stated that library is not strictly for studying, but also a social place for meeting fellow students and friends. Moreover, a compelling suggestions by Applegate (2009) was the fact that libraries are not only study spaces, but services and resources as well, which has to meet the user needs.

Therefore, such as any other services, libraries call for focus on positive user experience (e.g. through user-friendliness, better access and environment). Maklan, Antonetti and Whitty (2017) also expressed that CE indicates the "competitive battleground" within services, which for instance need to be well-managed through describing and eliminating classic pitfalls (p. 92). Hence, they referred to the earlier mentioned *pain points,* as reasons for switching service providers.

Theoretical framework

In the following subsections, theories and concepts are presented with relevant literature about my approach and technique for the thesis research. Particularly, studies and research are elaborated below which highly assisted in shaping the perception of the phenomena being analyzed.

Design thinking and service design

Design thinking is explained by Brown (2008) as "a methodology that imbues the full spectrum of innovation activities with a human-centered design ethos" (p. 86). This refers to the systematic and strategic development of ideas by designers that could tackle problems which are able to occur within given products or services. Moreover, he explains the notion of service design as a useful tool, within the design thinking approaches and framework, for interpreting what customers can experience throughout the totality of a specific service.

According to Parker and Heapy (2006), the service design approach has different tools and methodologies that also possess a sort of "shared language[s] of service[s]" (p. 104). These languages (also understood as tools and methodologies) are for instance, *customer journeys* or also known as experience maps, which visually maps the pleasant, as well as the unpleasant experiences and interactions within the service being analyzed. Moreover, *user segmentation*, which refers the transformation from raw data into meaningful insights, which in this particular case refers to the theme generation or categorization of insights and the user distribution by their varying user behavior. And finally, the *touchpoints*, which regards the sensible elements when customers are interacting with the service. These interaction could not only be for instance what the users see, hear, smell or touch, but it also could be a type of personal interaction with the staff. Moreover, online interactions, emailing and further virtual communications are also seen as touchpoints, since the users are somewhat connecting with the service providers (Parker & Heapy, 2006). Although there are further

elements and tools of service design methodology and hence design thinking, these tools are more in-depth detailed in the next subchapters.

Correspondingly, Dorst (2012) has identified that the 21st century is highly surrounded by great and complicated systems and services that are designed and developed by structures and organizations. By this, Dorst (2012) resonates to the complex formation of service constructions. He also pointed out that these services are mostly designed by organizations or businesses. Therefore, these aforementioned complex services, such as a university library, need to be well planned and carefully developed by the management of the given organization. Designing a service can highly support and increase the user and customer benefits of the particular service (Brown, 2008).

Hence, discovering the unsatisfied needs of the library users at Erasmus University Rotterdam, and thus uncovering their negative experiences seems to potentially contribute to a better designed service by the organization. In more details, if these needs are better supported, the users' satisfaction could significantly increase, as well the overall customer experience. This means on one hand a practical relevance, since the organization could prevent the further negative experiences whilst also enhancing the positive ones. On the other hand, some theoretical contribution could be made for service design as an approach, customer experience as a concept and library as a service (or study place related services) through the findings and discussion of this research. This approach could also include a student perspective on the library services, as well as an intertwined conclusion of service design and libraries.

Conclusively, academia seemingly lacks an understanding of how a service design perspective may increase the library users' experience, hence this paper seems to be an interesting addition to the already existing literature.

Theory of *service*

Breaking down service design, in order to better comprehend its elements, it appears to be important to analyze the different aspects of it separately, thus the concept of 'service', as well as the concept of 'design'.

Firstly, an early attempt to define services was noted by Solomon, Surprenant, Czepiel and Gutman (1985), in which service was described as "[…] processes, rather than objects" (p. 99). This notion strongly refers to the distinction of good/products and services. It also puts forward the question of tangibility and intangibility as a distinction. It was later supported by Vargo and Lusch (2004), who argued that among other differences, tangibility could be a distinctive aspect of goods and services. Although, both Vargo and Lusch (2004) and Solomon et al. (1985) looked at services from a marketing perspective, their definitions do not appear to be generally accepted. Also, as Rathmell (1966) indicated that although, the definition of service is not narrow enough, they were mainly seen as the opposite of tangible goods.

Additionally, as Edvardsson, Gustafsson and Roos (2005) pointed out, "the [service related] definitions are too narrow and the characteristics are outdated as generic service characteristics" (p. 107). On the other hand, they further argued that modern services could be seen as perspectives, since they depend on the organization who depicts these services, as well as on its unique purpose.

Therefore, it seems to be justified to state that services are no longer understood as the intangible part of businesses, but more of a perspective and a purpose that the specific company portrays to its users or customers.

Theory of *design*

The other building block of service design is the concept of 'design'. Design is often understood as the outlook or appearance of tangible products. This interpretation of design seems to be outdated and irrelevant in the 21st century. This might be the reason why many authors refer to design as something broader and more complex concept than only the layout of a product. For instance, Dorst (2012) stated that, "[a]ll goods and services are designed." (p. vii). How is that possible? Because each and every product or service is engaged with meeting customer needs.

This being said, the definition and the usage of the concept 'design' has changed over the past decades. In its early years, it was explained as the process of advancing conditions to favored ones (Simon, 1969). While a more modern and up-to-date definition by Dorst (2012), argued that design is the absolute action of adequate range of domains which are demanded for any preferred outcomes. Therefore, Dorst (2012) made reference to the design's influence on not only the customer needs and product layouts, but also its impact on the overall organization and businesses. Examples from the concrete service professions are shown such as, industrial design, process design or service design. Hence, the relevance of designing as service is, on the one hand, important for the customers of the service, in terms of better meeting their needs and increasing the outcome of particular service. On the other hand, the organization itself (owner of the service or business) could benefit from designing the service, since Norman (2010) illustrated that design's scope expanded from physical products to structures of organizations, solving problems and designing experience with positive interaction with the customers.

Convincingly, the contemporary comprehension of the concept of 'design' seems to be important in terms of recognizing its potential influence on something much more than a single physical product and its appearance. With the modern interpretation of 'design' includes aspects, inter alia, services, customer needs, organizational structures. This further entails that these aspects could be better planned and therefore potentially better work from a user perspective. Moreover, theoretical relevance seems to be justified with regards to the concept of designing. Since earlier research in the field of the library services appeared to have a higher focus on the physical and more tangible elements of libraries, such as computers and furniture (Lincoln, 2002), this paper also examines the

underlying and more intangible aspects of a library service. Therefore, potentially expanding the literature and theory of the structural influence of designing, as well as tackling problems and increasing the quality of the user experience.

Service design and customer journey

Customer journeys (also known as experience mapping) are crucial for companies and service providers in order to understand and design a positive experience through a visual and textual form (Lemon & Verhoef, 2016). In details, customer journeys/experience maps are visual representations of the interactions between users and service providers, different stages of the service, as well as positive and negative experiences encountered with the specific service, Yet, customer journey and experience maps are one of the most important tools for service design and design thinking (Parker & Heapy, 2006). According to Miettinen, Rontti, Kuure and Lindström (2012), customer journeys can assist the management of services, in terms of realizing the current user experiences, specifically with their negative elements. Further Holmlid and Evenson (2008) also argued that customer journeys are particularly useful for "walk[ing] in the customer's shoes" and thus viewing services as a typical user (p. 343).

Moreover, service design is elaborated by Mager (2004) as an outside-in angle on developing services. The term 'outside-in', in this case, resonates the idea of customer centrism, co-developing and a kind of holistic view on different services. These aspects were also referred to and elaborated by Lowry and Johnson (1993). Besides, Parker and Heapy (2006) described that service design, as a methodology, could potentially propose varying perceptions and some directions for transformations and development.

Customer journey is also being discussed as a greatly customer-centric tool, since it features not only the holistic view of the entire service, but a customer perspective as well. (Kankainen, Vaajakallio, Kantola & Mattelmäki, 2012)

Customer journeys, more specifically, became the center of attention (Følstad & Kvale, 2018). These journeys have specifically increasing importance within the service and design industries, as well as within the marketing and management fields. By definition, customer journeys are determinants for customer viewpoint, as well as tools for grasping experiences and insights by the users.

However, customer journey is a relatively new way of representing the desperate user behaviors, many authors referred to this methodology throughout the user experience literature. For instance, customer journeys are also known as 'experience sheets' and 'user journeys' (e.g. Følstad & Kvale, 2018; Dorst, 2012; Rasila, Rothe & Nenonen, 2009). Moreover, there are two different types of customer journeys, as Følstad and Kvale (2018) pointed out. The first one is the 'as-is' journey, which visualizes the current service and customer experience. Whilst the second types, as referred by

Følstad and Kvale, (2018) is a journey proposition, also known as the 'to-be' journey, which represents the plan for the future experiences and service developments. Although, this distinction has been made across some service design scholars, this paper will generate one comprehensive journey, which represents the current service and customers experiences, while also portraying some possible solutions for the future and further customers desires. This customer journey is visualized through computerized tools/software, for instance Realtime Board. These visual maps offer beneficial viewpoints for the management, in terms of uncovering the real flow of the service processes. This, in details, mean a flow-chart-like visualization of the stages involved or perceived by the users (Diana, Pacenti & Tassi, 2009).

Moreover, as Crosier and Handford (2012) argued, through visualized customer journeys, the product and service related emotions could be discovered which redounds the service provider organization and the user satisfaction. Additionally, as Følstad and Kvale (2018) concluded, customer journeys can support the service management and customer experience. This notion is backed by Johns and Clark (1993), since they stated that the perspective of this customer journey can enhance the management's competence of the customers' experience.

Hence, the final customer journey/experience map of the EUR library could potentially contribute to the management of the service with practical and theoretical input.

According to Følstad and Kvale (2018), there are some contradictions and dissidence among the literature that is focusing on customers journeys in service design. Firstly, the time frame of the journey is questionable, since some journeys are open ended, while others have specific ends. Correspondingly, the beginning of the customer journeys appears to be ambiguous. Some journeys have a clear start as the customer pays for a service. Alternatively, as Peterson, Gröne, Kammer and Kirscheneder (2010) elaborated, showing interest or hearing about the service can also mean the beginning for a customer journey.

Building blocks of the customer journey

Although every service is somewhat different, as well as have a different and unique experience (Berry et al., 2002), some elements seem to be present in the majority of the customers journeys. Although the user journey is highly dependent on the case where it is being applied, Følstad and Kvale (2018) concluded some elements that seem to be present throughout the service design literature, as well as in the practical fields of service design. These elements are the following:

- **Steps/stages/events:** which represents the varying phases that the customers experience in a timely manner
- **Units/divisions:** which stand for the separate sections of the service
- **Touchpoints:** which are, the earlier mentioned, interactions with the service providers through a direct or an indirect manner

Together with these popular customer journey elements, I decided to add further aspects, in order to create a more credible and valid visualization of the customer experience. These components are added from personal experience from the service design field. These additional elements are the following:

- **Pain points:** which represent the negative experiences, while also showing the opportunity to develop and focus on customer satisfaction
- **Positive experiences:** which show the elements where the library users are satisfied, while also offering an opportunity to enhance those
- **BYE factors:** which are the most negative points for the personas, something that makes them leave the service
- **WOW factors:** which are the most positive points for the personas, something that causes an outstanding experience
- **Further needs and wants:** which and suggested elements, offered by the customers or users of the EUR library services

While these elements are all present in the final customer journey of the EUR library, further differentiations will be used to make the journey more understandable. For instance, different colors, signs and scales are used to help the interpretation of the service and its experience from a holistic point of view.

Personas

Another tool for service design is persona, which is explained as interaction design tools by Idoughi, Seffah and Kolski (2012). In greater details this means a deeper research in customer behavior and user experience modelling (Cooper, 1999). Moreover, Cooper (1999) explained persona as a fictional personality, established by the data gathered from the actual users. Tu, Dong, Rau and Zhang (2010) defined personas as typical users modelled by real and shared behavioral characteristics of user groups.

In general, personas became important as constituting user needs (Idoughi et al., 2012). Comprehensively, Tu et al. (2010) described personas as crucial tool for experience designing, since if personas' basic needs cannot be satisfied, large variety of service users can have low user satisfaction. Moreover, personas are not only for highlighting needs, but the goals of service users as well (Lene, Kira, Jan & Jane, 2015). This, in details means uncovering the users' number one and thus the most important purpose of using the specific service. This could also reveal some compelling information about user behavior both for research and management purposes.

Hence, the final personas represent larger groups of users which are easier to satisfy for service providers. This appears as visual elements of fictitious users, which (in the case of the library services) speaks for a wider group of library users. Lene et al. (2015) stated that persona creation process is less rooted in literature, thus their development is more practical and closely connected to the inductive data synthetization.

How to create personas

Nielsen, Hansen, Stage and Billestrup (2015) described persona as a "fictitious user" of a product or service (p. 45). Moreover, they argue that although this method is increasingly being applied, it still appears to be challenging to create the prefect persona and to determine the perfect description. The presentation of the personas are progressively becoming important, since it highly impacts the overview and the understanding of the differences between them (Nielsen et al., 2015).

The aspects of the personas are extracted from Nielsen et al. (2015) template for persona designing. Although their comparison between 47 persona descriptions was only sampled from the Danish industry, their elements seem to be considerably comprehensive. In order to truly highlight these differences and segment the different users/customers of a service, the following elements are included and were examined throughout the interviews to differentiate between the personas.

- **Profile photo:** to make the personas as life-like as possible
- **Demographics:** basic information, such as age, gender, study program etc.
- **Personality:** which can be understood as a short biographical description
- **Quote:** which describes personality traits to a greater extent
- **Goals:** which represents the main purpose of using the service
- **Positive experience:** which shows the favorable experiences when encountering the service
- **Negative experience:** which shows the unfavorable experiences

On the other hand, some further elements are added from personal experience with persona creation. These elements are closely related to Caddick and Cable's (2011) anatomy of personas, in which they refer to 'Must dos' and 'Must nevers'. These in further details mean the most necessary support for users, as well as the description of what to avoid. In my case, these elements are named as the following:

- **WOW factor:** what would this typical user be passionate about with regards to the service ('Must dos')
- **BYE factor:** what would discourage this typical user from the service ('Must nevers')

I decided to add these two elements, since they seem to convey the most important not-to-have aspect, as well as the components that could cause the greatest positive change with regards to service satisfaction. These elements seem to beneficially contribute to differentiate between the personas to a greater extent as well as to truly segment the user types by characteristics (Sinha, 2003).

Overall, personas can provide an overview on the different user types of the service based on their characteristic, user behavior, specific and most important user needs (Parker & Heapy, 2006). Besides, user behavior in this case is also understood as 'goals' of the persona. This being said, Caddick and Cable (2011) introduced the goals of the persona as key elements of its anatomy. They argued that "[i]f you know what people want […] you can ensure you have everything in place to make sure they can do it." (Caddick & Cable, 2011, p. 14). Furthermore, although Caddick and Cable (2011) differentiated between the 'goals' and the 'behaviors' of the persona, it appears to me that these two categories could be combined. Their key difference between the two categories are the motivation for using the system, on the contrary with the specific task the users need to accomplish. Conclusively, these two elements appear to be intertwined, since the user's specific task can influence the motivation to use the particular service, thus these two sections can be questioned together.

These information, as Hosono et al. (2009) argued, are synthesized from the collected data, through in-depth interviews, could benefit the structure of the library service, since the providers can sincerely perceive the most essential user needs. Moreover, these information could increase the practical relevance of the paper as well, since better aiding the customer satisfaction.

Surprisingly, many authors have discussed the relevance of personas in various fields of services and products throughout the user experience literature. On the other hand, as Nielsen et al. (2015) argued, each service or product has a different fictive user, thus it seems to be justified that a different operationalization is needed for each project or field where persona creation is being applied. Therefore, the relevant operationalization for this thesis' persona could be found in the methodology section of the paper.

Description of the theoretical gap

The literature that has been mentioned and elaborated above, lead to the discovery of the theoretical gap. This gap could be described as the service design perspective on customer or user needs within libraries and its services. Moreover, since in terms of the library, it is free to use to all students at Erasmus University Rotterdam, the customer in this case become users, since they do not pay or offer direct monetary or other value compensations for the usage of the service. Therefore, the user expectations, experience management and reaching user satisfaction appeared to be highly significant elements, in terms of well-managed user needs. Conclusively, there seem to be a theoretical gap within the academia and related concepts with regards to university library services, service design and its users' needs.

3.   Methodology

The following section is focusing on the different aspects of the data collection method, and the complex way of creating the personas and customer journey. In order to reach easy comprehensibility, this part is organized into subsection.

Research material and focus

This exploratory case study concentrates on the user perceptions and well managing their needs in university library contexts. Hence, to exemplify this theme, the case study will focus on the library services at Erasmus University Rotterdam (EUR).

As it was aforementioned, libraries could include different levels of access, informational technology aspects, hardware for instance computers or tangible books (Lincoln, 2002). The intention to analyze this particular service arose from the curiosity of possible improvements of the service and thus the experience by the users. Besides, the establishment of social, theoretical and practical implications that could be important for library managements and for service research were pursued throughout this thesis. These aforementioned aspects seem to be achievable with a service design methodology and point of view (Steen, Manschot & Koning, 2011).

Despite the fact that this research focuses on identifying previously elaborated user pain points that could cause significant negative experiences, also positive outcomes are expected from the analysis. This idea was supported by Steen et al. (2011), since they concluded that service design projects/case studies have benefited of improving services in terms of creativity, efficiency and organizational effectiveness, which could be the aim the library management at EUR. Moreover, the users' needs and offerings by the library service could be better tailored, thus achieving higher customer satisfaction and overall experience.

Figure 1: 'Print facilities at EUR, What you need to know' brochure

At the time of the research, the EUR library has already incorporated elements that seemingly increase user experience, for instance workers who direct students to empty spaces in the library. Other elements, such as brochures for using the printing facilities (see **Figure 1**) could be found at the EUR library, which serves as an instruction manual for printing.

Moreover, the so called 'share your chair' cards (See **Figure 2**) are present in the library and further study spaces at Erasmus University Rotterdam. These cards can reserve a study spot with the date and time of return. This means, if someone is studying and desires to take a break or has a class to attend, the person can share that spot with someone else by placing a 'share your chair' card until the time of return, without occupying that space for the period of being away.

Figure 2: 'Share your chair' cards at the EUR library

These services (or elements of the library service) could illustrate the already existing attempts to increase customer satisfaction and library experience for students, who are the majority of the users of the EUR library.

Conversely, Evenson and Dubberly (2010) explained when users encounter great experiences, increased expectations for even better ones are predicted. Moreover, as they argued, expectations by customers for pleasant experiences increased in every service fields, thus better user experience seems to be a success factor of service provider companies. Therefore, for this research, in terms of material and focus, the students' pleasant and unpleasant experiences were sought. Not only to identify the negative ones and possibly turn them into favorable ones, but also to find out the already positive experiences and to enhance those.

Description of the data collection method

In order to establish different elements of library services that are potentially causing both positive and negative user experiences, a qualitative approach appears to be required. As Baškarada, (2014) explained, qualitative analyses are concentrating on understanding varying beliefs, as well as different meanings and further disciplines. Therefore, since experiences usually do not appear to be tangible, but more obtainable (Shostack, 1982), the process of meaning making out of these specific service experiences appear to be the most appropriate method. Therefore, I chose a semi structured in-depth qualitative method, in order to collect and sincerely comprehend experiences from library users. Additionally, other available documentary data were used from the library itself, as some of them were mentioned earlier (e.g. **Figure 1, Figure 2**), homepage and library/study space-related Facebook posts on the official site of Erasmus University Rotterdam.

In another related paper by Strauss and Corbin (1994) expanded the nature of qualitative analyses methods, since their focal point is not only to deeply understand the essence of the area being analyzed, but also to describe exact phenomenon. Hence, a qualitative method appears to be reasonable to gather valuable insights from the users and their experiences, and for the purpose of describing existing phenomenon within the library service.

Additionally, Hermanowicz (2002), described the method of in-depth interviews as a predominant qualitative method with valuable outcomes. He further explained that in-depth interviewing is a useful tool for uncovering and understanding people's attitude and experiences. Hence, while this paper aims at comprehending positive and negative experiences with a particular service, other qualitative research methods do not appear to be as efficient as in-depth interviews.

Moreover, Holstein and Gubrium (1997) stated that "[i]nterviewing provides a way of generating empirical data about the social world by asking people […]" (p. 114). Thus, in this study, the respondents were asked to describe their experiences with the library and their own interpretation of how it could be improved. Hence, to support the generation of valuable insights, interviewing and its interpretive nature seems to be an effective method for meaning making and theme generation within these particular experiences.

Additionally, Dubois and Gadde (2002) explained that to profoundly comprehend a phenomenon, in-depth case studies could be required. In the case of library services, pain points that are causing negative experiences were comprehensively examined through "[…] developing theory by utilizing in-depth insights of empirical phenomena and their contexts." (Dubois & Gadde, 2002, p. 555). They also stated that continuously reciprocating between perceptions and theory could broaden the interpretation for more aspects of the phenomenon and theory. Thus, while 'walking in the users' shoes' and hence living through their experience (Holmlid and Evenson, 2008), the phenomenon and theories were considerably expanded (Dubois & Gadde, 2002).

Data collection

The research focuses on users of EUR library, thus the individual interviews have taken place with students whom were enrolled at EUR at the time of the research. Although, other students and individuals were seemingly working or using the library services, the research's population were exclusively the active students of Erasmus University.

Furthermore, the location of the interviews were anticipated to take place in the library itself, to make use of the objects' tangibility (e.g. furniture, books and computers). Moreover, doing interviews in the actual library appeared to be a strength of the research, since Hermanowicz (2002) indicated, material probes could increase the quality of the research. On the negative side, due to the library's division of 'silent' and 'non-silent' areas, the library appeared to be whether too quiet in the silence area for the interviews (in terms of disturbing other people's studying sessions), or it seemed to be too loud in the non-silent area (for audio-recording the interviews). Therefore, the actual interviews took place on campus and further study spaces instead of the library itself.

The interviews have incorporated different sub-questions and probes (Hermanowicz, 2002) to maximize the quality of the insight creation processes. The topic list, with a sample introduction and outro, which were created before the interviews actually took place, could be found in **Appendix A.** Although the topic list served this semi-structured interviews in terms of leading the questions, some adjustments were made during the interviews if an interesting or new aspect arose from the in-depth conversation (Dubois & Gadde, 2002). These insights were specifically focusing on positive and negative experiences that users encounter while using the EUR library. These positive and negative experiences were directed towards aspects that were seemingly not being sought by the management of the library, thus, for instance pain points and complaints that are presumably unknown. Further, the interviewees were asked to agree upon audio recording through a written consent form, which greatly supported the latter categorization of insights and transcription processes. An unsigned version of this aforementioned consent form can be found in **Appendix B**.

Thus, while the 'unit of analysis' were EUR students who use the library services, the time period for the interviews seemed to be less significant due to the library's constant high demand. Yet, the month of February and March of 2019 showed to be a favorable time to conduct the interviews, due to seemingly less busy exam schedules.

Finally, to maximize the interviews' value, questions that were asked during the interviews were adjusted for previously identified topics. This particularly helped in narrowing the focus and to gain deeper understanding of users' perception.

Sampling

The initial idea was to conduct 15 interview. Although, after 11 interviews, saturation could be sensed, since no or insignificant new information were articulated by the interviewees. The idea of

saturation was elaborated as acquiring new qualitative data with no additional contribution to the exploration (Glaser & Strauss, 1967). Therefore, the conduction of a 12th interview took place as a test to ensure the level of saturation. Hence, the final number of interview respondents were 12 students. A full list of respondents is shown below in **Table 1**, with the respondents' number, first name initial, age, gender, study program, year in studies and finally, the faculty of studies. This table can contribute to the validity and reliability of the paper. Additionally, the respondents are later referred to as their first name initial and their age, for instance: A19.

Number	Name	Age	Study program	Faculty	Year	Gender
1.	A	19	IBA	RSM	1st	F
2.	A	28	Clinical psychology	ESSB	1st (Masters)	F
3.	D	19	IBA	RSM	1st	F
4.	D	21	IBEB	ESE	3rd	F
5.	G	21	IBEB	ESE	3rd	F
6.	I	18	IBA	RSM	1st	F
7.	K	22	IBCoM	ESHCC	2nd	F
8.	M	25	Clinical psychology	ESSB	1st (Masters)	F
9.	M	22	IBCoM	ESHCC	2nd	M
10.	N	19	IBA	RSM	1st	F
11.	S	18	IBEB	ESE	1st	M
12.	S	21	IBCoM	ESHCC	3rd	F

Table 1: List of respondents

I focused on random as well as somewhat convenience sampling from the population of active EUR students who use the library. The random sampling were used in order to give equal chance to all users to be interviewed (Brown, 1947). This sampling method were discussed as beneficial from varying perspectives. As Brown (1947) argued, this method eliminates possible sample biases, while it symbolizes " […] the universe in all of its many characteristics" (p. 332). Although, unfamiliar and active students were asked to participate in the research, the convenience aspect took place since the interviewees were reached through personal contacts. To conclude, sampling was a relatively simple process thanks to the huge number of students at the library, as well as EUR itself.

Moreover, the latter categorization of users were not made from the classical demographical perspective, but from the user behavior angle. This was based on Parker and Heapy's (2006) argumentation, since they had stated that segmentation could be done based on varying user behaviors in designing services and experiences.

Describing the steps of data analysis and guiding the research

The procedure of analyzing data was continuously done during and after the interviews were conducted. This in details means that if one interview respondent brought up a significant and novel

aspect, the interview questions for next interviewees could have been adjusted accordingly. After the interviews took place, the transcript versions of the conversation were created which supported the further analysis. Specifically, based on insights that were gathered, different pain point categories were generated. Although, this practice appears to be highly similar to the so called 'coding process', this paper refers to this as 'data synthetization'.

Through data synthetization, comparable themes were brought together from the raw data and were further analyzed as broader insight categories (Parker & Heapy, 2006). Due to the flexible nature of qualitative approaches (Beitin, 2012), different categories were predicted to show the concepts that were highly involved in the research process, such as the level of satisfaction or experience, while further unknown concepts had been also anticipated. This theme development, which is one of the key steps of service design (Brown, 2008), were supported by online computerized programs, such as the online qualitative research tool called Dovetail App. This online application helped in the categorization of insights through a user-friendly platform by using different colors. Besides, a board platform for cross-functional visualization, namely Realtime Board was used, which had assisted the envisioning of the experience map or customer journey, as well as the personas.

During synthetization, different user-perceived problems were expected that are easily solvable from the management perspective, in terms of smaller monetary investment and time effort. Likewise, less easily resoluble experiences were foreseen to be present that require higher level of investment and effort. Therefore, during the interviews, mostly feasible ways of increasing the satisfaction and overall experience were sought, rather than highly expensive and unfeasible approaches.

Correspondingly, the research and analysis phases can also be described as inductive reasoning. Since Mantere and Ketokivi (2013) elaborated that inductive reasoning connects the examination/data gathering, interpretation and finally drawing conclusions. Hence, this method of analysis or understanding the data can shift a specific example or case to more universal or common instances, through examining comparable elements, as well as more varying aspects (Barker, 1957). Therefore, as Brown and Eisenhardt (1997) pointed out, generalizations from inductive methods can be originating from the gathered data.

On the other hand, this method appears to be more appropriate than the deductive reasoning, since deductive reasoning is highly dependent on a previously established set of rules (Mantere & Ketokivi, 2013). Therefore, since these pre-established rules could be seen as limitations for the further interpretations, inductively analyzing and 'thinking' about the data appears to be more comprehensive. Although, this method seems to be justified by many authors in analysis and methodology related literature, due to its highly qualitative nature, it remains exceedingly dependent on the researcher's interpretation and thinking. Thus experience with the EUR library, service design as a methodology or other included elements might be influenced by the researcher's interpretation, involvement or experience.

Moreover, many research aiming at generalizability, which in details means that one specific case's outcome can accurately predict all (or most) of the outcomes in similar settings (Moisander & Valtonen, 2006). In the case of this specific research, the aim is different. Why? Because due to the qualitative nature of in-depth interviewing, as well as service design, reaching transferability is the focal point, since transferability has a similar basis of creating results that are whether similar or not to other cases in comparable circumstances. On the contrary, Moisander and Valtonen (2006) described transferability as "[…] not necessarily involv[ing] broad theoretical claims but invit[ing] readers and evaluators to make connections between elements of a study and their own understandings and personal experience" (p. 27). This description can be understood as creating framework or answering the research question in a way that people/readers/evaluators can not only understand the EUR library services and their attached experiences, but also make assumptions and connections with further library services and user experiences. This is also well explained by Stake (1995), since he referred to transferability as natural generalization. This in details means that case studies or particular instances with extensive descriptions can support readers to understand the way conclusions were drawn and to encounter these experiences.

Therefore, transferability and ensuring that the readers understand the processes appear to be more compelling than simply having a general conclusion.

Operationalization

As aforementioned, interviews tend to have a highly interpretive nature, thus the meaning making process of the generated insight is greatly dependent on the perception of the researcher (Holstein & Gubrium, 1997). Thus, to truly reinforce the meaning making process, experiences by the users need to be discovered. Correspondingly, Eccles and Durand (1998) explained that dissatisfied customers tend to complain about the service, although not specifically to the service providers. Thus, the questioning procedure of the respondents, about their unsatisfied needs and negative experiences seemed to be justified and feasible.

The following operationalizations were not strictly and separately applied, since many aspects are present in both the personas and the overall customer journey, such as positive and negative experiences. Therefore, some intertwining questions or answers were expected from the interviews, due to the similar content of some questions related to the two different deliverables. Despite, the operationalization of the two final deliverables (personas and customer journey) are elaborated below.

Operationalization of the customer journey

The preceding theories and concepts about user experience and satisfaction (e.g. Chuan & Manhas, 2014; Chahal & Dutta, 2015), as well as services and their qualities (e.g. Frow & Payne, 2007; Berry et al., 2006) and finally service design and its tools for identifying experiences (Parker &

Heapy, 2006; Lemon & Verhoef, 2016; Holmlid & Evenson, 2008) supported the process of operationalization, in terms of pushing the analysis and the findings to the right direction.

To successfully identify these specific unsatisfied needs, negative experiences and users' own ideas about the library service, open-ended questions were asked (Hermanowicz, 2002) (see **Table 1**). These questions which arose from the aforementioned and employed concepts supported the research with regards to the understanding of the phenomenon and focusing on the description of the perception of the students, as well as to comprehend the connections and assumptions to similar cases and instances (Moisander & Valtonen, 2006).

Concepts	Focus with phenomenon	Example questions
Customer Experience (CE)	Positive experience	- What do you like about this place? - What was your favorite experience? - When do you feel good inside the library?
	Negative experience (pain points)	- What is the thing that you like the least? - What makes you feel bad when you are in the library? - If you had to list 3 things you particularly dislike within the library, what would they be?
	Experience as a whole	- On a 1-10 scale, how much would you give for the library in terms of your experience? - What is the missing X? - What would make this place a 10 out of 10 library?
Services and its qualities	Service processes	- When do you come here? - What do you use the library for? - What is your intention when you come here?
	Satisfaction	- How do you feel when you study/work here - How is it different than home?
Service Design and experiences (SD)	Experience journey	- What are your feelings when you are here? - What is your favorite thing about the library? - What have you experienced while being here?
	Unspoken needs	- What do you miss from the library? - What could increase your happiness/satisfaction? - What would you add to the library?
	Touch points (interaction with service providers)	- Do you interact with the library somehow? - Online? Facebook? Staff? - Where? What happened?
WOW factor	Biggest need for user	- What is that you like the most about the library? - If you could design you own library what would you add?

		- What makes you leave before finishing?
BYE factor	Least desired needs	- What is that you dislike the most about the library?
		- Has it ever happened to you that you left the library angry or frustrated? When? What happened?
		- What would you take out from the library?
Steps/stages/events	Customer journey Co-creation	- How does a day at the library look like?
		- What do you do during the X hour that you spend here?
		- What is the beginning and the end of the service for you?
Units/divisions		Respondents were asked to describe their user journey, from their own perspective

Table 2: Questions within concepts and phenomenon for customer journey

The customer journey, in theory, possesses some elements that were inductively added based on the insights (Mantere & Ketokivi, 2013). These elements, for instance, are the different steps/stages/events and the units/division within the service. However, other components (themes) were also added from an inductive perspective, these two factors appear to be the most significant aspect that can be influenced by the researcher's perception.

The customer journey, thus was created on the basis of the previously mentioned questions, as well as the data synthetization from the answers to these questions. The user experience map was created with the earlier mentioned Real Time Board application and is elaborated throughout the findings and discussion chapters of the paper.

Operationalization of personas

The persona creation process involves the synthetization of data, in terms of the elements of the above mentioned persona anatomy. The elements that had been considered, were selected from the concepts collected by Nielsen et al. (2015), as well as from the persona components by Caddick and Cable (2011) in order to make the personas as approachable as possible. These previously mentioned aspects are purposely sought through the in-depth interviews by asking questions regarding the elements. The following table (**Table 3**) indicates the different persona anatomy elements, their elaborated descriptions and example questions which contributed to fully comprehend the different types of users, as well as their behaviors and thus develop the varying personas.

Elements	Descriptions	Example questions
Demographics	General information about the fictitious character, such as age, name, gender	- What is your age?
		- Which year are you within your studies?

Personality	Short biography about the persona. This is understood as a short introduction and description of the persona which deepens the familiarity with the character	- What do you like to do in the library? - Where do you usually sit? - Do you come alone? - How much time do you spend in the library? (e.g. in a week)
Quote	A quote from interviews (or compiled from interviews) is offered that is further expands the understanding of the descriptions. This also helps to get to know the personality more	Extracted from the answers of other questions
Goals	Different motivations to use the service and specific tasks within the service. Different levels of information of the service and the interactions, as well as the user's overall goal with the service	- What is your main goal in the library? - Do you only study here? - Do you interact with the library? - How does you time look like in the library? (e.g. detailed description of how time is spent)
Positive experiences	This entails the favorable experiences and memories that the persona has. As well as the elements that the user likes about the service	- What do you enjoy about the library? - What is your favorite thing with regards to the library? - Do you have any good experience with the service?
Negative experiences	Opposite of positive experiences, unfavorable experiences and memories with regards to the service	- What do you 'hate' in the library? - Have you ever felt anger towards the library/service during your stay? - Do you have any bad experience with the service?
WOW factor	The element within the service that makes this persona be passionate about the library. Something that makes the user think: 'wow'	- What do you miss from here? - If you could design this place, what would you add? Extracted from the 'positive experiences'
BYE factor	The element within the service that discourages this persona to engage with the library. Something that makes the user leave, and think: 'bye'	- Have you ever left the library, being angry at the service? Why? - What would you change within the library? - What makes you go home before finishing your tasks? Extracted from the 'negative experiences'

Table 3: Persona elements with their descriptions and example questions

Although, **Table 2** and **Table 3** show a seemingly fixed set of questions, due to the flexible nature of semi-structured interviewing, these questions were adjusted to the most important elements highlighted by the respondent, in order to ensure a fluent conversation with the interviewees (Dubois & Gadde, 2002). Based on the inductive theme categorization of the disclosed information, the personas were created. Since personas are fictive users (Cooper, 1999), those represent a bigger group or type of users of the library. Each persona has its own unique profile photo, which was selected

from stock photos to match the personality and create a more persuading character. These photos are free to use and could be downloaded from online. The specific website I used was: www.pexels.com. It seems to be important to identify and develop these personas, since if a persona's pain point can be eliminated, that also means a greater amount of users' satisfaction could convincingly increase (Tu et al., 2010).

Moreover, the final personas could be found in the finding section of the paper. Finally, each persona has its own layer within the overall experience map of the library. This not only helps differentiating between the varying user behaviors, but also recognizing and potentially rank the pain points. This might be done from a monetary perspective or a time/effort point of view, although to truly increase the user experience and satisfaction, all pain points should be considered by the management of the library services.

Expected outcomes

The research had some expectations in terms of findings and most occurring information. These also could be seen as different reasons for the user to have negative emotions/feelings towards the service, thus these also could be understood as some kinds of hypotheses for the most frequently stated reasons for unpleasant experiences at the EUR library.

With regards to the library, recognition of easily and less easily solvable issues were expected. This, in details, means that some of the major pain points by the users of the service were expected to be difficult to solve (meaning high investment, lot of time and effort), while other easily solvable problems or possibilities for improvement are presumed (regarding low investment, little time and effort). Some expected outcomes of the in-depth interviews were the following:

- Not enough places to study within the library
- People disturbing each other, while studying
- Not having enough plugs (for computers and phones)
- Eating and drinking inside (in terms of disturbing others while consuming foods and beverages)
- Food and beverages options (with regards to the lack of filling food options close to the library)

These expected outcomes were based on personal experience from the library, and since service design is implied by living through the users' experience by walking in their shoes (Holmlid and Evenson, 2008), these earlier mentioned outcomes appeared to be logical from a user perspective. Conclusively, these expectations were further sought by the semi structured in-depth interviews, in order to observe whether these are actual reasons to generate negative feelings towards the library service.

My steps of analysis

This section extensively describes the steps which were taken for synthetizing and analyzing the data. Moreover, in order to make the steps transparent for the readers (Moisander & Valtonen, 2006), as well as fully comprehend the logic and way of interpreting the decision that were made, this section is organized into subparts which elaborate the actions of analysis.

Coding tree development

For a comprehensive and complex data synthetization, a coding frame was created. As Boeije (2002) introduced, coding and constantly collating interview insights can establish specific and relevant theories through inductively categorizing and making connections. Thus, this coding frame was developed based on the insights from an initial analysis of 4 interview transcriptions. The idea to begin with initial coding was highly suggested by Boeije (2002), since she stated that by starting the open coding process by a single interview, which is then further developed into a more persistent and sufficient coding frame.

Based on these transcriptions, and the generated insights, many categories, subcategories and even sub-subcategories were created. These categories and their relevance are supported and confirmed with illustrative quotes from the interviews.

An important decision was made before the analysis. This determination entails that the two varying deliverables (personas and customer journey) will have two different coding frames. This judgement appeared to be compelling from an unequivocal perspective of creating the analysis as transparent as possible. Thus, to reach transferability (e.g. Stake, 1995; Moisander & Valtonen, 2006), different coding frames were needed. These coding frames and their development are described in the below sections. Moreover, some significant choices regarding the persona and customer journey creation could be found in the finding section, since it seemed to be more interpretable after grasping the actual visual personas and experience map.

Coding tree for personas

As it was mentioned earlier, an initial analysis was made for creating the basis for the coding tree. This analysis included 4 random interview transcriptions. After reading them and collecting the most compelling insight with regards to the positive/negative experiences, main purposes for using the library and suggestions for making it better, a primary coding tree was created.

The following interview transcriptions and analysis put forward some complications in terms of coding. In particular, many elements which had been found in the first 4 interviews were not supported by the other 8 interviews. This lead to data reduction, in terms of erasing that category/subcategory, since seemingly a little amount of respondents mentioned those elements. An

example for an erased elements could be the suggestion by a respondent of having hangers and places to put the users/students' bags and belongings while studying. This information was only found in one single interview, thus it evidently cannot be understood as a general or transferable user need.

Moreover, in the initial coding, the categories of "positive" (experiences), "negative" (experiences) and "infrastructure" were separated, however after the extensive analysis of all the transcriptions, these categories appeared to have overlapping subcategories. Therefore, these three categories were merged into two categories of "positive" and "negative" (experiences), while infrastructure became a subcategory of these categories.

And finally, another instance that has occurred in terms of the persona coding tree development was the overlapping subcategories. For instance, the first 4 analyzed interviews mentioned different ways of improving the library's interiors, such as having carpets, different colors, or paintings around. Therefore, these subcategories appeared to be highly similar regarding their content, hence these were combined into one subcategory, namely: Design.

Most importantly, as Parker and Heapy (2006) stated, in service design cases, segmenting users relying on their user behavior could be beneficial. Therefore, the most important distinguishing element of the personas for this case study was the user behavior. The behavior was coded on the basis of using the service from the perspective of for instance how often, for how long, or at what time to start using the library services. Distinguishing between behaviors could fruitfully recognize the main characteristics of the users, as well as deeply describe other user behavioral elements, such as further experiences, needs and wishes.

On the whole, the persona coding development had some difficulties in terms of merging important and eliminating less important elements. Despite the fact that it has immensely altered from its initial formation, the coding has been carefully adjusted to all analyzed interview transcripts. The complete coding tree, due to its length can be found in **Appendix C**.

Coding tree for customer journey

A highly similar process was involved with the coding tree development for customer journeys. Specifically, the initial coding frame was created on the same basis as it was for the coding of the personas, in reference to the 4 initial interview analyses. Although the generated insights for the customer journey seemed to be better corresponding, some respondents elaborated more in details, while others less on their experience journey in the library. This lead to the fixation of the different steps and stages involved. An interesting discovery was made after the initial coding. In greater detail, all the 4 randomly selected initial interviews referred thoroughly to one type of user journey at EUR library. On the contrary, throughout the data synthetization of the remaining in-depth interview transcription, another distinct route of the journey was identified. Therefore that route was added, and supported by three further participants. The user journey's coding can be found in **Table 4** below.

Steps	Stages	Illustrative quotes from the data
-1st	Prepare	**D19**: "First, before that. There's a first one. Set my goals."
		K22: "Okay, so definitely preparing well to go in there, because I need all the books, I need my laptop, I need all my chargers and I need my lunch for the day. Because if I leave then god knows is going to happen to my spot. But yeah, so just having everything prepared."
		N19: "I mean I go to the library. I bike there. And then sometimes if you are too early, you have to stand in line."
1st	Get in	**D19**: "I come in, find my spot."
		G21: "Either in the morning or after class, I go into the silent place"
		I18: "I go into the library."
		S18: "So, entering the library."
		M22: "When you walk through the door. It has to be a welcoming door, basically."
		N19: "Then someone opens the door and people enter."
		A19: "I would go there […]"
2nd	Look for a seat	**A28**: "Because I'm looking for a spot and it's very stressful. "
		D19: "Find a spot, yeah, definitely."
		D21: "I hope to find a seat."
		G21: "First is the first floor and then I go to the second floor. Yeah, we find a spot for me and my friend."
		I18: "Then I walk downstairs. I don't know if that's the next step. Then I see if there is a place free. That can already go wrong because there cannot be free seats."
		K22:"Then finding a spot."
		N19: "And then you usually everyone goes to their spots."
		S21: "And then I look for a seat. Then I usually can't find a seat. So, I'll go up a floor. And then hopefully I find a seat and then I sit down."
		S18: "Then like you'd find a seat […] that would be the next step."
		A19: "If it goes well, I find a spot. If it goes bad, I don't find."
3rd	Organize stuff	**D19**: "Then organize my stuff on the table."
		D21: "Then once I have found it, I put my stuff there."
		I18: "Then if there's a seat I would sit down. I would install myself. Put out my laptop, put it into the plug and get all my books open. Take everything I need."
		K22: "[…] unloading all of that."
		M22: "Once you enter the library you are there, you're like you have arrived, because if you have your jacket on your lap basically and the backpack behind you, then it always seems like okay I'm about to leave. […] Like your own area and you feel like you're there, you arrived."
		S21: "Well then so I sit down, take off my coat. Get out my laptop, my water bottle, my coffee. And then I start by checking my emails and stuff."
4th	Start studying	**D19**: "[…] start studying."
		D21: "[…] and I start studying. "
		G21: "We start studying."
		K22: "Then well, basically using the spot right, using to study."
		I18: "[…] and then I start studying."
		M25: "For me it would be studying the next step."
		N19: "Then the first 3-4 hours of studying."
		A19: "Well, I sit down I study for long."

5-6th	Mini-breaks	**A19**: "Oh, yeah, of course, the mini-breaks if the coffee machine is working and everything is good. I go to the hallway to get a coffee. Sometimes that one is broken. So, I would go to Spar or to Theil to get a coffee which is further away."
		K22: "Yeah, and using the affordances that they provide, other than studying area in the brakes. [...] having that coffee area, or having the opportunity to take out a book. So, using other affordances than just the study space."
		D21: "[…] and obviously when I have brakes, I don't know, I meet with my friends, I go to the bathroom, I eat."
		I18: "[…] or literally just refilling the bottle and going to the toilet."
		M25: "I would just stay there and study. I mean I don't count bathroom breaks. [...] To get some water or something like that."
		A28: "A coffee break here and a coffee break here."
		D19: "Take a break every 2 to 3 hours, I guess. By the break, I mean going out because of, of course, inside sometimes I go on Facebook or on my phone."
	Lunch break	**M25**: "And then […] breaks to eat and drink something, or smoke and chat with someone."
		A19: "Then I would take a lunch break. I wouldn't go too far. Usually, I go to Spar and buy the wraps or anything they have."
7th	Back to study	**D19**: "Then come back to study."
		N19: "Go back to the library, study."
		A19: "Then I would go back to my spot. I would continue studying."
8th	Mini-break	**N19**: "[…] and then there's usually another break around 17:00 or something, and you go somewhere else again to Spar or just to grab a snack or something like that."
		A19: "As I said then maybe a second lunch break, which is shorter than the first one. I would say I usually just get another coffee."
9th	Study	**N19**: "And then […] you go back to studying."
10th	Leave	**D19**: "So, I just leave. So, I guess I leave when I feel like leaving, or when my body asks for it."
		D21: "I know I need to get this done today and when I get it done I leave. Or if I know I need to study a lot then whenever I get tired."
		G21: "I'm going to be tired and usually more or less either I finish first or I'm tired. I usually am tired first and I leave."
		N19: "[…] and then at some point, as I said at 18:00-19:00 I leave."
		K22: "Finishing your work and leaving so you can sleep and come back."
		M25: "Then maybe I would leave when I would be done studying. "
		A19: "And then I like to stay until 17 or 18, depending on the day and I would just go home."
1st, 2nd, 3rd	Get in - Look for a seat - Leave	**A19**: "If it goes bad, I don't find. But of course, then I would go somewhere else besides the library."
		A28: "But if don't find a spot, then I go to another place, because I don't want to spend my whole morning trying to find a seat."; "For example, last week I came once or twice, and after that, I went to another place to study. I didn't want to encounter the stress of looking for a space […]."
		I18: "No space downstairs then I go upstairs first and check if there is a space there. So, I would check the other less desirable areas. So, I would say if there's still no space, which is very unlikely, then I return home again."
		S18: "Sometimes you can just enter and then leave. Yeah, if I just see that it's really busy from like the second I walk in. And then sometimes they can just be like entering, try to find a seat and then leave if I didn't find a seat."

Table 4: EUR library's user journey coding tree

The final step for the analysis and creation of the complex user journey was an interesting addition, namely "library perspective" (see **Figure 8**). This seemed to be justified, since in order to entirely answer the research question and potentially create a transferable framework, the library's already existing services to manage the users and the various personas seemed to be an interesting addition. Therefore, based on living through the experience of the library by walking in the shoes of the users (Holmlid & Evenson, 2008), some existing elements and extra services were added to the journey for the purpose of better comprehension and persistent framework development.

The process of data synthetization, as well as the two earlier described coding trees greatly supported the procedure of converting the raw data into actual findings. These findings are introduced in the next chapter.

4.   Findings

This section is dedicated for introducing and elaborating the interpretation of the collected and synthesized data. By reading the following subsections, the aim is to reach full comprehension in terms of well-managing student experiences in a library setting and throughout its own unique services. Moreover, the purpose is to grasp how service design methodologies and tools can give meaning to the collected raw data. As well as, to entirely realize the way a service design point of view perceives the user needs and experiences in library services through personas and a holistic view of the service experiences (e.g. customer journey) (Kankainen et al., 2012).

Personas

The first deliverables/findings of the service design methodology are the earlier stated personas. Throughout this persona development, 4 different personas were created. During the process, among other elements, the most significant aspects for making distinction between users were the user behaviors, most important needs and wants, main purposes for using the service as well as most compelling unpleasant experiences and frustrations. Based on these aforementioned elements, the following personas were developed and are further intricated below:

- Persona 1: **Laura**
- Persona 2: **Michael**
- Persona 3: **Sofia**
- Persona 4: **Josh**

Moreover, next to the data synthetization, I drew on my experience with persona creation, therefore, each personas received an additional label (it also can be understood as a type of nickname), for the reason of making these fictional characters more approachable. These labels are also partly serve as earmarks of the personas' user behavior. Thus personas are further intricated as:

- **Laura** "the always goer"
- **Michael** "the keep-up guy"
- **Sofia** "the before exam girl"
- **Josh** "the social butterfly"

Example persona

First of all, the main elements of the personas were identified in an example persona frame, and were later filled with the varying information about experiences and user behavior. The example persona frame has the broadly used "Lorem ipsum…" as text, to serve as placeholders for the latter completed texts. The frame of the persona is visualized and further explained in **Figure 3** below.
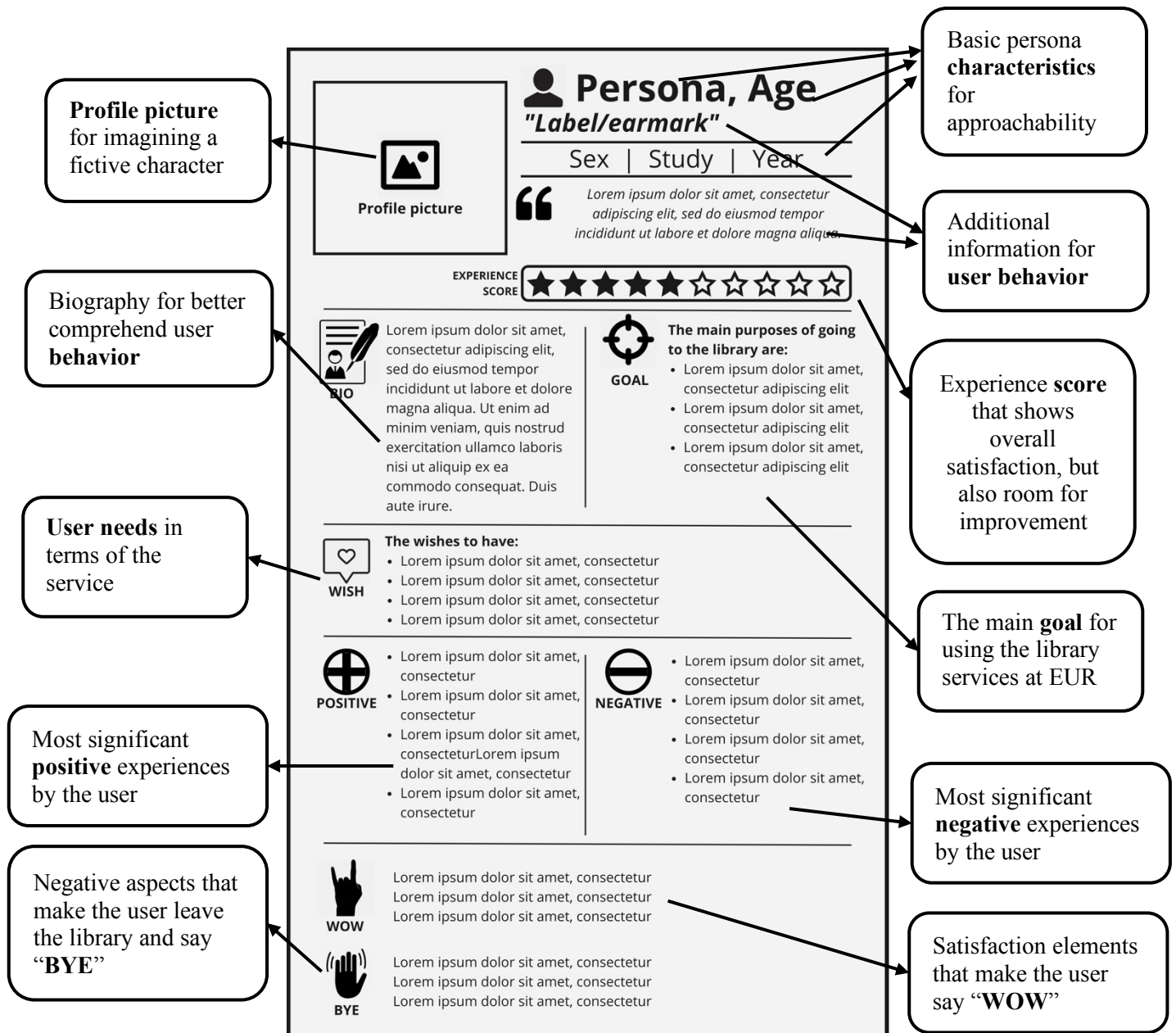
Figure 3: Frame for example persona (own development)

The final personas have unique characteristics which help to make them approachable and distinguishable. These elements are a unique name, age, sex, study program, and year of studies, as well as a profile picture. In addition, a quote is included which were generated to get even more familiar with the personas' user behavior. An interesting addition from personal experience is an average experience score by the persona. These scores were actively sought during the interviews by asking the respondents about their overall experience on a 1-10 scale.

Moreover, a short biography and main goals for using the service are appended to fully understand the user behavior. Subsequently, wishes are attached to the personas which describe most compelling earlier elaborated user and customer needs. Furthermore, to grasp the user experiences, positive and negative experiences are added to the personas which deeply describe the pleasant and unpleasant aspects that they encounter during the library services. And finally, the last elements are

the previously introduced the WOW and BYE factors. These represent Caddick and Cable's (2011) 'must dos' and 'must nevers'. Based on these elements and the persona frame, the 4 different personas are introduced below. The first persona is presented with some example questions that were asked to seek the specific information, therefore the first persona appears to be the most elaborated, since the other personas had a comparable development process, as well as questions.

Laura "the always goer" – Persona

The first created personas is Laura "the always goer". Her persona represents an idealized perception of the students who go to the library 5 to 7 times a week and could be found in **Figure 4**. Students like Laura were identified by the following responses to the question of "How often do you go to the library?". This question was sought the varying user behaviors. Some respondents referred to a heavy/frequent user behavior.

"[I go to the library] every day, like every weekday." (A28)

"[I use the library] pretty often. […] before I used to live there. I would go in the morning and I would love it if I don't have that many classes then I can stay all day long. So, if I had days off, I would be there for the whole day. So definitely I use it a lot." (K22)

These interview responses justified and contributed to the persona who is the heaviest user of the library and its services. This led to the result of Laura's earmark: "the always goer". Moreover, her age was fixed on 19, since exactly one fourth of the respondents were 19 years old at the time of the interview. Moreover, her studies and year of studies were set as being an IBA student (also known as International Business Administration) in her 1st year. Her overall experience score is 7 out of 10.

Laura "the always goer's" quote is: "I wake up at 7am and be at the library when it opens. I would stay until 7pm to ensure my smooth completion of IBA course in 3 years. No re-sits for me". This quote not only represents the heavy usage of the library, but as well it offers some insights for the further user behavior and identity. The quote was created on the basis of the responses to the various questions of such as "For how long do you go to the library for?"; "When do you go to the library?" and "What time do you go to the library?". Since a high number of respondents mentioned their early arrival to the library, it appeared to be a justified user behavior. Some demonstrative quotes are listed below.

"I try to go in the morning because otherwise it gets full and you can't' find a spot."; "Usually around 9 because at 9:20 [the library is] already full." (G21)

"So, starting from 8:00 in the morning, when [the library] opens, then till late in the evening." (N19)
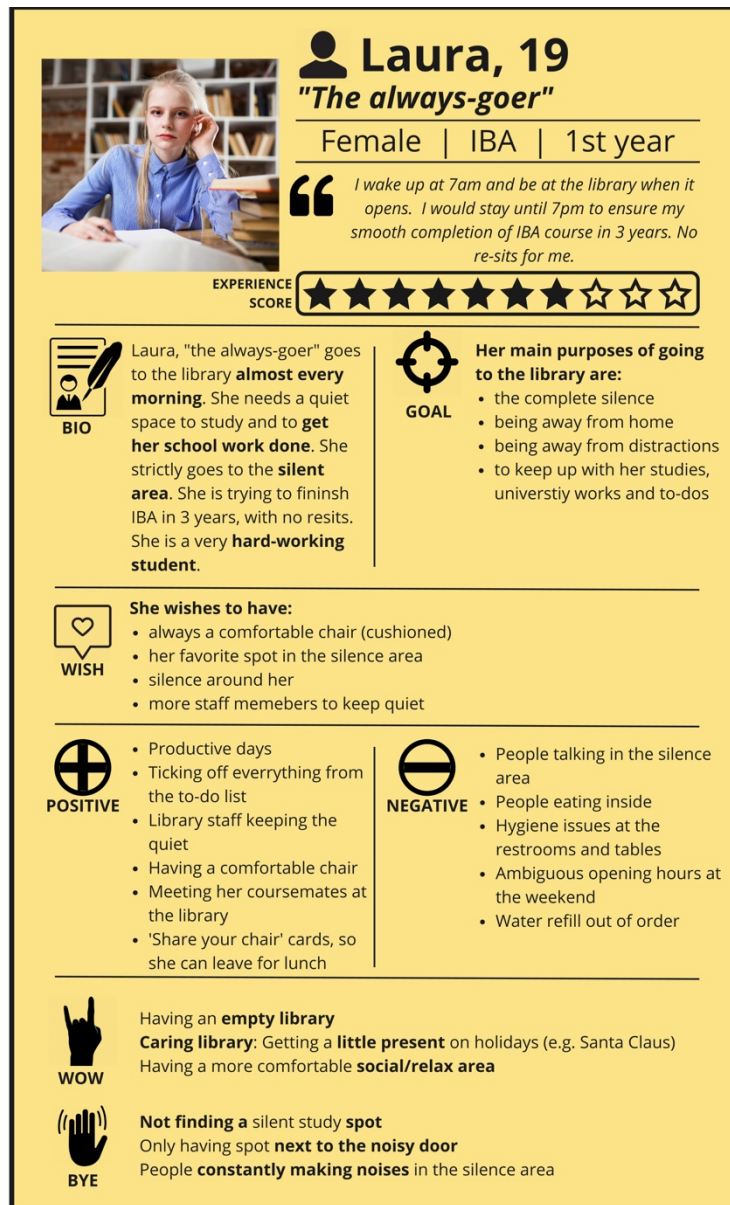
Figure 4: Laura "the always goer" persona (own development)

These quotes support the behavior of entering the library right when it opens or early in the morning. Moreover, based on the collected and synthesized data, the short biography and main goals indicate that Laura "the always goer" is a heavy user with the motivation to get her schoolwork done, as well as her preference of the silent area over the non-silent one. The development of the biography description (which can be entirely found in **Figure 4**) was on the basis of the questions of for instance "How often do you go to the library?"; "Where do you usually sit?" ; "Do you have a specific favorite study spot?"; "What is your main goal when using the library?" and "How would you finish the following sentence of 'my goal in the library is to…'". Some descriptive reactions to these questions identified the preference for silence and productivity as main goal for the service.

"[I prefer] the silent. I think it's easier to concentrate and there are not many distractions. No people coming in and going all the time, no people talking. So yeah, I prefer that to the other areas." (M25)

"[My goal in the library is to] get as much done as possible in like 12 hours." (I18)

Additionally, although, some elements might overlap within one persona, this does not seem to be a limitation, more of an extensive review of the needs, experiences and main purpose of using the services. Therefore, some elements might be originating from the same interview question, or in other cases, related information might be extracted from other matters. This notion was identified by Nielsen et al. (2015), who argued the difficulty of developing fully distinctive personas.

As a result, Laura "the always goer" became the persona who goes to the library almost every morning (if she doesn't have a class before). She keeps up with her studies in terms of studying for every course that she has in IBA. Her main goal in the library is to be as productive as possible and to get stuff done. This could also be understood as the reason for going to the library and using the services. Thus not only the goals while being at the library is described, but also the intention and motivation to go there.

The next element, the persona's wishes are conceived from the responses to the questions of for instance "What do you miss form the library?"; "What would you add to this library?"; "How could you make your learning experience even better?". After synthetization, based on some responses about infrastructure and silence, the persona wishes were indicated.

"Maybe the chairs could be more comfortable. [...] Maybe like have chairs with armrests." (D19)

"Sometimes it can be really annoying if people really start talking to their neighbors or to their friends in the library. Sometimes people talk to them for like 20 minutes straight and the whispering can be even more annoying than the normal talking." (N19)

These quotes from the interview transcriptions well illustrate the fact that there is a need for more comfortable chairs, as well as complete and consistent quietness within the silent area of the library. Thus, these were added to Laura's "the always goer" character, since these appeared to be elements that could be considered by a highly frequent user.

Additionally, the positive and negative experiences were sought by the questions for example "What are some positive/negative experiences that you had in the library?"; "What do you like/dislike about the library?" and "What is your favorite/least favorite thing about the library?". Some interviewees' quotes that illustrate a few positive, as well as negative experiences were added to Laura "the always goer". These citations are listed below. Positive experience related quotes were the followings.

"There's like this one guy with the green vest which says library. He always walks around downstairs and tells people to be quiet."; "Also, the tables and chairs. It's just really comfortable and makes you studying in a good way." (A19)

"I don't know if that's a service or what that is, but when you can have a card and you can say for how long you are going to be gone. Then someone can take your spot for that time. So, I really think that's a great idea for the library that they implemented I think last year or something." (K22)

"[…] usually I meet a lot of my classmates there or sometimes I go with my friends."; "For me, the good day in the library is when I'm productive and I have my favorite seat, and if I can focus." (D21)

While these previous quotes indicated some of the significant positive experiences with regards to the library services, many negative experience regarding quotes were also present in the interviews.

"When people are noisy around me, especially when you're in the silence area [of the library], the lowest noises can distract you by a lot. The person that chews too loud or something, someone moves a chair around and stuff. This is what I'm trying to avoid sometimes."; "I use the toilets a lot, usually, I even go to the handicapped bathroom because bathrooms in the library sometimes tend to be, not filthy, but no toilet paper there or no drying towels for your hands."; "[…] every time I know I have to go to the toilet now, I'm like umm I hope it's clean this time." (M22)

"Especially if they are loudly eating [in the silent area of the library]."; "They eat and it's very noisy." (A28)

"Before the exams, [...] we were [at the library] at 9 and it officially opens and 10. We were there at 10 on a Saturday. And it opened at 10 and it was full. So, they opened at 9:45 apparently, so everyone was already there and there were almost no spaces left at 10:00 when it opens. So that's really kind of annoying." (I18)

Since the personas, user journey and experience mapping are highly focusing on both positive and negative experiences, the aforementioned quotes are some illustrative quotes from the interviews that well represent the persona's experiences. This does not mean that these quotes are exhaustive from the interviews.

Although, throughout the answers, many corresponding themes were found, some references to specific examples were also discovered. These indicate the WOW and BYE factors of the users and thus the persona. However, these aforementioned WOW and BYE factors were actively sought throughout the interviews, via questions such as "What do you like the most/least?"; "What would make this library a perfect library?", many elements that are included in these two parts arose from

simply asking the experiences. Hence, some examples for descriptive quotes for WOW and BYE factors that arose from the interviews and referred to the most significant 'must dos' and 'must nevers' (Caddick & Cable, 2011) are the following. The WOW factor related quotes were mentioning the additional 'care' that the library offers, as well as the need for a relaxing place within the library.

> "I think I would increase the silent area [of the library] and then have a social area as well. Like where people could just like go and chill maybe with couches and stuff and talk to friends." (S18)

> "Everyone was studying for exams […] [when Santa Claus] went through with a huge bag and you could pick something"; "I even put a story on my Instagram, like Erasmus is making us feel well or something. That's pretty nice. I think it was right before the exams. […] Everyone was terrified and it was hostile and then they just came in and the mood changed. It was so nice. […] I was so happy!" (D19)

While these earlier cited 'must-have' or satisfaction-increasing elements were demonstrated, on the contrary, library users appeared to have 'must-not-have' elements, or as this paper refers to it, BYE factors. Some of the most compelling BYE factors were regarding different noises, as well as not finding a study seat.

> "The only thing that always annoys me [in the library] is if you kind of sit next to the door, then people are outside of the door talking and you hear it so loudly every time someone comes in. So, then you're like, okay someone comes in you hear people talking so it's not silent anymore." (I18)

> "But lately I'm not coming here to the library because there is no space literally. So, I now go to T-3 computer rooms or Polak [building's study spaces]."; "[There are] no seats to be honest." (A28)

Laura "the always goer's" persona is significant. Why? Because she is the user who goes to the library the most frequently. She represents a very loyal user, who's first choice for study place is the EUR library. Therefore satisfying her needs, eliminating her negative experiences and enhancing the positive ones appear to be the most important to-do from the service design perspective and seemingly from the library perspective as well.

Michael "the keep-up guy" – Persona

The second persona is Michael "the keep-up guy". His conceptual character stands for the student type which uses the library once or twice a week. His persona is presented in **Figure 5**. He was fixated with the age of 22, as well he is in his 3rd year of his International Bachelor Communication & Media (also known as IBCoM) studies and his overall experience score of the library is an 8.5 out of 10.

His quote is the following: "I like to go in the afternoon, once or twice a week, when the library is relatively empty. I want to be alone and zone into my stuff". His persona and his quote represents the students whose main goal and thus user behavior is to keep up with the studies, and therefore keep track of each courses, assignments, presentations and other school works. The generation of the user behavior like Michael's was identified by an interviewee quotes.

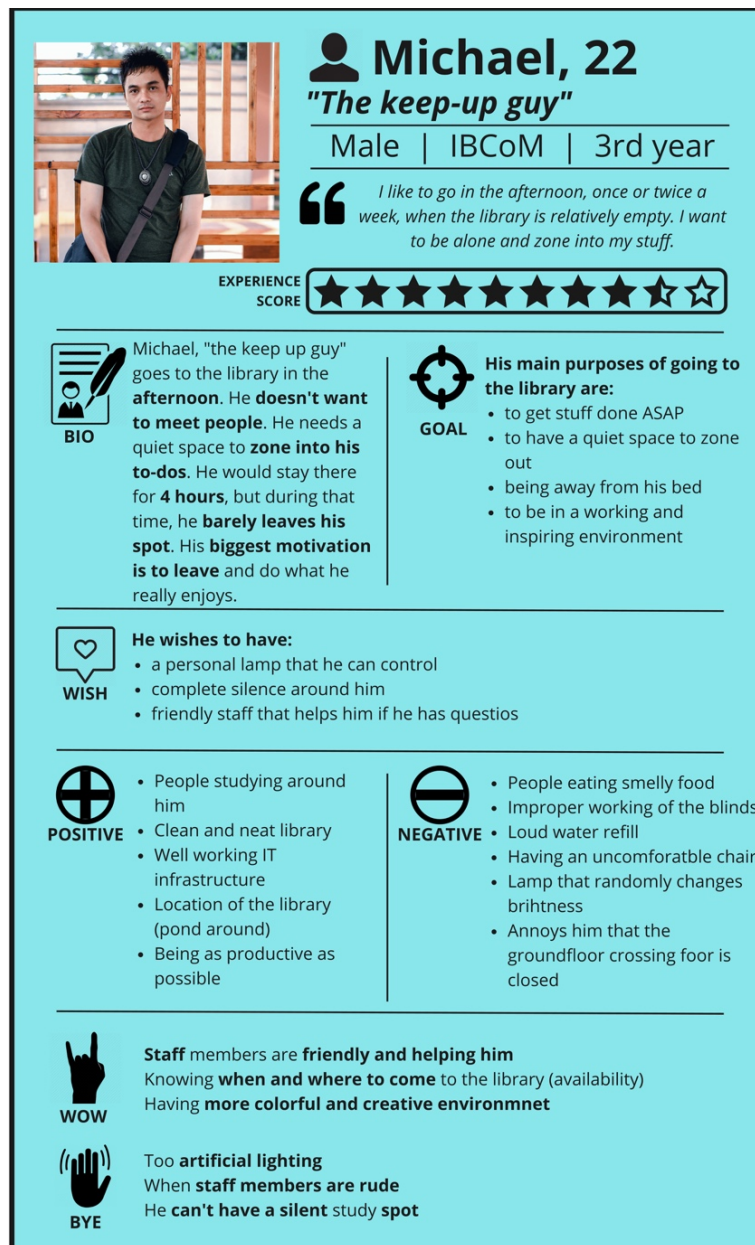"Um, the university library, I use it probably like once a week." (M22)

Figure 5: Michael "the keep-up guy" persona (own development)

When Michael "the keep-up guy" is at the library, he would stay for 3-5 hours and study as much as he could. Moreover, he would go after his lectures or seminars, not only because that's when

he has time, but also for the reason that the library is getting emptier by that time. These behavioral elements were created on the basis of some corresponding quotes from varying respondents. A demonstrative insights about the time spent in the library for Michael "the keep-up guy" could be the following.

> "When I don't have the exams, I probably leave [the library] around 17:00. And go there after my lecture, which usually ends around 15:00, and then go there until 17:00 or 18:00. For like two or three hours, not more." (N19)

On the other hand, while Michael "the keep-up guy" spends 3 up to 5 hours in the library, his time of arrival was fixated to afternoons based on the frequent user behavior of using the library service when it starts emptying out.

> "Normally [I go to the library] after 16:00. [...] because during the day, like in the mornings, I have lectures and tutorials. And then I like to relax for a bit, eat lunch and then I go to the library because it's usually really busy around 12:00 till 14:00 or 15:00. So you normally find a space after 16:00." (S18)

Additionally, Michael "the keep-up guy's" biggest motivation to go to the library is to get his stuff done, as soon as possible, in order to do what he actually wants to. He strictly sits in the silent area. Moreover, he even goes downstairs to the cubicle seats (which entails a study spot with walls around) since that is where he can really zone into his school work and to-dos. Also, he uses the silent area to be away from his home, since that means a lot of distractions for him, such as his bed, or cooking and so on. He also like that other people are working around him, since that also motivates him to do more. These equivalent themes arose from some demonstrative quotes about the main purpose of using the library services. His behavior of preferring the cubicle spaces was based on the following insight.

> "It's just the fact that I can zone into my study material because I'm like kind of in the cage. In that yeah small cubicle thing. [...] if I really want to concentrate, I can just bend forward and just try to avoid looking to the right or to the left. So, I think it positively contributes to my studying." (N19)

While Michael "the keep-up guy" sits alone in the silent area, his other greatest motivation is to leave his home, and therefore some of the distractions that can cause lost focus. Some respondents referred to factors for distractions such as bed, food or electronic devices.

> "Whereas when I'm at home, I would like to go to bed early just walk around or eat something."; "[At home] it's just more tempting to just go in to bed and sleep or do something else or be on your phone." (A19)

Furthermore, for Michael "the keep-up guy" it is important to be alone, in terms of not having friends around, due to the fact that he would constantly take breaks and talk to them. On the contrary, as it is mentioned above, he desires studying people to be around him because that highly affects his productivity as well.

> "I usually try to go [to the library] alone because that's how I study best. [...] usually alone and then I try to have my own space."; "So, the social aspect doesn't really play a part when I go to the library." (M22)
> "I used to do in the beginning, studying at home. But I feel like I'm more productive in the library because I also see other people studying there and this pushes me more and to do more." (N19)

Subsequently, Michael "the keep-up guy's" negative experiences are highly connected to his wishes, since he wishes to turn the negative experiences into positive ones. A descriptive example could be that Michael gets frustrated by the improperly working desk lamps, and thus one of his user needs is a personalized lamp that he can control. Moreover, he gets distracted if some people eat or drink smelly food/beverages close to him, thus he gets annoyed by the smell. Further, other 'wish' elements can be intertwined with 'negative experiences', such as the pain point of the high level of sound of the water refills, and the connected need to have a complete silence around him. These matching themes were present in many interview answers, which hence helped the development of these topics. Firstly, the personalized lamps were mentioned.

> "The lights above your thing, they just turn off and on like every single time."; "So yes, it's very annoying because sometimes it just randomly stays on for a few hours and then it is off and it doesn't go on again. Yeah, I have actually considered just switching places at some point." (I18)

Secondly, although a few respondents stated that they like to snack on something while studying, many users indicated that a significant pain point that they experience is food related. This was an expected outcome of the research, although the extent of the frustration was unforeseen.

> "What really bothers me is when people eat big meals [in the library]. The food smell and the sound, I don't really like that." (D21)

Finally, in terms of pain points and frustrating elements, Michael "the keep-up guy's" negative experience is also related to noises and other users disturbing him. This outcome was also anticipated before the interviews took place. An illustrative example could be the loud water refilling station.

"Sometimes I go to the handicapped toilet and I fill up my water bottle, but usually also in the bathroom and not in the water dispensers because they're pretty loud." (M22)

On the other hand, some elements that Michael "the keep-up guy" perceives as positive experiences could be that he sees the library as a clean and neat place with very well-working IT infrastructure. He also appreciates the spatial location of the library, since he really enjoys the pond around the place. These information could be exemplified for instance by the following representative quotes.

"I think [the library] is very organized and very clean." (G21)

"I also like the location [of the library] because there's a pond there and if you sit by the window, it's really nice. And I also like that I have a place to study and be concentrated. And I'm so close from my house and I mean, yeah, it's something to appreciate maybe." (M25)

Finally, some of this persona's 'must dos' and 'must nevers' (Caddick & Cable, 2011), or in this specific case the WOW and BYE factors are closely related to the common pain point of the earlier mentioned silence and desk lighting. On the other hand, he has a great need for friendly staff, and if he experiences the opposite, a WOW factor rapidly could turn into a BYE factor. Moreover, he gets the most frustrated when he cannot find a study spot for himself in the silent area, thus seemingly the biggest WOW factor would be to know when and where to come. The insights that helped formulating these respective needs and wants were firstly focusing on the staff related WOW or BYE factors.

"But I just feel like they are so caring and they really work to meet goals"; "Well, once I asked for earphones to borrow, and they don't have the service but still, they gave me."; "[…] they are very helpful if you have any questions they always answer." (A28)

Additionally, the most compelling WOW and BYE factor was closely related to the availability of the library. However, not only the need of knowing the availability was mentioned, but the critical negative experience of not finding a study seat as well.

"Just the fact that you go [to the library] to study but you can't find a study space is the most devastating thing to do. Because it costs a lot of your time when you have to go to some other places." (K22)

"I know in other universities it's like an electronic system where you can book it and you can see what seats are available." (D21)

Michael "the keep-up guy" is however less frequently using the library than Laura "the always goer", his need appears to be significant. Not only from the perspective that he also uses the library, but that he potentially represents an even bigger population than Laura "the always goer". Although he less frequently uses the library, he is very consistent with his usage and thus user behavior. His first choice for study spaces is the library, due to the silence area, therefore enhancing his positive experiences by eliminating the negative ones seems to be crucial for well-managing the user satisfaction and experiences.

Sofia "the before exam girl" – Persona

The third created persona, is Sofia "the before exam girl" (see **Figure 6**). Her abstraction and her user behavior portrays the students who heavily use the university library services before and during the exam periods. This means that users, such as Sofia, would take advantage of the library, only when exams are coming up, however at that time, the library would be the number one study area choice at campus. Although, she depicts a less frequent usage, when she uses the service, she goes there for a longer period of time, throughout one to three weeks. Additionally, she would occasionally use the library's non-silent area for group projects/assignments/presentations, however, in this case, library does not appear to be her first choice. Moreover, the persona was determined as a second year student of International Bachelor Economics & Business Economics (also known as IBEB) with an overall experience score of 8 out of 10. These elements were synthetized as the persona's quote and were based on various analogous responses.

> "I went [to the library] two or three weeks in advance the exam and the last exam periods also two or three weeks before." (A19)

> "It varies because when we had exams we would stay [at the library] for like 10 hours." (M25)

Sofia the "before exam girl" would most preferably sit in the silent area. This has two different reasons. Firstly, she needs a motivating atmosphere to be as productive as she can be. Secondly, she is usually sitting together with her course mates/friends, in order to make the studying a less 'alone' process. Moreover, within the silent area, she doesn't mind where she sits, since she is using noise cancelling headphones, hence the noise doesn't bother her. These elements are portrayed as the persona's main goals and biography and were synthetized on the basis of some corresponding interview quotes.

"[…] being with your friends, and you don't feel like you're the only one that has to study, so you go together."; "You socialize and you also do your work."; "I usually go to silent [area], because my friends also like to go to the silent." (G21)
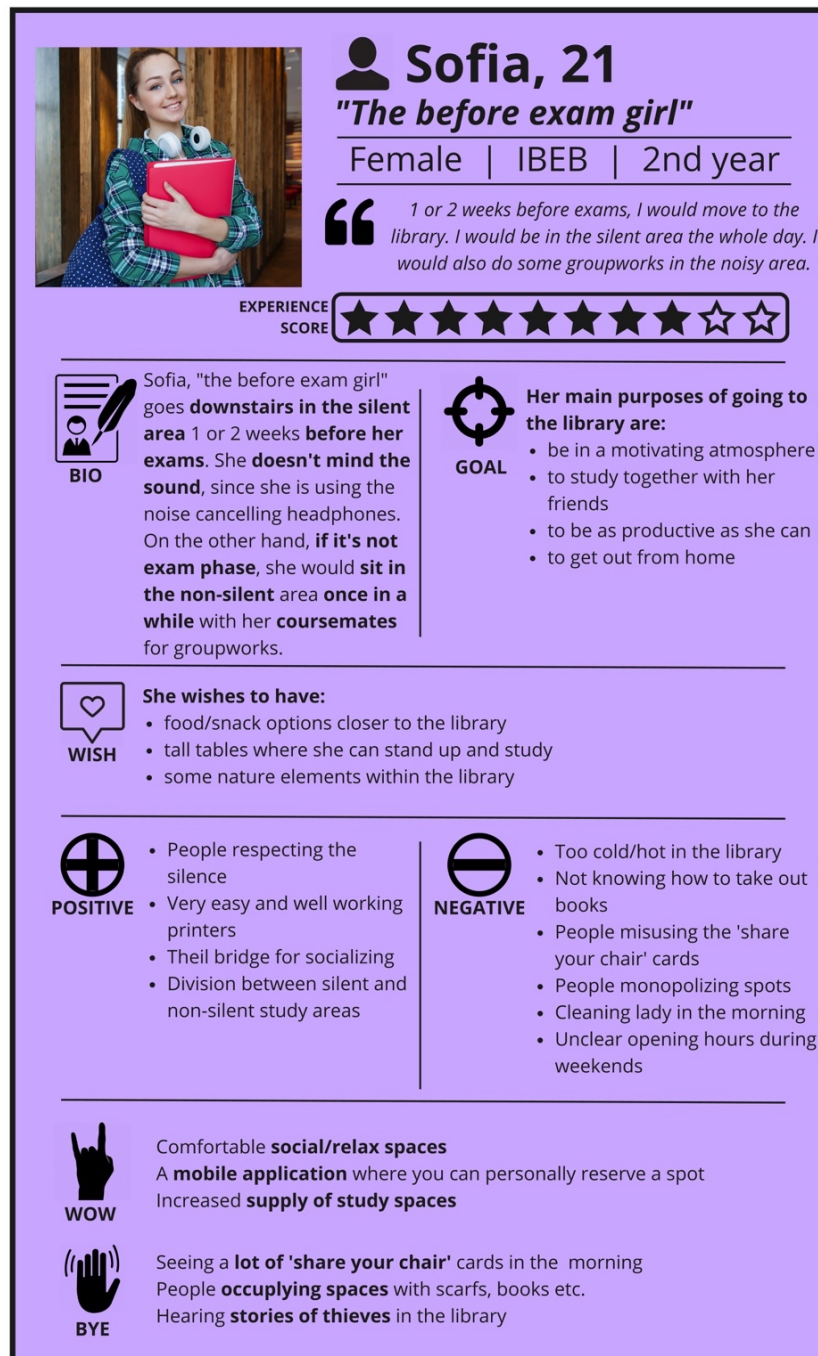
Figure 6: Sofia "the before exam girl" persona (own development)

In terms of user needs, many respondents referred to the lack of food and snack options, thus it appeared to be a significant wish and was added for the persona of Sofia "the before exam girl". As well as, many interview participants wished to have some interior design and furniture related elements, such as standing up tables and natural components within the library, hence these wishes were also added as compelling user needs.

"If it were up to me, I would put like greens and more plants and just make it a bit more Zen." (K22)

"What would be awesome is, you know in Polak, they have like the higher tables […] for some reason it's like a different kind of productivity for me […]." (S21)

Moreover, an important element was mentioned by the EUR library users. The users referred to the lack of food options around the library, thus the need for increased supply of these arose.

"Maybe also like something food related for example. So, you can just grab a snack somewhere in between a break because right now they don't have anything like that there. And if you're really hungry you have to get out of the library and go to Food plaza or the cafeterias." (N19)

In addition, with regards to experiences, this persona also has some important pleasant and unpleasant experiences that she encounters whilst using the library services. For instance, although Sofia "the before exam girl" is not bothered by the noise, yet she enjoys that within the silent area, people truly respect the silence and thus creating a proper working environment. Moreover, she likes the bridge between the library and the university's Theil building, since she can have a small social break with her friends, as well as the user-friendly printers and printing system.

"[In the library] people are really respectful and they don't speak." (A28)

"[…] the connection to this building [bridge], is also really nice. If you do want to get a snack that you can just go here." (I18)

"I always use [the printer in the library] and it works perfectly well. It's really good." (D19)

Finally, in terms of positive experiences, the WOW factors for this persona was based on the highly common suggestion by the respondents of having increased supply of study spaces and having a social area where students can relax between two study sessions. As well as the respondent's majority desires a mobile application or a platform where users can see the availability of the library. Due to the high frequency of these insights, these became the WOW factors for Sofia's persona. The positive experiences of Sofia "the before exam girl" are the followings.

"It would be nicer to just have more spots [in the library]." (A19)

"Just a little space where you can literally take a break. But that's not meant for studying. And just like be there for 5 to 10 or like 15 minutes." (I18)

"[…] to have like an app where you can book off the tables yourself and then you can only do one day just for yourself. Like through your own student account or something." (S21)

On the contrary, in terms of negative experiences, some respondents correspondingly referred to the inappropriate temperature within the library and people misusing the 'share your chair' cards. These elements appeared to highly influence the user satisfaction, as well as the main purpose of using the services.

"I would say when it's too warm in the winter. Like the temperature. […] I lose focus […] that just destroys the aim of me being [at the library]." (I18)

Thus, these were added as negative experiences for this persona. Moreover, as some interviewees mentioned negative experiences such as not knowing how to rent out books or wanting to keep it for a longer period of time.

"To this day I've been living in the library and still don't know how to get a book. I really don't." (K22)

Further, as negative experience, some respondents mentioned the presence of the cleaner, specifically when the cleaning process is loud (e.g. vacuum cleaning). This finding could also be elaborated as disturbing sounds by others, and thus it was anticipated as a frustrating factor.

"Sometimes if it's exam phase, I'm very early in the morning. I mean it's normal, but they still clean for example, and that's very loud." (N19)

In addition, the unambiguous opening hours during weekend appeared on several occasions throughout the interviews. Therefore, these elements were added as negative experiences to Sofia "the before exam girl's" persona.

"Also, I don't know I've been meaning to ask them but I never do because I don't know why I think on weekends there are opening earlier than 10 a.m." (D19)

Furthermore, negative experiences that appeared to have the highest significance were added as BYE factors. Due to high repetitiveness, monopolizing spaces and misusing the 'share your chair' cards were appended as the most unpleasant experiences for Sofia "the before exam girl".

"[…] the most annoying things is that sometimes you come to [the library]in the morning and people put these signs of reserve-reserve-reserve, and there are no one. So, it's friends I think that put for them." (A28)

"Also, the fact that some people just leave their spot and come back again after like five hours. […] They leave all their stuff there without putting the share chair thing." (N19)

Moreover, a radical insight was found in two interviews. Although two interviews do not appear to be truly explanatory, the seriousness of the insights created the last BYE factor. Namely, hearing stories or personally experiencing thieves in the library.

"My course mate, she went to the bathroom and when she was in the bathroom her wallet got stolen from her bag."; "I would like to not worry about my stuff and carry them when I go for lunch." (D21)

Sofia "the before exam girl" appears to be a relevant and significant user of the library. Although her usage is not that consistent in terms of permanence, she still tends to be a stable user of the university library. Since when she uses the EUR library service, she stays for a long period of time, before every single exam period that she has. Thus satisfying the needs of these type of users shows to be important from a user experience perspective.

Josh "the social butterfly" – Persona

The final persona, namely Josh "the social butterfly" was created based on a single insight and could be found in **Figure 7**. On the other hand, this insight appeared to be outstanding and highly descriptive of the nature of the less significant users of the library. The insight is the following:

"For example, people from our year. Some of them I feel like they just go to the library to get noticed by others and to also see other people and to just go there more for the social part. [...] To just talk to other people and to let other people know that they are also there." (N19)

This insight appeared to be a perfect description of the less frequent and thus less significant users. Why so? Due to the fact that their user behavior do not appear to be crucial from the library perspective, since they use the service for an individual purpose that is seemingly not in the priority of the library. On one hand, socializing and studying with others was mentioned before with Sofia "the before exam girl's" persona, it was justified that socialization is a big part of the library's usage. On the other hand it only appears to be vital (from a library perspective) if that behavior is combined with the purpose of studying. On the basis of these aforementioned information, Josh "the social butterfly" was created.

The "butterfly" title was given to this persona, since presumably, the library's aim is to satisfy the students who use the service for its primary purpose. Hence, Josh "the social butterfly's" persona and thus user needs are less or not significant from both service design and library perspective.

However, Josh "the social butterfly's" persona is less significant, some basic information, mostly social needs related, are included in his persona. For instance, that his greatest motivation is to meet people, be recognized by people and have a feeling that he belongs to the library's studying atmosphere. His biggest needs are people, mostly course mates and friends to be present in the library.
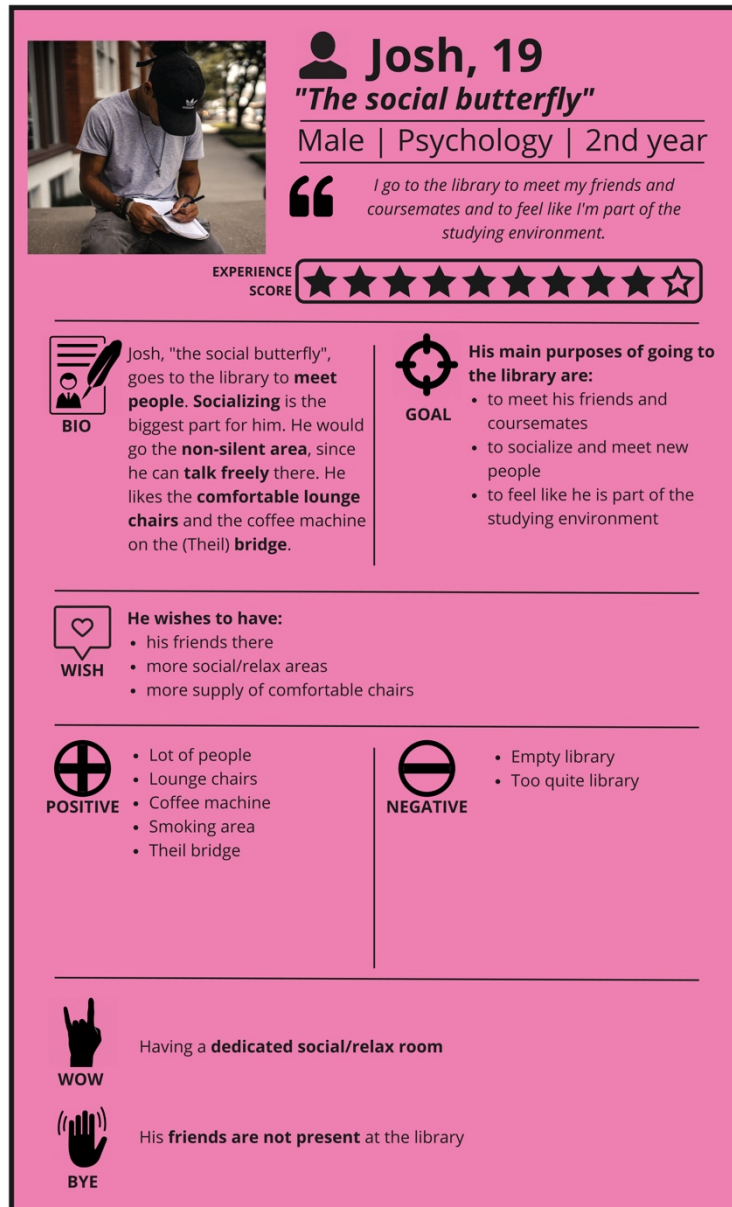
Figure 7: Josh "the social butterfly" persona (own development)

Although he greatly enjoys spending time in the non-silent area, as well as on the (Theil) bridge and smoking places, he wishes to have more organized social places where he can spend more time with his friends/course mates. He has negative experiences when the library is too empty or

when his friends are not at the library. Illustrative quotes about these needs were mentioned throughout the other three personas.

Finally, the persona Josh "the social butterfly" is seemingly irrelevant form the library perspective, although it appears to be a relevant addition to this research from a service design experience point of view. Particularly, knowing the users whose needs are less important, could increase the focus for the more important ones. Thus, the minor importance of Josh "the social butterfly" boosts the relevance for well-managing the other three personas' experiences and user needs.

Customer journey

As of the second key finding/deliverable of this research, a customer journey/experience map was created. This journey can be found in **Figure 8**. It seems to be important to state early, that the horizontal axis represents the timeline, thus the further elements placed on that are depicted in a timely manner.

As it was anticipated, a fixed set of steps were present in the majority of the interviews. On the other hand, as it was also mentioned earlier, a second journey arose from the interviews. Although both starts likewise, a new branching appeared from the same beginning of the journey. These routes are exhibited by the horizontal component, more particularly, by the 'student journey' item. The first route is the optimal version of using the service, while the second route, exhibited under, is the imperfect path from an uncompleted behavior perspective for the EUR library usage. This is also marked with a red exclamation mark, that represents the end of a journey with user frustration. With regards to the optimal route of the journey, based on the frequent answers by the respondents, the following stages were created. It is important to note that the numbers after the stages show repeating steps within the journey.

1. Prepare
2. Get in
3. Look for a seat
4. Organize stuff
5. Start studying (1)
6. Mini-breaks (1)
7. Lunch break
8. Back to study (2)
9. Mini-break (2)
10. Study session (3)
11. Leave

In terms of the imperfect route of the EUR library usage, based on some responses, three different stages were created. Respondents referred to this type of route as having a negative experiences, therefore, this route increases the relevance of well-managing the user needs. Based on three interviews, the following steps were fixated:

1. Get in
2. Look for a seat
3. Leave

For the development of the stages of both the optimal and imperfect user routes, the illustrative quotes and the synthetization of the raw data can be found in the coding tree of the customer journey, presented **Table 4**.

In terms of an interesting finding within the user journey, some participants referred to the repeating cycles of having a study session and taking mini-breaks. Therefore these cycles were made visible with green reoccurrence cycles. Some illustrative quotes by the interview respondents for the repeating cycles could be the followings.

> "And then probably take a break if you need to, and continue studying. And then I can repeat until you feel confident." (S18)

> "After a while, when we're tired, we just, bathroom, smoke or coffee break, or whatever. […] This is the same for a couple of times […] until we are tired." (G21)

Nevertheless, the final journey does not only entail the different steps from an overall user perspective, but also the varying four personas' own perceptions were added throughout the different stages of the service, based on their experiences and needs. This is presented in the horizontal axis, namely 'Personas'. Within this component, three different types of user related aspects could be found. Firstly, the green post-its, which refer to the positive experiences and favorable encounters. Secondly, the red post-its, which resonate the negative experiences and frustrating components. And finally, the blue post-its, which indicate the wishes of the personas within the specific stages.

However, the personas were created on the varying basis of user behavior, they might have similar needs within the desperate stages. For instance, more than one persona can have unpleasant experiences with other people disturbing their study sessions.

Conclusively, the holistic point of view over the entire service can highlight the positive experiences, as well as identify the negative ones. Whilst, it also presumably suggests the room for improvement, in terms of well-managing user experiences and needs.
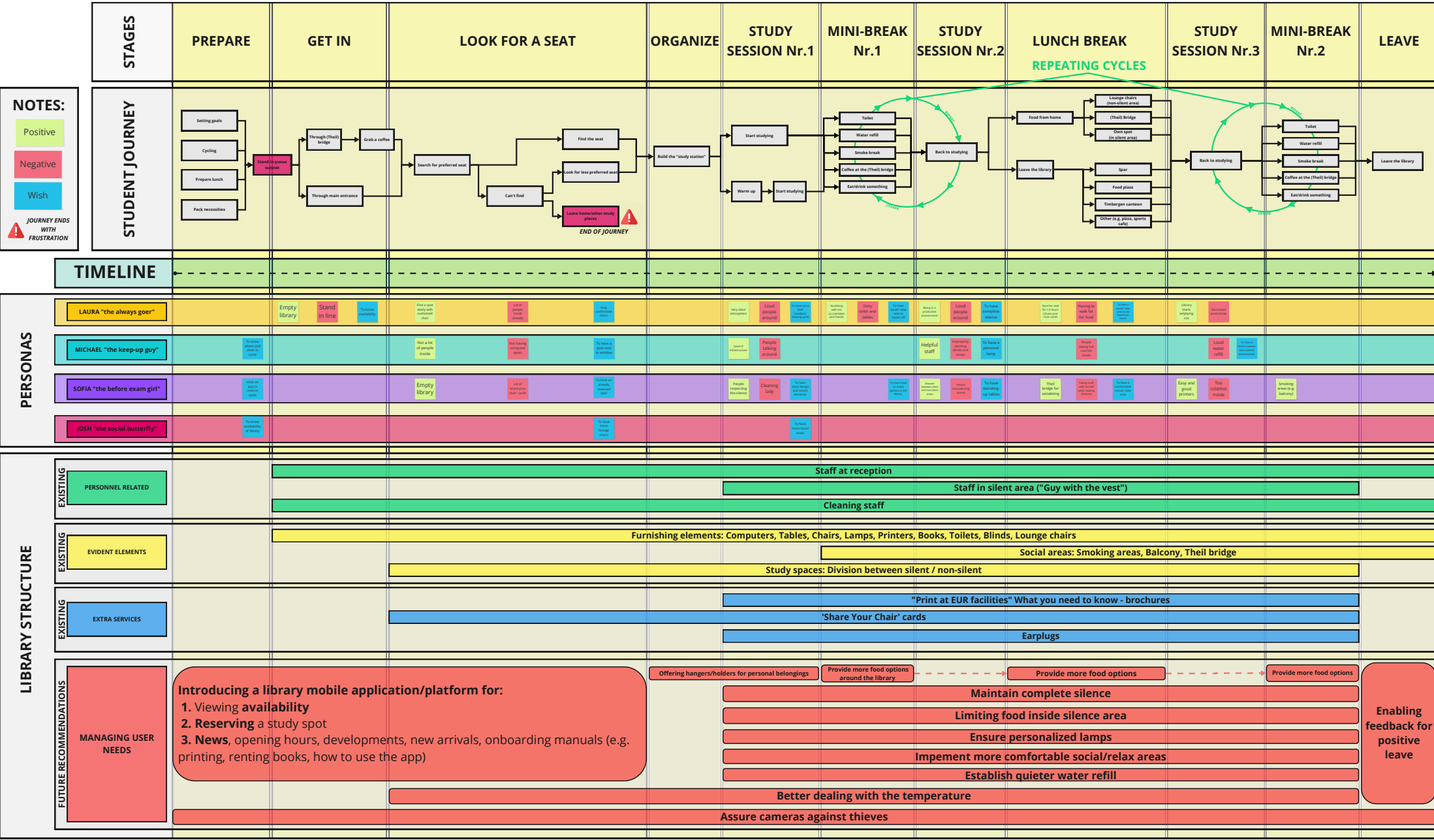
Figure 8: User journey of the EUR library (own development)

Library structure

Unexpectedly, some novel elements of the user journey arose during the data synthetization and analysis. More specifically, the unforeseen component, which was added to the user journey, is the library structure. This idea and perspective represents the EUR library's already existing components, that can be experienced through using the service and potentially have impact on well-managing the student needs and expectations. Illustrative elements could be the above noted 'share your chair' cards (see **Figure 2**), or the brochures for using the printing facilities (see **Figure 1**).

Based on some interview responses, and additionally via repeatedly self-experiencing the service, the following aspects were identified and further clustered as existing structural components influencing or well-managing student needs and experiences:

Personnel related aspects:

- Staff at reception
- Staff at the silent area ("Guy with the vest")
- Cleaning staff

Evident elements:

- Furnishing elements – for instance: chairs, printers, books, lamps, blinds etc.
- Social areas – such as the smoking areas, balcony, (Theil) bridge
- Study spaces – such as the division between silent and non-silent areas

Extra services:

- 'Print at EUR facilities' brochure
- 'Share your chair' card
- Earplugs

These impactful elements are placed on the user journey in a timely manner. This means that the length of the element correlates with the different stages involved in using the library service. Thus, it not only offers understanding of the time-placement of these offerings, but also the identification of missing elements and further enhanced service additions are seemingly made possible.

From this notion, some future elements are also specified in the library structure within the user journey. This appears to be a significant step in terms of realizing the areas where potential experience and satisfaction related improvements could be made. Subsequently, this point of view also offers exact elements that the interview participants and thus students referred to as their further needs and wishes within the library services.

Therefore the layer of the library structure seems to be justified from both service design and user (student) stand points. The specific elements that are also potential forthcoming service elements could also be comprehended as future recommendation for library service providers, more particularly, university libraries. These recommendations and other future elements with regards to

managing user needs and experiences were found through experiencing the service, as well as during the in-depth interviews with users. The relevant suggestions are highly similar to the wishes that the personas mention, although from a library perspective, therefore it can be found in the personas and their coding trees (see **Appendix C**). Hence, some of the persona wishes (can be understood as suggestions) showed to be less relevant from a library perspective. Based on the interviews and personal experience, the following future recommendations are present in the user journey:

Pre-usage of the service/beginning of the service:

- Introduce the EUR library mobile application

Within the organizing stage:

- Offer personal hangers/holders

Throughout the repeating study-break cycles:

- Maintain silence
- Limit food inside silence area
- Develop personalized lamps
- Ensure more comfortable social/relax areas
- Implement quieter water refills
- Assure more food options around the library

End of the service related additions:

- Enable feedback system/positive leave

Entire journey related suggestions:

- Better dealing with temperature
- Assure cameras against thieves

The previously mentioned recommendations seemingly cover the most significant needs and experiences of the users, since the majority of the ideas were suggested by the actual users. Moreover, all of these appear to be important, since users' experiences and needs can be better managed though those. Although, many recommendations are shown in the user journey, some of them appear to be more significant than the others. These key findings/recommendations, which appear to be the most compelling with regards to managing the biggest range of users are elaborated below.

Key results and recommendations

Although many novel, as well as anticipated results are present in the findings, some of them appear to be more relevant than the others. How is that possible? Since the focus is on a service with a great amount of users, finding the elements that can satisfy the highest number of students seems to be more compelling than just covering 'smaller issues'. However, these 'smaller issues' can have crucial impact on the experience, such as the inappropriate temperature, these appear to be rather easily and

unequivocally solvable, such as limiting the food in the silence areas or having a dedicated and personally controllable lamp at each study spots. Hence due to easy comprehensibility, these will not be further elaborated.

Place of focus: Where to well-manage student experiences?

User journeys create a customer-centric and holistic view over the entire service. This is beneficial, since the service providers could visualize where the service and thus the users require more focus (Kankainen et al., 2012). Based on this notion and the final illustration of the EUR library's user journey, the library users show to require more attention by the service provides in two varying stages.

Firstly, the beginning of the service seems to lack the attention from the library, in terms of providing services throughout the first four stages (get in, look for a seat, prepare, organize). Since if one looks at the EUR library's user journey, the already existing services tend to mostly focus on the repeating studying-break cycles. Therefore the beginning of the service seems to be a valuable opportunity for the library to better engage with students and thus better manage their needs and experiences.

Secondly, the already existing services show to completely miss the focus on users in the stage of leaving the library. Why does this seem to be important? Since if someone is using a service for 3 up to 10+ hours, creating a positive experience in terms of finishing or leaving the service appears to be a vital place to concentrate on. In details, here I refer to the positive end-feeling that the users could achieve when using the service for a longer period of time. Hence, an opportunity for better managing the student experiences seems to be identified by the user journey, more specifically, the 'leave' stage of the service.

The earlier mentioned and visualized findings, as well as all the future recommendations are relevant for further research and implementation. Not only because actual users referred to those as key needs, but also to increase satisfaction and user experience, additional services/service elements seems to be required. As both Camilleri (2018) and Evenson and Dubberly (2010) referred to, users tend to have increased expectations in terms of the services when they encounter great experiences. Therefore, the users' experiences, needs and expectations demand a continuous management in order to reach and maintain satisfaction and a user friendly service. Conclusively, all findings and recommendations are relevant for the EUR library, since implementing those over time can have an effect on both the user experience and satisfaction.

Chapter 3:
Discussion, & Conclusion
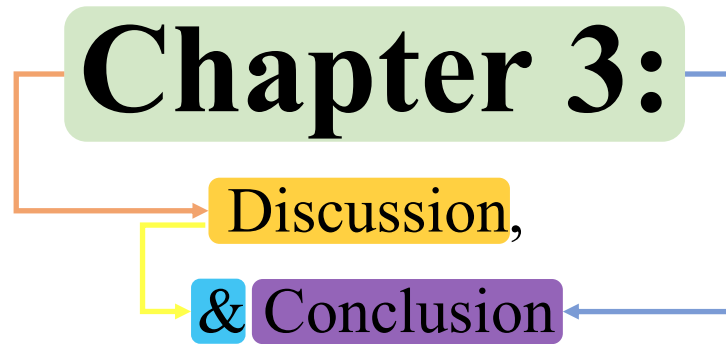
5.   Discussion

Throughout the discussion section, earlier mentioned theories and novel findings are comprehended with already existing research. Moreover, in order to reach transferability and to entirely answer the research question and its sub-questions of comprehending the student needs within university library contexts, the created framework, personas, and user journey will be further explained and discussed. Furthermore, the intention is to discuss below the different ways of improving library services, as well as the overall user experience. This also boosts the theoretical and practical relevance of the research.

Library experience

Services have their own unique indications for experiences which could be positively enhanced (Berry et al., 2002). Therefore, university libraries could be also seen as services that have experiences for its customers or users. This being said, the EUR library has its own experience as well. In terms of the results of the analysis, it can be clearly stated that users of the library have both positive, as well as negative experiences that they encounter when using the service. Based on the related responses, the most significant positive and negative experiences that the personas also refer to in the EUR library are the following:

The most significant positive experience related elements:

- Productive, studying and working environment
- Social aspects
- Printing and IT infrastructure
- Division between silent and non-silent areas
- The library's location (pond)
- Friendly staff
- 'Caring' library (e.g. Santa Claus)

The most significant negative experiences:

- Not finding a study space
- Not knowing the availability
- Monopolizing/occupying study spaces
- Disturbing factors (smell, temperature, noises)
- Improperly working infrastructure (lamps, blinds, water refill's noise)

Although, these above listed elements appeared to be the most significant from a user experience and service design perspective, less compelling and hence more easily solvable elements are also visible in the two types of deliverables (four personas and user journey).

Some of the experience related responses were not strictly correlated with the service itself. However, as Berry et al. (2002) stated, a user will always have an experience when encountering a service. Thus the previously mentioned elements might not be precisely services, the users' own experiences can be highly impacted by these elements, both positively and negatively.

In addition, service providers need to focus on creating a positive experience for users, since the perceived experience has a great influence on the comprehensive satisfaction (Chahal & Dutta, 2015). Hence, as Maklan et al. (2017) indicated, eliminating frustrating factors (also referred to it as pain points) from services are crucial for creating and well-managing customer experiences. In other words, the EUR library needs to implement solutions that can eliminate these unfavorable experiences. On the other side, eliminating the negative elements do not show to be adequate. Why? Because by the elimination of negative factors, positive experiences are not guaranteed. Thus, EUR library also needs to enhance the aforementioned positive experience related components, whether those are intangible (e.g. silence, productive environment) or tangible (e.g. printers, IT infrastructure).

The question might arise of why would a library consider creating and maintaining a positive user experience. The answer has seemingly two perspectives. On the one hand, positive service experience is highly connected to loyalty, overall user satisfaction and positive WOM (e.g. Frow & Payne, 2007; Keiningham et al., 2007; Chahal & Dutta, 2015), which appears to be significant for the service providers. As well as Shankar et al. (2003) referred to, by well-managing the users' experiences, the probability for repurchasing, or in this case reusing the service could increase. On the contrary, negative experiences can be understood as signals for negative WOM as well for increased incentives to switch service providers (Keiningham et al., 2007). Thus, well-managing student experiences in the case of a university library appears to be appropriate by boosting the positive experiences, whilst removing the factors that cause the opposite.

Library user needs

With regards to user experiences, more specifically satisfaction, user needs show to be significant to satisfy (Camilleri, 2018). In the course of data synthetization, some user needs that are closely connected to the university library's main function of studying were found. Namely, that users desire positive experiences in terms of silence, studying and being productive within the library.

Subsequently, an anticipated outcome of the research was the lack of food options, and thus the need for further food and beverage options around the library. Although, some interviewees mentioned that they purposely going to a further place for food options in order to "[…] have a little motion and get [the] blood flowing" (M22), many students showed interest in having further food and snack options closer to the library.

Surprisingly, the most commonly mentioned pain points (Zomerdijk & Voss, 2010) of the service seemed to create the further needs of the users. In addition, throughout the in-depth

interviews, suggestions by the users for library developments were actively sought. This could mean that the users were unconsciously stating their needs, by offering a solution for them. This notion was highly supported by Meyer and Schwager (2007), since they pointed out that the customers have a significant value within the service processes. Hence, this seems to justify the ongoing attention on the unsatisfied user needs, as well as well-managing the user experiences.

Therefore, the causes of the negative experiences could serve as directions for user needs. In more details, this resonates Zomerdijk and Voss' (2010) notion of designing positive experiences by implementing elements that can decrease the level of negative experiences, in the same time it can satisfy the customer needs. Although, this not necessarily means that users have a need for better experience, but more that needs can serve as indicators for the causes of unfavorable users experiences.

Based on the interviews, the majority of the respondents stated that their most significant user needs which need to be satisfied for beneficial outcomes (Chahal & Dutta, 2015) were with regarding the EUR library's main function of studying. Namely, having increased supply of study spaces, knowing the availability of the library, and possibly reserve individual seats. These needs were somewhat anticipated due to the large number of students using the library services and are further elaborated throughout this section.

Novel user needs in libraries

Subsequently, some interesting and novel aspects arose from the interviews. Specifically, that the users' needs are not severely connected to the main function of the library, namely studying. These elements were mostly unforeseen.

One of the most compelling novel factor that respondents referred to was comfort. Many interviewees indicated that comfort, in terms of chairs and tables are increasing necessities. Thus, suggestions were made such as having increased supply of cushioned chairs, armrests and adjustable tables. These needs are visible on the persona frameworks as well. Although some of these needs appear to be less feasible, since they require a higher level of investment, for instance cushions for each chairs appear to be attainable. Although, many user needs and possible influencers of positive experiences were mentioned by the literature, such as well-planned furniture (e.g. Lincoln, 2002), comfort did not appear to be as essential as other elements. Therefore, the concept of comfort within university library settings seems to be a novel, as well as vital aspect for the related literature.

On the other hand, a seemingly novel aspect arose in terms of user needs within libraries, namely, the interior design. Although, many respondents have mentioned that they were fond of the design and modernity of the EUR library, other users referred to the lack of colors and nature elements within. Since numerous research have been done on the positive effect of nature elements on

productivity, well-being and even health in offices (e.g. Smith, Tucker & Pitt, 2011), this shows to be applicable and justified for libraries as well.

Another, novel aspect that arose from the data analysis is closely related to the theories and concepts of libraries and their further purposes of not only studying and renting books. This being said, as Marino and Lapintie (2018) specified, libraries are not only serving the function of studying and reading, but further goals are increasingly possible. An illustrative example could be the earlier mentioned notion of 'third place' by Cook (2001), which pointed out the " […] home away from home […]" aspect of the university libraries (As cited by Lincoln, 2002, p. 9). Thus, this justifies the next relevant finding, which is the social aspect of the library. In more details, several students (thus respondents and library users) highlighted the fact that socialization is a substantial part of the EUR library. Some personas also refer to this aspect as user needs and positive experiences for instance Sofia "the before exam girl". Therefore, it is not surprising that many respondents recommended more and better organized social areas for the library users. For instance, an interviewee referred to this need as a "take a break area" (I18). Hence, creating the opportunity for a better managed social/relax area appears to be a momentous user need within university library settings.

Based on the previously stated most significant user needs, as Applegate (2009) highlighted, the conception of ongoingly managing student needs appear to be highly important for the EUR library, in order to continuously satisfy its users. As well as, the ongoing user satisfaction appears to be compelling for both this research and for a service design perspective.

Unique goal for using the library services

A fascinating finding was discovered during the research. Although, the different user behaviors were anticipated for the personas, since Parker and Heapy (2006) explained user segmentation based on behaviors, an unexpected purpose of going to the library arose. However, varying goals for using the library services were foreseen (Lene et al., 2015), the motivation for going to the library and thus getting out from home was unexpected.

Numerous library users mentioned that by going to the library, they leave the distractions behind and thus going to a place of focus. This goal was therefore added to three persona frameworks (Laura, Sofia and Michael). This notion appears to be an addition to the already existing research, since the previously stated literature only resonates the intellectual community and working environment (e.g. Lincoln, 2002; Marino & Lapintie, 2018). However, these seemed to lack the motivation for leaving the distractions behind. Hence, university libraries can seemingly serve as a place for disciplined focus and productivity.

Personas, the typical users

In order to review the EUR library personas and draw connections with the related literature, some elements seems to be important to note. Namely, since personas are design tools for instance in interaction and service designing (Idoughi et al., 2012), these can beneficially identify user behaviors and experiences by the typical users of a service (Cooper, 1999). Moreover, Tu et al. (2010) explained that these fictive users are vital elements of experience designing, due to the fact that satisfying a persona can effect a greater amount of actual users of the service. This being said, the four different types of personas which represent the varying type of user behaviors were created for the specific service of the EUR library. These personas are highlighting the positive and negative experiences, as well as the further user needs and the main goal to use the library services (e.g. Lene et al., 2015; Nielsen et al., 2015).

On the other hand, Nielsen et al. (2015) pointed out that although personas have become widely used in varying industries, it still appears to be complicated to create entirely distinctive personas. Based on this notion, it seems to be vital to note that the EUR library personas were aiming to identify separate user behaviors, however the personas appear to have some similar needs, experiences and goals for using the service. In greater details, this means that there are some interlacement within their elements. Although, the personas were aiming at complete division in user behaviors and experiences, some elements appeared to be more important from the raw data and thus was used for more than one persona, such as the goal for leaving distractions behind by getting out from home.

On the contrary, some experiences and user needs appeared to be ambiguous. This means that some interview participants referred to an aspect as positive, whilst others referred to those as positive. For instance, some interviewees mentioned their preference for the 'share your chair' cards, whereas others mentioned with a negative connotation. Therefore some conflicting components appear within the personas. In more details, a persona, for instance Laura "the always goer" likes the 'share your chair' cards, since she can go to have lunch and save her seat, while Sofia "the before exam girl" gets frustrated if she sees people misusing it. Thus, the personas might have conflicting experiences and needs in terms of the services. This does not appear to be a limitation, since these were backed up by the respondents' insights, albeit it appears to be compelling to point out the existence of those.

Although, each service has a its own unique fictive users (Nielsen et al., 2015) with varying components, characteristics, and even goals for using the service (Lene et al., 2015), transferability of the personas (frameworks) could be reached. How? Due to the fact that library services are seemingly similar, thus user needs at the EUR library could be highly similar to other libraries or study spaces, specifically within students at universities.

Another important aspect to discuss are the personas coverage with regards to the actual users. As it was aforementioned, Nielsen et al. (2015) have clarified that creating entirely distinctive personas shows to be difficult. Therefore it is essential to state that the created personas (Laura, Sofia, Michael and Josh) can be seen as not only fictive users (Lene et al., 2015), but also as ideal users. Why so? Based on the collected data, the personas were created to identify user needs, experiences and goals for using the service. Hence, it is highly possible that an actual library user does not entirely fit into one of the persona's framework. Moreover, it is thus very likely that a randomly chosen library user can have needs that are depicted for instance in Michael "the keep-up guy's" framework, while also having frustration that are portrayed in another persona, for instance Sofia "the before exam girl".

Furthermore, an interesting discussion could arose from the personas, particularly the fact that Josh "the social butterfly" is less significant to satisfy from a library perspective. How come? Since, comparing a user whose biggest need is to socialize (Josh "the social butterfly") to the other three personas (who are frequent users of the services seemingly primary purpose) can point out that the focus should be on the primary users. Although, the ideal case appears to be the overall satisfaction of all users, Josh "the social butterfly" tends to be the bottom of the priorities.

Experience scores by the personas

Based on personal knowledge and experience with service design, as well as to measure the level of customer/user satisfaction (e.g. Oh & Jeong, 1996; Bagozzi, 1980), experience scores were added to the personas. Although, these experience scores were actively sought throughout the interviews, it seems to be important to discuss about its nature. Specifically, the scores that the personas have are the following. Laura "the always goer" has 7/10, Michael "the keep-up guy" has 8,5/10, while Sofia "the before exam girl" has 8/10 and Josh "the social butterfly" has 9/10 experience scores at the EUR library.

Since Laura's persona uses the library the most, she can easily realizes her pain points. Moreover, Michael, appears to be highly satisfied, since he is using the service during afternoons where the library is relatively empty, thus he can very frequently achieve his goal for using the service. Additionally, Sofia also has a high experience score, since socialization is a great component for her and that can be highly achieved at a crowded library. Finally, Josh has the highest satisfaction since the only negative experience that he encounters is an empty library. Hence, as Oh (1999) referred to, people like Josh have the highest satisfaction and perceivably the greatest loyalty for the library services.

Hence, as the users and personas indicate, the experience scores of the varying personas show a high satisfaction with the EUR library. On the other side, it also shows some room for improvement, since a perfect service tends to be nearly impossible to reach, the experience scores greatly resonate this notion.

As a conclusion, the four personas are not strictly fixated as frameworks, but they show to be more as directions towards well-managing student experiences and needs in library settings. Thus it is possible that an actual user of the library might fit within the four persona frameworks. On the positive side, this does not appear to be a constraint, since the service experiences, needs and behaviors are well described throughout the personas. Yet, eliminating the unfavorable factors, as well as strengthening the favorable ones seems to be the main goal of the library, particularly from a service design perspective.

EUR library user journey

The following subsection explains the connections between the customer journey related literature and the actual outcome of the results. As Berry et al. (2002) stated, every service has a different experience, thus the user journey might differ from other journeys. Hence, the important elements and literature related information are discussed with the EUR library's user journey.

Structure of the user journey

The EUR library's user journey serves as a customer-centric and holistic flowchart-like view over its entire service and components (Kankainen et al., 2012). In order to sincerely answer the research question of well-managing library user needs, customer journey appeared to be significant. As Lemon and Verhoef (2016) elaborated, customer journey is a key deliverable to truly comprehend the experiences within a service. Although Følstad and Kvale (2018) explained the distinction between 'as-is' journey and the 'to-be' journey, this thesis and thus the results associated these two types and created one overall experience map. The elements that are seemingly the most important for the 'to-be' journey (Følstad & Kvale, 2018) are made visible on the horizontal component of 'library structure'. More specifically, it is visible as 'future recommendations' and thus serves as the key elements of the 'to-be' journey.

As well, Crosier and Handford (2012) pointed out that service related emotion can be perceived via customer journeys. According to Berry et al. (2002) these emotions and experiences with services can be seen as positive, negative or neutral. On the contrary, for the customer journeys and to well-manage user experiences and needs, the neutral emotions appeared to be insignificant and hence were unused.

Finally, with regards to the building blocks of the customer journeys by Følstad & Kvale, (2018) an important adjustment was made. Specifically, the earlier mentioned 'touchpoints', which refer to the interaction with the service providers through a direct or indirect manner, were removed from the user journey. Why? Since the vast majority of the users referred to the complete lack of interaction with the library. Moreover, few interviewees referred to two ways of interacting. First, they referred to the personal (direct) interaction with the present staff at the library for minor issues

such as asking for a stapler. Secondly, receiving emails from the library about returning books in time. Hence, these two types of interactions did not show to be significant from a user perspective, although to reach transferable frameworks, friendly staff and hence some type of interaction was added to the persona of Michel "the keep-up guy".

Library structure

By looking at the library structure of the user journey, two different elements are made visible. One refers to the already existing elements, while the other offers recommendations for future service developments. However, both the existing and future service elements are closely connected to experience management of students. This means that the listed features could potentially increase the user experience, as well as the overall satisfaction. This notion of well-managing student experiences and continuously satisfying their user needs, within library settings, was also elaborated by Applegate (2009).

Moreover, as Lincoln (2002) argued, libraries require up-to-date strategies and implementations to create a user-friendly atmosphere for its users. However, the already existing elements seemingly influence the user satisfaction, many further pain points were identified through the data collection and synthetization which are causing negative experiences and frustrations (Zomerdijk & Voss, 2010). Hence, the future recommendations were added on the basis of causes of the frustrations, as well as some recommendations for solving these annoyances were offered by the interviewed EUR students. To state an example, Lincoln (2002) introduced that libraries need to have well-planned furniture for its users. The idea of furniture was backed by the interviewees, however comfort, with regards to chairs and tables, were also mentioned by numerous respondents. Hence, comfortable furnishing elements for the library was added as a user need (wish) to Sofia and Laura's persona.

Furthermore, many elements appeared to be significant form a user experience and thus service design perspective, however some showed to have a higher importance. What makes a service element more important? One way of comprehension is the amount of students and the amount of needs being satisfied. Therefore, some solutions appear to have a higher priority than others.

Additionally, it seems to be important to once again point out that due to the inductive nature of this research, there might be different interpretations of the data synthetization which led to the user journey and thus to the library structure. Thus, the created framework for the personas and their pain points, as well as the user journey appears to be transferable, however, due to the possibly varying interpretations and specific library culture and settings (Lincoln, 2002), the framework could be slightly modified from a case to case basis.

Novel places of service focus

As Mager (2004) illustrated, service design has an outside-in angle of a particular service, thus it can determine and detect the varying user frustrations. Moreover, Kankainen et al. (2012) supported this notion by specifying that service design tools (thus customer journeys and personas as well) could support the users' experiences and satisfactions by a holistic view over the entire service, while also focusing on the users. Therefore, by looking at user journey, it is made visible that the beginning and the end of the service needs extra attention in terms of managing needs, as well as keeping the user engaged and up-to-date. This is made visible with the red circles on the somewhat color-adjusted user journey, and can be found in **Figure 9**.

Hence, an interesting addition for the exiting library and service experience related literature seems to be justified. Namely, the major frustration by the users throughout the pre-usage phase. In details, the initial phases of using the library service such as knowing the availability and a possibility to reserve individual study spaces.
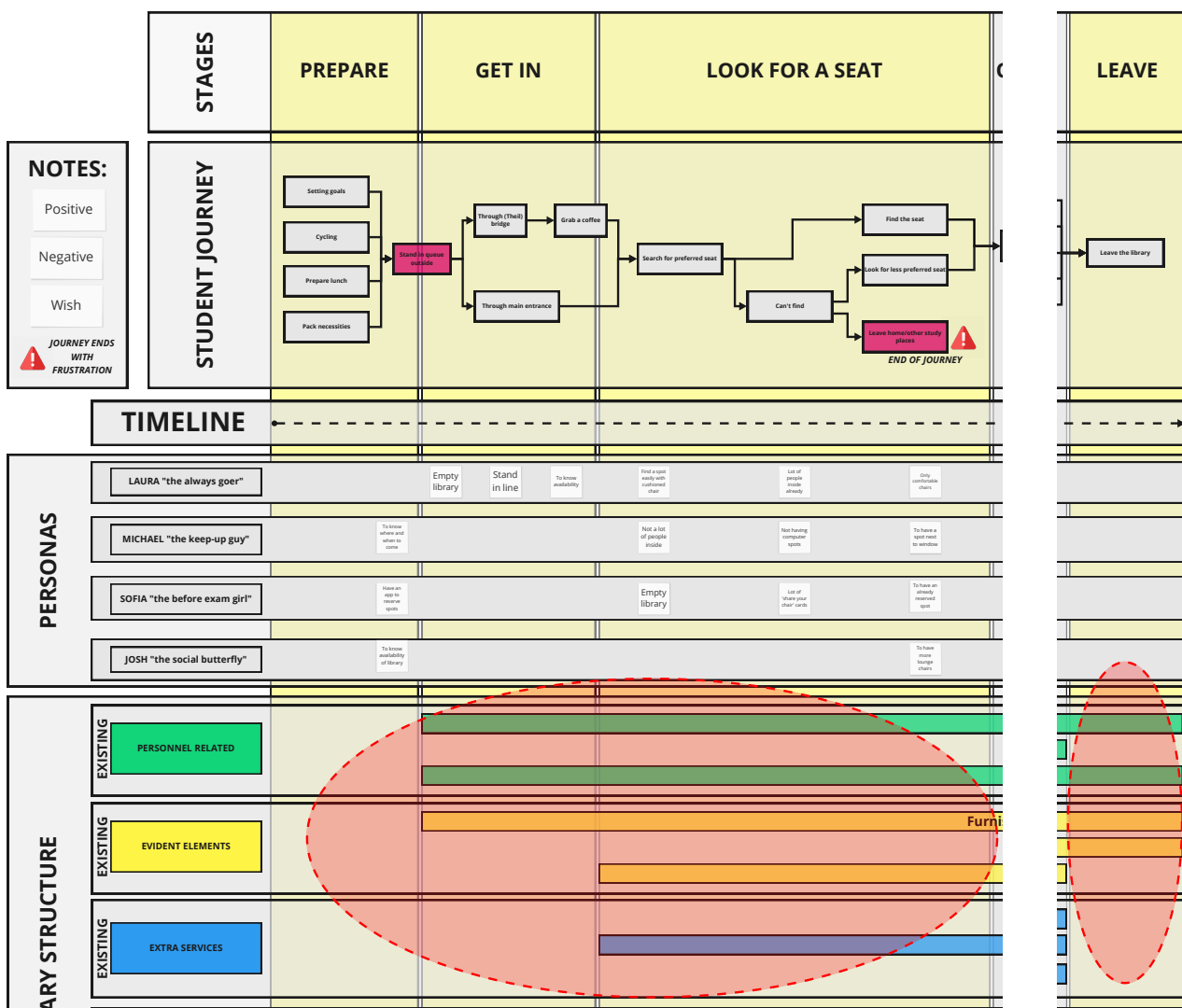
Figure 9: Snapshot of highlighting the places of focus (red circles)

Most important for the users: Availability and reservation mobile app

As aforementioned, the most significant finding concentrates on the pre-usage and the beginning of the service, as well as keeping the users engaged and connected to the service at the end or while not specifically encountering it. This in details mean that by a single solution, more pain points could be eliminated and thus a positive experience can be designed (Zomerdijk & Voss, 2010).

Hence, the most significant finding, in terms of user experience and needs within a library setting, with the largest reach of student needs seems to be an online and real-time library/study space mobile application. Lincoln (2002) aligns with this notion, since she highlighted the fact that up-do-date strategies are required to satisfy the library users.

Throughout the interviewees, many participants mentioned varying functions of this application. Some referred to the purpose of viewing availability and thus realizing the empty spaces. Moreover, an interviewee suggested that this application could work as a parking lot's red and green light system of acknowledging the free/unused and already taken spaces. Although these quotes were already referred to, these information well describing the need for an application by the users, thus these are repeatedly listed below.

> "You know, how in parking lots there are red and green lights? [...] So, something like that. So, every time someone sits down in the place, you just press a button and that would go to an app or something. It's a crazy thing but sometimes you are home and there are like five spots and you have no idea and sometimes your friends are not at the library. And then if you knew, you'd come to the library. Sometimes you waste your time because you don't find any spots." (D19)

> "Maybe just like having something like an app, where you can see the availability of study spots. I don't know how you can do that. Or just get an overview. I mean you have it example for the rooms, that you can see which room is available and which is not. [...] Just have something similar like that for the library or Polak. So you can see on average how full it is." (N19)

Therefore, the solution of overviewing the availability of the library's free spots and usage could tackle the substantial frustration (Maklan et al., 2017) of looking for a spot and not finding one.

Whilst, other interview participants referred to the role of an application as reserving individual study spaces. In more details, the individuality of reserving spots appears to be important from an accountability perspective and could also eliminate the common frustration of users reserving spaces for their friends/course mates. A highly illustrative quote by S21 participant of individual seat reservation is the following:

> "Well I guess what will be fair […], to have like an app where you can book off the tables yourself and then you can only do one day just for yourself. Like through your own student account or something. Because then you can actually be held accountable if you're not there." (S21)

This function appeared to have some further benefits for the users (Gudi & Paradkar, 2016). For instance tackling the commonly agreed problem of misusing the 'share your chair' cards, as well as occupying spaces with object, such as scarfs or books. This finding could be discussed as an important addition, since during the initial concept gathering, study space monopolization was unforeseen. Hence, occupying spaces and thus monopolizing them seems to be an addition for library service providers. Although, presumably little research has been done on this aspect, Given and Leckie (2003) have referred to monopolizing study rooms as a difficulty in library facilities. Moreover, this seems to be in resonance with the earlier mentioned seat monopolization. Therefore, it shows to be a compelling addition to the existing service and library experience related academia.

Finally, in terms of EUR library mobile application, another respondent mentioned the existence of reserving application in other universities, for instance at Yonsei University, Seoul, South-Korea. This case show that the computerized reservation system is feasible, therefore Erasmus University Rotterdam could also have the possibility to integrate such services to their library and study spaces. For instance, D21 respondent stated the following:

"I know in other universities it's like an electronic system where you can book it and you can see what seats are available." (D21)

Conclusively, the relevance of initiation an own unique EUR library/study spots mobile application seems to be justified by the high number of possible functions that it could possess. Moreover, a recent research by Atkinson and Lee (2018) identified the need for reservation system within study rooms of libraries at university settings. Although, their paper focused on shared and collaborative study rooms and work spaces, their findings could be in alignment with the individual seat reservation system and not only study rooms. Hence, not only satisfying a single user need, but seemingly such an application would cover a bigger range of wishes via an application where users can have control over reservations, as well as view the availability of study spaces. Since many respondents with varying user behavior (hence perceivably different personas) referred to the application as a crucial need, their experience and needs could evidently be well-managed through this singe mobile solution. Additionally, in **Figure 10**, the stages and their corresponding user journey steps, where the negative experiences and thus user frustrations could be tackled by the mobile application are made visible (see red components).

The red arrows indicate the places that could be directly and beneficially impacted by this single solution of an EUR library mobile app. On the other hand, the dashed arrows point out that the application could also serve as a feedback system or ensuring a positive feeling of leaving the library. Although, this aspect was not mentioned by the respondents, it seemingly contributes to the user engagement and thus user centrism.
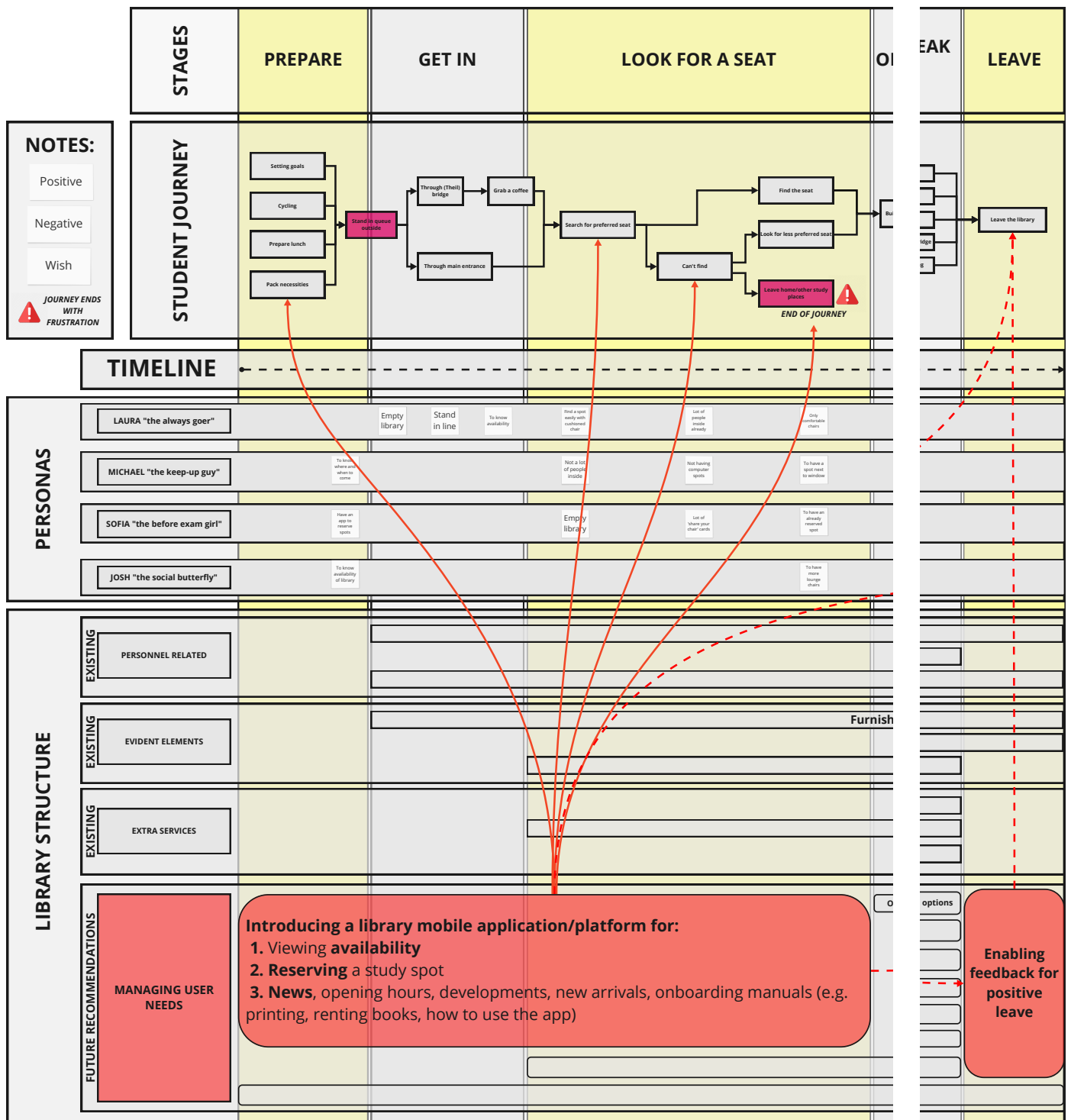
Figure 10: Snapshot of the positively influenced stages by the EUR library app

Moreover, as a possible addition, the application could be also elaborated as a platform for news and further critical information for users. The following quote well represents this notion.

"Maybe there should be something like an app about the news in the library about what is going on, if there's going to be a case like the wi-fi doesn't work." (N19)

The library application idea, hence, seems to be relevant from one more perspective, from transferability. Why? Because the main library is highly similar to the other study or collaborative working spaces (e.g. Atkinson & Lee, 2018) which are offered at EUR, therefore, by transferring the idea and usage of the application can cover even a higher number of users can be achieved through a single application development.

Finally, a highly recent development regarding the student experience was introduced during the time of the research and was announced on EUR's official Facebook page (see **Figure 11**). Specifically, that EUR study spaces will only allow active EUR students with a special identification card to use their facilities, hence excluding outsiders from its services. These outsiders could be an addition to the personas. How? The outsiders and thus non-EUR students are seemingly undesired by the library, since they use the spaces that are offered for the actual EUR students. Thus, the outsiders could be added as a fifth persona. The persona could be " the library ghost". This persona is unwanted in the library, thus its needs are completely unimportant to the library and service design perspective. This novel development of the identification card could be seen as a great example of user centrism, as well as strict customer focus.

Although, this development has been only announced at the time of the research, its usage remains unknown. On the other hand, this approach tends to be highly customer centric and thus its basis resonates the service design perspective.

Figure 11: EUR's Facebook post about the new study spaces usage

Since the research question highly entails the way student experiences can be well-managed, the biggest desires by the personas and the users shows to be the most relevant and thus can be solved gradually and over time.

To conclude this research, the main argument can be boiled down to the notion that libraries can indeed manage user needs in their own settings, as well as that a service design can greatly assist in identifying the experiences at university libraries. This notion aligns seemingly with Gudi and Paradkar's (2016) research on library user experience. In essence, this means creating user-friendly experiences, satisfying user needs, as well as manage expectations of the students within university libraries.

Limitations of the research

Although the entire research process appeared to be relatively smooth, some limitations and constraints were identified. Firstly, the lack of material probes and interviewing about the library experience outside from the actual area might have impacted the answers of the users. More specifically, if the interviews would have taken place at the library, the respondents might have had better memories about their experiences. Secondly, due to the limited research on libraries might have impacted the theoretical backbone of the research. More specifically, although this research aims at filling the theoretical gap of library experiences and service design, the literature clearly lacks of existing user experience research on libraries. Thus, it might appear to be a limitation, since an entirely new typology was developed. On the contrary, determining novel gaps in the academia and unique directions for further research can be made.

Finally, the personal user experience and existing background with the researched service can have consequences on the study's authenticity. Although the findings were generated by the insights of the interview respondents, by the virtue of the semi-structured interviews, some potential biases might have been present throughout the conversation of the users library experiences. However, the user recommendations were present in each interviews to somewhat tackle this anticipated limitation.

Suggestions for further research

Throughout this research, some elements arose that could be interesting to further research. Particularly, since the most significant finding was a mobile application for availability and reservation, developing a prototype for the EUR library appears to be a compelling area to further study. Moreover, since four types of fictional users were identified at the EUR library, as well as it was discovered that some of the library users have a need to socialize, the interrelationship or connections that the varying types of users have with each other seems to be a fascinating scope to

explore. As direction for further research, **Figure 12** was created in order to show the possible interrelationships between the four varying personas.
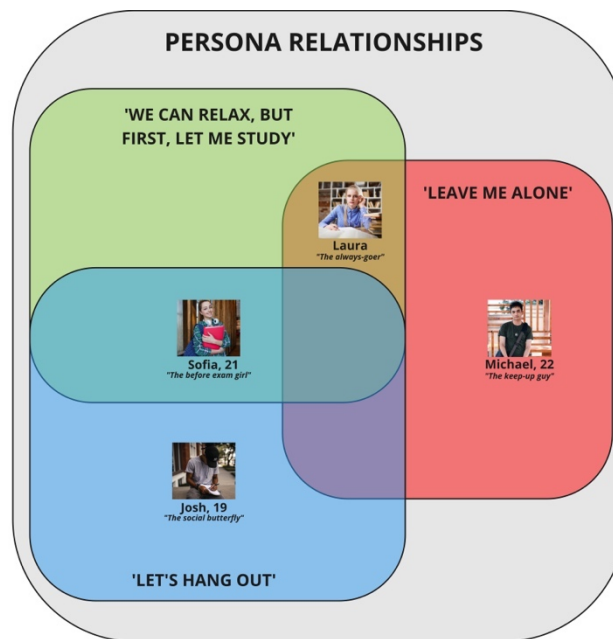
Figure 12: Possible persona relationships and interactions

Finally, since at Erasmus University Rotterdam there are numerous study spaces and buildings, the difference between the library and the other study facilities with regards to their experience, as well as their user journeys are seemingly an exciting field to analyze.

Therefore, expanding the scope of this study by involving more participants, different EUR study spaces, as well as focusing on the interrelationships and differences of these study spaces and users, could potentially determine novel aspects of user research and library experiences.

6.   Conclusions

In the 21st century, where customer centrism and satisfaction became a 'must', services also appear to be more than just the opposite of products. Services undoubtedly offer a unique culture and experiences for those who encounter them. In particular, the service of this research was concentrated on the Erasmus University Rotterdam's library services, since libraries are more than just services. Libraries also require a continuous management of student (thus user) needs (Applegate, 2009).

As numerous previously conducted research have identified, services need to create positive experiences for their users in order to develop and maintain customer satisfaction. How can a service do that? Evidently, by looking at the users of the service and discovering their needs and further wishes. Through satisfied user needs, positive experience, user satisfaction and beneficial outcomes for the service providers as well can be attained. Favorable outcomes for instance could be positive WOM, increased loyalty and repurchase/reuse and reduced incentives for switching service providers. On the other hand, by aiming at positive user experience, the user benefit of satisfied needs and lack of negative experiences could be reached.

Although, perfect experience with a service seems to be nearly inconceivable, a design thinking methodology, more specifically service designing can offer a holistic perspective on experiences and hence assist creating positive experiences. This can be done through some of service design's key tools, such as user journey/experience map and personas. Therefore, in order to determine the course of well-managing student experiences in a library setting, personas and a user journey were utilized. Furthermore, not only mapping the experiences appeared to be compelling, but also identifying the causes of negative experiences and thus frustrations. Surprisingly, the causes of these frustration were highly aligned with the users' further needs. Moreover, throughout the data collection, suggestions were sought by the interviewed users to increase their value in the service development and to greatly discover their needs.

Some of the key implications with regards to negative experiences were highly in correlation with the disturbance of studying in a silence area of the library. For instance, noises created by other users or food rated issues. Thus, a key need for the users showed to be the complete quietness within the silence areas. Moreover, since the personas represent different type of user behaviors, needs and goals for using the service, the frustrations and positive experiences differ from each other. At the same time, due to the difficulty of reaching complete distinction between personas, some needs and expectations might be mutual.

Another key implications with regards to user annoyances which create negative experiences were strictly connected to the furnishing aspects of the library. This means different infrastructural issues that appeared to create frustrations. For instance, the improperly working blinds and lamps, as well as the lack of comfortable chairs within the library. Thus, the users referred to the need and user wish of having personalized desk lamps and increased supply of cushioned chairs.

On the contrary, while service design not only assist in identifying the causes of negative experiences, but also highlights the positive ones. This seems to be significant from a service provider perspective, since the aim is not only to eliminate the negative causes, but as well as to enhance the positive ones. Hence, the library service experience can be approached from a dual point of view. One side is the enhancement of positive experiences, whilst the second side is the elimination of negative ones.

Most importantly, the key implications of this research is correlated with the seemingly biggest need of the library users. This need resonates the major frustration of not having a study space or aimlessly looking for one. A highly common suggestion appeared to be an up-to-date strategy and solution for this pain point. Namely, a mobile application that makes the EUR library's availability visible. Moreover, it also offers the possibility to tackle the shared frustration of occupying and monopolizing the study spaces, by individual seat reservations. Additionally, the application can also be seen as a platform for information sharing, as well as keeping the user engaged with the service.

Although the main implication of the mobile application is seemingly more difficult to implement, due to its costly nature, other negative experience related issues tend to be more feasible. (Feasibility in this case refers to the effort and monetary investment by the service providers.)

Conclusively, the students' needs within a library setting can be well-managed from a service design perspective by identifying the reasons for negative and positive experiences. Furthermore by eliminating and enhancing the varying causes of these specific experiences. Moreover, the 'well-management' shows to be a continuous and timely manner and needs conscious and careful planning. As a conclusion, such as every single service, libraries also require careful attention on developing pleasant experiences for their users, in order to reach overall user satisfaction within its own unique settings and services.

7. Literature and references

Ali, F., Hussian, K., & Ragavan, A. N. (2014). Memorable customer experience: Examining the effects of customer's experience on memories and loyalty in Malaysian resort hotels. *Social and Behavioral Sciences, 144,* 273-279. https://doi.org/10.1016/j.sbspro.2014.07.296

Applegate, R. (2009). The library is for studying: Student preferences for study space. *The Journal of Academic Librarianship, 35*(4)*,* 341-346.

Atkinson, S., & Lee, K. (2018). Design and implementation of a study room reservation system: Lessons from a pilot program using Google Calendar. *College & Research Libraries, 79*(7), 916-930.

Bagozzi, R. P. (1980). Causal models in marketing. NY, New York: John Wiley.

Barker, S. F. (1957). Induction and hypothesis. Ithaca, NY: Cornell University Press.

Baškarada, S. (2014). Qualitative case study guidelines. *The Qualitative Report, 19,* 1-18. http://www.nova.edu/ssss/QR/QR19/baskarada24.pdf.

Beitin, B. (2012). Interview and sampling: how many and whom. *In: Gubrium, J. F., Holstein, J. A., Marvasti, A. B., & McKinney, K. D. The SAGE handbook of interview research: The complexity of the craft,* 243-254. Thousand Oaks, CA: SAGE Publications, Inc. doi: 10.4135/9781452218403.

Berger, A. (2002). Recent trends in library services for ethnic minorities: The Danish experience. *Library Management,23*(1/2)*,* 79-87. https://doi.org/10.1108/01435120210413878.

Berry, L. L., Carbone, P. L., & Haeckel, H. S. (2002). Managing the total customer experience. *MIT Sloan Management Review, 43*(3)*.*

Berry, L. L., Wall, A. E., & Carbone, P. L. (2006). Service clues and customer assessment of the service experience: Lessons from marketing. *Academy of Management Perspectives,* 43-57.

Biggs, J., Kember, D., & Leung, D. Y. P. (2001). The revised two-factor study process questionnaire: R-SPQ-2F. *British Journal of Educational Psychology, 71,* 133-149.

Boeije, H. (2002). A purposeful approach to the constant comparative method in the analysis of qualitative interviews. *Quality and quantity, 36*(4)*,* 391-409.

Brown, G. H. (1947). A comparison of sampling methods. *Journal of Marketing, 11*(4)*,* 331-337. https://doi.org/10.1177/002224294701100401.

Brown, S. L., & Eisenhardt, K. M. (1997). The art of continuous change: Linking complexity theory and time-paced evolution in relentlessly shifting organizations. *Administrative Science Quarterly, 42*, 1–34.

Brown, T. (2008). Design Thinking. *Harvard Business Review,* 84-92.

Caddick, R., & Cable, S. (2011). Communicating the user experience. A practical guide for creating useful UX documentation. United Kingdom, UK: Whiley.

Camilleri, M. A. (2018) Traveling marketing, tourism economics and the airline product: An introduction to theory and practice. Springer. doi: 10.1007/978-3-319-49849-2.

Chahal, H., & Dutta, K. (2015). Measurement and impact of customer experience in banking sector. *Decision, 42*(1)*,* 57-70. doi: 10.1007/s40622-014-0069-6

Chuan, V., & Manhas, D. (2014). Dimensional analysis of customer experience in civil aviation sector. *Journal of Services Research, 14*(1)*,* 75-98.

Cook, C. C. (2001). A mixed-methods approach to the identification and measurement of library service quality constructs: LibQUAL + TM. (doctorial dissertation). College Station, TX: Texas A&M University.

Cooper, A. (1999). The inmates are running the asylum. Indianapolis, IN: SAMS Publishing.

Crosier, A., & Handford, A. (2012). Customer journey mapping as an advocacy tool for disabled people: A case study. *Social Marketing Quarterly, 18*(1)*,* 67-76.

Diana, C., Pacenti, E., & Tassi, R. (2009). Visualities: communication tools for (service) design. *In First Nordic Conference on Service Design and Service Innovation, Linköping University Electronic Press*, Linköping, 65-76.

Dorst, K. (2012). Frame innovation. Create new thinking by design. Cambridge, MA: The MIT Press.

Dubois, A., & Gadde, L. E. (2002). Systematic combining: an abductive approach to case research. *Journal of Business Research, 55*(7)*,* 553-560. http://dx.doi.org/10.1016/S0148-2963(00)00195-8.

Eccles, G., & Durand, P. (1998). Complaining customers, service recovery and continuous improvement. *Managing Service Quality: An International Journal, 8*(1)*,* 68-71. https://doi.org/10.1108/09604529810199421.

Edvardsson, B., Gustafsson, A., & Roos, I. (2005). Service portraits in service research: A critical review. *International Journal of Service Industry Management, 16*(1)*,* 107-121.

Evenson, S., & Dubberly, H. (2010). Designing for service: Creating an experience advantage. *In: Salvendy, G., & Karwowski, W. (Eds.). Introduction to Service Engineering.* Wiley Publishing.

Følstad, A., & Kvale, K. (2018) Customer journeys: A systematic literature review. *Journal of Service Theory and Practice.* https://doi.org/10.1108/JSTP-11-2014-0261.

Frow, P., & Payne, A. (2007). Special issue papers towards the 'perfect' customer experience. *Brand Management, 15*(2)*,* 89-101. AU, Sydney: Palgrave MacMillan LTD.

Given, L. M., & Leckie, G. J. (2003). "Sweeping" the library: Mapping the social activity space of the public library. *Library & Information Science Research, 25*(4)*,* 365-385.

Glaser, B., & Strauss, A. (1967). The discovery of grounded theory: Strategies for qualitative research. New York: Aldine Publishing Company.

Gudi, P. S., & Paradkar, P. M. (2016). User satisfaction with library facilities: A study of engineering colleges of Pune city (India).

Hermanowicz, C. J. (2002). The great interview: 25 strategies for studying people in bed. *Qualitative Sociology, 25*(4)*,* 479-499.

Holbrook, M. B., & Hirschman, E. C. (1982) The experiential aspects of consumptions: Consumer fantasies, feelings, and fun. *Journal of Consumer Research, 9*(2)*,*132-140.

Holmlid, S., & Evenson, S. (2008). Bringing service design to service sciences, management and engineering. *In: Hefley, B., Murphy, W. (Eds.). Service science, management and engineering education for the 21st century. Service Science: Research and Innovations in the Service Economy.* Springer: Boston, MA.

Holstein, J., & Gubrium, J. (1997). Active interviewing. *In D. Silverman (Eds.), Qualitative research: theory, method and practice.* 113-129. London: Sage.

Hosono, S., Hasegawa, M., Hara, T., Shimomura, Y., & Arai, T. (2009). A methodology of persona-centric service design. *CIRP Design Conference, Competitive Design,* Cranefield University.

Idoughi, A., Seffah, A., & Kolski, C. (2012) Adding user experience into the interactive service design loop: A persona-based approach. *Behaviour & Information Technology, 31*(3), 287-303, doi: 10.1080/0144929X.2011.563799.

Johns, N., & Clark, S. L. (1993). Customer perception auditing: a means of monitoring the service provided by museums and galleries. *Museum Management and Curatorship, 12*(4)*,* 360-366.

Kankainen, A., Vaajakallio, K., Kantola, V., & Mattelmäki, T. (2012). Storytelling group: A co-design method for service design. *Behaviour and Information Technology, 31*(3)*,* 221-230.

Keiningham, T., Cooli, B., Andreasseen, T., & Aksoy, L. (2007). A longitudinal examination of net promoter and firm and firm revenue growth. *Journal of Marketing, 7,* 139-151.

Kim, K. H., Kim, K. S., Kim, D. Y., Kim, J. H., & Kang, S. H. (2008). Brand equity in hospital marketing. *Journal of Business Research, 61,* 75–82.

Lemon, N. K., & Verhoef, C. P. (2016). Understanding customer experience throughout the customer journey. Journal of Marketing, 80, 69-96. doi: 10.1509/jm.15.0420.

Lene, N., Kira, H. S., Jan, S., & Jane, B. (2015). A template for design personas. *International Journal of Sociotechnology and Knowledge Development, 7,* 45-61. 10.4018/ijskd.2015010104.

Levesque, T., & McDougall, H. G. G. (1996). Determinants of customer satisfaction in retail banking. *International Journal of Bank Marketing, 14*(7)*,* 12-20. https://doi.org/10.1108/02652329610151340.

Lincoln, S. Y. (2002). Insights into library services and users from qualitative research. *Library & Information Science Research, 24,* 3-16.

Lowry, B. C., & Johnson, R. E. (1993). Managing technology: Lessons learned from unsuccessful experiences. *The Journal of Academic Librarianship, 19*(5)*,* 306-307.

Mager, B. (2004). Service design: A review. KISD: Köln.

Maklan, S., Antonetti, P., & Whitty, S. (2017). A better way to manage customer experience: Lessons from the Royal Bank of Scotland. *California Management Review, 59*(2)*,* 92-115. University of California Berkley: Sage. doi: 10.1177/0008125617695285.

Mantere, S., & Ketokivi, M. (2013). Reasoning in organization science. *Academy of Management Review, 38*(1)*,* 70-89. doi: 10.5465/amr.2011.0188.

Marino, D. M., & Lapintie, K. (2018): Exploring multi-local working: Challenges and opportunities for contemporary cities. *International Planning Studies*, doi: 10.1080/13563475.2018.1528865.

Meyer, C., & Schwager, A. (2007). Understanding customer experience. *Harvard Business Review.*

Miettinen, S., Rontti, S., Kuure E., & Lindström, A. (2012). Realizing design thinking through a service design process and an innovative prototyping laboratory: Introducing service innovation corner (sinco*). Design Research Society, 3,* 1202-1215. Chulalongkorn University: Bangkok.

Minser, J., & Webb, V. (2010). Quantifying the benefits: Application of customer loyalty modeling in public transportation context. *Transportation Research Record, 2144*(1)*,* 111–120. https://doi.org/10.3141/2144-13.

Moisander, J., & Valtonen, A. (2006). Qualitative marketing research: A cultural approach. London: Sage.

Nielsen, L., Hansen, S. K., Stage, J., & Billestrup, J. (2015). A template for design personas: Analysis of 47 persona descriptions from Danish industries and organizations. *International Journal of Sociotechnology and Knowledge Development, 7*(1)*,* 45-61. doi: 10.4018/ijskd.2015010104.

Norman, D. (2010). Why design education must change. Retrieved from: https://www.core77.com/posts/17993/why-design-education-must-change-17993.

Oh, H. (1999). Service quality, customer satisfaction, and customer value: A holistic perspective. *International Journal of Hospitality Management, 18,* 67-82.

Oh, H., & Jeong, M. (1996). Improving marketers' predictive power of customer satisfaction on expectation based target market levels*. Hospitality Research Journal 19*(4)*,* 65-85.

Otto, J. E., & Ritchie, J. R. (1996). The service experience in tourism. *Tourism Management, 17*(3)*,* 165-174.

Parker, S., & Heapy, J. (2016). The journey to the interface: How public service design can connect users to reform. UK London: Demos.

Peterson, B. E., Neels. K., Barczi, N., & Graham, T. (2013). The economic cost of airline flight delay. *Journal of Transport Economics and Policy, 47*(1)*,* 107-121.

Peterson, M., Gröne, F., Kammer, K., & Kirscheneder, J. (2010). Multi-channel customer management: Delighting consumers, driving efficiency. *Journal of Direct, Data and Digital Marketing Practice, 12*(1)*,* 10-15.

Pine, J. B., & Gilmore, J. H. (1998). Welcome to the experience economy. *Harvard Business Review, 76*(4)*,* 97-106.

Pine, J. B., & Gilmore, J. H. (1999). The experience economy. *Harvard Business Review,* Boston, MA: 18-23.

Rasila, H. M., Rothe, P., & Nenonen, S. (2009). Workplace experience. A journey through a business park. *Facilities, 27*(13/14)*,* 486-496.

Rathmell, J. M. (1966). What is meant by services? *Journal of marketing, 30*(4)*,* 32-36.

Reynolds, A. J., & Rabschutz, L. (2011). Studying for exams just got more relaxing: Animal-assisted activities at the University of Connecticut Library. *College & Undergraduate Libraries, 18*(4)*,* 359-367. doi: 10.1080/10691316.2011.624934.

Shankar, V., Smith, A. K., & Ragaswamy, A. (2003). Customer satisfaction and loyalty in online and offline environments. *International Journal of Research Marketing 20*(2)*,* 153-175.

Shostack, L. G. (1982). How to design a service. *European Journal of Marketing,16*(1)*,* 49-63. https://doi.org/10.1108/EUM0000000004799.

Simon, H. A. (1969). The sciences of the artificial. Cambridge, MA: MIT Press.

Sinha, R. (2003). Persona development for information-rich domains. In *CHI (2003). Extended abstracts on human factors in computing systems.* 830-831. ACM Press.

Smith, A., Tucker, M., & Pitt, M. (2011). Healthy, productive workplaces: towards a case for interior plantscaping. *Facilities, 29*(5/6), 209-223. https://doi.org/10.1108/02632771111120529.

Solomon, M. R., Surprenant, C., Czepiel, J. A., & Gutman, E. G. (1985). A role theory perspective on dyadic interactions: The service encounter. *Journal of Marketing, 49*(1)*,* 99-111.

Stake, R. E. (1995). The art of case study research. London: Sage.

Steen, M., Manschot, M., & De Koning, N. (2011). Benefits of co-design in service design projects. *International Journal of Design, 5*(2)*,* 53-60.

Strauss, A., & Corbin, J. (1994). Grounded theory methodology. *In Denzin, N. K., & Lincoln, Y. S. (Eds.), Handbook of Qualitative Research,* 273-286. Thousand Oaks, CA: Sage.

Tu, N., Dong, X., Rau, P. L. P., & Zhang, T. (2010). Using cluster analysis in persona development. *Conference paper: Supply Chain Management and Information Systems (SCMIS)*, 1-5.

Vargo, S. L., & Lusch, R. F. (2004). The four service marketing myths: Remnants of a goods-based, manufacturing model. *Journal of Service Research, 6*(4)*,* 324-335.

Verhoef, C. P., Lemon, N. K., Parasuraman, A., Roggeveen, A., Tsiros, M., & Schlesinger, A. L. (2009). Customer experience creation: Determinants, dynamics and management strategies. *Journal of Retailing, 85*(1)*,* 31-41. https://doi.org/10.1016/j.jretai.2008.11.001.

Zomerdijk, G. L., & Voss, A. C. (2010). Service design for experience-centric services. *Journal of Service Research, 13*(1)*,* 67–82. doi: 10.1177/1094670509351960.

8. Appendix A: Interview introduction, topic list and outro

Sample intro for interview:

My name is Peter Vandor and I am a Master student of Media and Creative Industries at Erasmus University Rotterdam. I am conducting a research for my master thesis on how the library service can better support the student or user needs. I specifically focus on the student perspectives. During the period of the following interview, I will ask you to answer some questions with regards to your usage of the library, some specific experiences that you had here and some general questions about your way of using the library services. The interview is anonymous, your name will not be used in any forms, although if you are interested in the final result, at the end of the interview, providing your e-mail address the final research paper could be sent to you online. The interview will take around 40 minutes, and will be audio recorded. I am not allowed and I will not use these recordings anywhere, it only supports the analysis and the transcription processes.

If you have any questions regarding the research, or the way its conducted, please do not hesitate to ask. Also, the quality and credibility of the research can be supported by you, therefore I would like to ask you to answer honestly. Thank you in advance for participating.

Topic list – Interview questions

This topic list includes the question that are asked during the interview process. Although these questions have high possibility to generate desired insights regarding various aspects of the paper, such as customer journey, persona and positive or negative experiences, the questions are present to lead the conversation, rather than a fixed series of steps. Therefore, some questions might be left out from the interview, whilst extra questions might be added as well.

1. **Warm up questions and demographics for persona**
- What do you study? Which year? Which faculty is that? And how old are you?
- How often do you come to the library? Is there a pattern (or rhythm) when do you come here?
  - Routine elements?
  - Certain times?
  - Certain place?
  - Certain people?
  - Number of breaks?
  - Why?

2. **More in-depth persona questions**
- Do you have a favorite spot?
  - Where do you usually sit?

- Why?
- How much time do you spend in the library? (e.g. in a week)
- What is your main goal in the library? What do you use the library for? Why?
  - Could you describe your learning experience?
  - Why do you come here?
    - What makes being at the library useful?
    - Are you more productive here?
    - Do you interact with others?
    - Do you learn better with others?
    - What enables you to learn better? And to connect with others?
  - If you had to finish this sentence, how would you do it? My goal in the library is to "…"
- What do you think about the influence of others while being in the library?
- How is the infrastructure in the library?
  - IT? Furniture? Access? Equipment?
- Do you only study here?
  - Or what else do you like to do in the library?
- Do you interact with the library?
  - Staff?
  - Online?
  - Why?
  - How do you interact with them?
  - What's the role of them?
  - Do you need their support?
  - How do they support you?
  - What about space? Spatial interaction?

3. **Experience and journey questions**

Positive experience

- What is a positive experience?
  - How do you experience the service as a process (start, beginning, end) ?
- What do you enjoy about the library?
  - Why?
- When do you feel good inside the library?
  - Which elements trigger good feelings?

- Why?
- What is your favorite thing with regards to the library?
  - What was your favorite experience?
- What contributes to a good experience?
- Do you have any good experience with the service?
- If you had to list 3 things you particularly like within the library, what would they be?

Negative experience
- What do you least like in the library?
  - Why?
- Have you ever felt anger towards the library/service during your stay?
  - What makes you feel bad?
  - Why?
- Do you have any bad experience with the service?
- What do you miss from here?
  - Why?
- If you had to list 3 things you particularly dislike within the library, what would they be?

4. Co-creation
- If you could design this place, what would you add/take out?
- What could increase your happiness/satisfaction?
- What do you miss from the library?
  - What would you add to the library?
- Do you succeed in fulfilling your goal (previously said reason to come to the library) during your stay?
- How is being here different than being at home?
  - Why?
- How does you time look like in the library? (detailed description of how time is spent, creating a 'mini-journey' with respondents)
- How would you describe the role of communication and media technology for your learning?
- Is the library becoming more digital? If so? What is changing?
- What would be the perfect library for you in the future?

5. Cool down questions
- In a 1 to 10 scale, how would you rate your experience in the library?

- If you had the chance, what would you tell the management of the library? (both positive and negative)
- If you could change anything, what would you do?
- Do you have any questions for me?
    - Or regarding this study?

Outro for interview:

Thank you so much for participating in this interview. I truly believe that this conversation brought me closer to deeper understand the student perspective on the customer experience, and overall the library services. If you have any questions about the interview, the process, some outcomes, please do not hesitate to ask. And finally, as I mentioned before the interview, if you are interested in the outcome of the research, by providing your email address, the final version will be sent to you.

Optional: E-mail address of the interviewee _____

(If the interview was more than 45-50 minutes, apologize for the interviewee for potentially causing any annoyance.)

9. Appendix B: Unsigned consent form for participating in interview research

CONSENT FORM FOR PARTICIPATING IN RESEARCH

Peter Vandor || vandor.peter.daniel@gmail.com / 499508pv@eur.nl || +31 6 87 55 19 57

You are invited to participate in a master thesis research about service design and service experience in the Erasmus University Rotterdam library. The purpose of this research is to comprehend the user experience and thus the negative and positive experiences in the library services. Furthermore, the aim is to better understand the unsatisfied student needs and identify opportunities for better user satisfaction.

Your acceptance to participate in this research in details mean, that you accept to be interviewed. Generally, the questions will be related to your positive/negative experiences in the library, way of usage and further satisfaction elements.

Unless you prefer that no recordings are made, I will use a tape recorder to help the further research processes and analysis.

Please note that you are always free not to answer any particular question, and/or stop participating at any point.

RISKS AND BENEFITS

As far as I can tell, there are no risks associated with participating in this research. Yet, you are free to decide whether I should use the first letter of your name or other identifying information, such as age. If you prefer, I will make sure that you cannot be identified, by [measures that will be taken: pseudonym, general identification only mentioning age and gender, etc.], although I only use the first letter and the age of the participants. For instance: J,20.

I will use the material from the interviews and my observation exclusively for academic work, such as further research, academic meetings and publications. Your participation in this study will approximately take 40 minutes. You may interrupt your participation at any time.

If you have decided to accept to participate in this project, please understand your participation is voluntary and you have the right to withdraw your consent or discontinue participation at any time without penalty. You have the right to refuse to answer particular questions. Your individual privacy will be maintained in all published and written data resulting from the study.

If you have questions about your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact – anonymously, if you wish — my master thesis supervisor, Dr. Sven-Ove Horst.

If you sign this consent form, your signature will be the only documentation of your identity. Thus, if you don't want to, you DO NOT NEED to sign this form. In order to minimize risks and protect your identity, you may prefer to consent orally. Your oral consent is sufficient.

I give consent to be audiotaped during this study:

Name: _____

Signature: _____

Date: _____/_____/_____

10. Appendix C: Coding tree for personas

Please note that in order to reach a better understanding, the persona coding tree elements were disported by its categories, since the entire table appeared to be too lengthy to comprehend it as one piece. Therefore, based on the different categories, the coding trees were separated.

Category	Sub-category	Sub-sub category	Illustrative quotes from the data
Library hacks	How often to go	Before exams	**G21**: "I usually go when I have exams. "
			S21: " I'm there for like a week or two weeks before the exam and then almost every day."
			A19: "I went two or three weeks in advance the exam and the last exam periods also two or three weeks before."
		Always	**D19**: "Let's say five days a week on average"
			K22: "Well pretty often. […] I would go in the morning and I would love it if I don't have that many classes then I can stay all day long. So, if I had days off, I would be there for the whole day. So definitely I use it a lot."
			A28: "Every day, like every weekday."
		After classes/Once in a while	**M22**: "Um, the university library, I use it probably like once a week."
			S18: "Probably twice a week, like two days. [...] It's normally between Tuesday Wednesday and Thursday."
		When not	**I18**: "don't go between 12:00 and 15:00. At 15:00 it's full."
			A19: "I think it's around 11-12-13. I have barely seen anyone getting spots except when someone gets up"
	When to go	Early morning	**G21**: "I try to go in the morning because otherwise it gets full and you can't' find a spot. "; "Usually around 9 because at 9:20 it's already full."
			K22: "In the morning, right when it opens"
			N19: "So, starting from 8:00 in the morning, when it opens, then till late in the evening. "
			S21: "I try to be here at 9:00 because then I'm at least sure that I can get a spot."
		Afternoon	**M22**: "I usually start going there at the afternoon and then I stay until 22:00 in the evening most likely."
			S18: "Normally after 16:00. [...] Yeah, like because during the day, like in the mornings, I have lectures and tutorials. And then I like to relax for a bit, eat lunch and then I go to earlier the library because it's usually really busy around 12:00 till 14:00 or 15:00. So you normally find a space after 16:00."
	Where to sit	Silence	**G21**: "I usually go to silent, because my friends also like to go to the silent "
			M25: "[I prefer] The silent. I think it's easier to concentrate and there are not many distractions. No people coming in and going all the time, no people talking.
			M22: "When I said in the silence area, I tried to sit on the third floor like on the upstairs floor. I try to sit in the very far right corner. I'm like sort of isolated from everyone else, but still, enjoy the view over the campus."
		Silence - downstairs	**I18**: "I always go downstairs because you have your cubicle so to say."
			N19: "It's just the fact that I can zone into my study material because I'm like kind of in the cage."

			S18:"Probably the ground floor area. The ground floor in the silent area"
		Non-silence	S21: "So, if I'm with other people out, I won't really sit it in the silence silent area. "
			K22: "So, I love to sit on the non-silent part. Because in the silence area, the second that I move, I feel like I did something wrong. So, I like to sit in the non-silent part in the first floor or the second floor where there's this hole you know, on the top of it."
	For how long to go	2-4 hours	M25: "but after classes were usually like 3 to 5 hours, something like that. "
			N19: "When I don't have the exams, I probably leave around 17:00. And go there after my lecture, which usually ends around 15:00, and then go there until 17:00 or 18:00. For like two or three hours, not more."
			S21: "Like 4 or 5 hours, I think. If not the entire day. "
		5-7 hours	M22: "Afternoon, until 22:00 in the evening, so about 4 or 5 hours. "
			A28: "Half a day or from 9 or 10 till 17."
		8-10+ hours	I18: "For the exams, I sit there from like 8 until 20"
			M25: "It varies because when we had exams we would stay there for like 10 hours"
			A19: "Then I stay usually until like 17 or 18. If I have it the next day and maybe stay longer if it's like urgent if I do need to do a lot. I stay longer, usually like 17-18."
	What makes you leave	Done enough	D21: "leave when you reached what you wanted to do, your goal"
			S18: "Like you feel you've done enough work and then leave which would be the end."
		Tired/"Brain dead"	D19: "I'm like dead or tired or my brain doesn't work. So, I just leave."
			D21: "Or when your brain is completely dead."
			N19: "My level of concentration. That's the only thing that makes me leave."
		Getting empty/atmosphere	K22: "for example, if it's even sometimes the atmosphere is bad I would leave even before my work is completely done."
			N19: "Yeah and also the fact that I see that other people are leaving in it's getting more empty, makes me feel like okay other people are leaving too, so why am I still here?"

Category	Sub-category	Sub-sub category	Illustrative quotes from the data
Social	Who to go with	Friends	A19: "I usually go with my two roommates like almost all the time and then we're like a group of five-six-seven."
			D21: "but usually, I meet a lot of my classmates there or sometimes I go with my friends. "; "But usually if I know that I will have a very long study day, I would try to go with someone so we can have lunch together."
			G21: "Usually one of my friends tells me to go, I don't usually go alone
		No one	M22: "I usually try to go alone because that's how I study best. [...] usually alone and then I try to have my own space. I usually don't sit next to a lot of people, I try to be isolated as much as possible."; "So, the social aspect doesn't really play a part when I go to the library. "
			S18: "And I found by myself that also helps me because I can just feel like doing my stuff."

	Where to socialize	Bridge (Theil)	**I18**: "Yeah, and the connection to this building, is also really nice. If you do want to get a snack that you can just go here"
			K22: "I usually sit in that hallway, the glass hallway, you know, the link between Theil."
			A19: "You just get into a chat"; "[during mini-breaks] we go to the glass bridge in that overpass"
		Smoking areas	**M25**: "My friend and I, we go outside. We usually have a smoke because it tends to be stressful and we just want to you know."
			S21: "When I used to smoke properly, then I would go outside and sit there for like 10 to 15 minutes and just kind of have our coffee and yeah have some cigarettes and just chill."
		Non-silent area	**K22**: "Yeah. Because like oftentimes I chill with my friends at those chairs to the left and then I sometimes bother people around because I'm not that designated, and I feel like that's the perfect spot because it's not right there when people are studying."
			N19: "Usually, when you grab a coffee, that's the most social part of the whole thing. Or sometimes, if you want to discuss something, for example, we go upstairs to the normal area, where you don't have to be silent."

Category	Sub-category	Illustrative quotes from the data
Main goal	Socialization	**G21**: "So, if I go with my friends, I spend more time there. So, I feel like I study more."; "being with your friends, and you don't feel like you're the only one that has to study so you go together "; "You socialize and you also do your work"
		A19: "Study, but it's nice for just the atmosphere like being around people."; "It's just nicer to be around some people and to have a nicer process of studying"; "Focus on studying but also making the process of learning more enjoyable."
	Productivity/get-stuff-done/keep up	**D19**: "Focusing"; "Yeah, exactly. Being productive."; "You need to study a little bit every day"; "So, try to keep up every week and do like every week a little bit of everything."
		D21: "For me, the good day in the library is when I'm productive and I have my favorite seat, and if I can like focus. "; "My goal in the library is to study."; "basically whenever I feel I'm behind and I need to focus because yeah, in the library I go to the silence area, so I feel more focused there"
		I18: "[my goal in the library is to] Get as much done as possible in like 12 hours."
		A19: "When I go to the library, I'm more productive."
		N19: "[my main goal in the library is to] Be the most productive I can be."
	Motivation/pressure	**A28**: "Also seeing other people work makes you also work."; "I spend so much time on coming here and it's so much effort, I feel like I'm obliged to do more."
		N19: "I used to do in the beginning, studying at home. But I feel like I'm more productive in the library because I also see other people studying there and this pushes me more and to do more. "
		M22: "I don't want to stand out by being the person who is on his phone the entire time and being distracted and stuff. So, it's definitely some kind of peer pressure going on."
		A19: "So it's not pressuring you, but you know that they are also studying, so you also need to study"; "I feel like I need to go at 8 as well, because she's going you know, so that really influences my studying."

	Away from home (distractions)		**A28**: "because at home I get distracted."
			D19: "Because when your home, you take a lot of breaks. And when I'm home, I eat a lot. Like I take breaks to eat like every 15 minutes or something."
			N19: "Because at home, for example, I always hear noises from the street and there, I don't. So that's why I like to go to the library."
			G21: "I don't get as distracted in the library as I get home. "
			A19: "Whereas when I'm at home, I would like to go to bed early just walk around or eat something."; "[at home] it's just more tempting to just go in to bed and sleep or do something else or be on your phone."

Category	Sub-category	Sub-sub category	Illustrative quotes from the data
Positive experiences	Infrastructure	Chairs	**I18**: "I like the chairs, they're good."; "the chairs are good. I was very surprised at how good the chairs actually are."
			S21: "they have different types of chairs. And not all of them are nice but also not everyone likes the same chairs. Or I'm very specific when I walk in and which chair I'll sit in. So, I can choose."
			A19: "Also, the tables and chairs. It's just really comfortable and makes you studying in a good way."
		Tables	**D19**:" I really like the tables, especially the ones that we usually sit on the first floor. The way there are displayed and how there are two plugs."
			G21: "Maybe that there are plugs, to plug the computer everywhere."
			M22: "I love the tables and the supplements they have in the library because they're very well equipped. Every seat has two plugs. At least you have your own little desk lamp as well. That's pretty nice."
		Printer	**D19**: "Printing yes. That all the time. I always use it and it works perfectly well. It's really good. "
			A28: "And then they offer you spaces where you could print and it's not one printer, it has various of them"
		IT	**A28**: "Yes, I prefer computer spaces, so I can have access to my stuff. I don't want to carry my computer, so I prefer using the one in the library"; "I like that the computer works faster than my personal computer and I can have access to all the articles even though I can use it with VPN, it's not as fast as it is using the library computer."
			K22: "I used them a few times when my laptop was broken. I did use them and I had some pretty good experiences with that."
			A19: "I didn't have any difficulties."
		Water refill	**D21**: "And then also what I really like about the library is that they offer water like I can refill my water bottles."
			A19: "I like the water filling station"
	Atmosphere	Productivity	**M22**: "So yeah positive experiences in the library would definitely be getting a lot of work done in a short amount of time."
			M25: "I like the collective feeling of everyone studying to achieve something and just everyone being there for their own reason, but it's also the same reason somehow. And you see people working hard, and it really motivates you."
			N19: "Of course, if you get stuff done in the library, that's also positive, but mostly it's about being with the people there I think, that's a positive."

		Respecting the silence	**D19**: "First thing respect. I think that's like the top and like the most amazing thing. People respect so much each other and that's so nice."; "Most of it is respect. I swear that takes it all. Because for me, what's the point of going somewhere to study if there are people talking?"
			A28: "and also people are really respectful and they don't speak."
		Working/ studying environment	**D21**: "I would say like the entire going there to study with all the other students who are also hard-working is a positive experience itself. Like the working environment."
			18: "Just because I'm more focused there and everyone around me studying. No one's like on their phones, making noise or doing anything else. So, I like the work atmosphere in the silent area. "
			M22: "The top 1 is the productive environment. "
	Specific experiences	Santa Claus	**A19**: "Santa Claus walking downstairs and he gave out the little webcam thingies."
			D19: "Everyone was studying for exams and yeah, it was really cool actually. They went through with a huge bag and you could pick something"; "I even put a story on my Instagram, like Erasmus is making us feel well or something. That's pretty nice. I think it was right before the exams. Everyone was having exams. Everyone was terrified. It was hostile and then they just came in and the mood changed. It was so nice." I was so happy!"
		'Guy with the vest'	**D19**: "And sometimes the guy goes around from the library. But most of the time he's just not there."; "He tells people to shut up and he's pretty serious about it."
			A19: "There's like this one guy with the green west which says library. He always walks around downstairs and tells people to be quiet."
		'Share your chair' card	**S21**: "the save your seat thing. That's really good. Do you know the cards? [...] Yeah. Those are really nice. "
			K22: " I don't know if that's a service or what that is, but when you can have a card and you can say for how long you are going to be gone. Then someone can take your spot for that time. So, I really think that's a great idea for the library that they implemented I think last year or something."
		Helping staff	**A28**: "once I had a task to look for high impact journals, and I didn't know how to do that and I asked the librarian at Polak. And then he gave me an e-mail of a woman and I wrote to her and she answered me the same day. She was very helpful, she wrote extensive information. So, I feel like they really do a great job."; "I think this help was the most pleasant experience, that they helped me so much with finding this information because I was really stressed"; "But I just feel like they are so caring and they really work to meet goals"
			D21: "Yeah, they were helpful, very nice."; "I think the staff is really nice. Like they are really positive and friendly, I like that"; "Yeah, whenever I had any type of questions, I ask the staff members who are there. Even I think once I needed a stapler because the printer didn't have so I borrowed from them."
			K22: "I like this staff. This was an instance with the books where it wasn't so friendly, but normally I do like them especially when someone is cleaning or something, they're always very nice."

	Building	Interior design	G21: "I love working with a lot of natural light I'm used to that, so it's better than in a dark place."
			M22: "I think the whole atmosphere in terms of architectural design, because it is also wide in a sense, you know, the hallways are super wide. Everybody has their own space."
			S21: "Yeah, I mean like obviously there are prettier buildings, but I feel like, in terms of a university library, it's pretty clean and looks nice."
		Division (Silent/Non-silent)	G21: "[I like] the fact that there's like a silent and a non-silent."; "There areas proper separate space for everyone, everywhere."
			A19: "It's nice to have a balance between non-silent and silent."
		Hygiene	A28: "And a clean and spacious environment that I think these whole things add to the experience."
			G21: "I think it's very organized and very clean."
			I18: "the bathrooms are clean. That's a personal thing that I really like. The desk as well, there's no dirt or anything. It's clean."
			S21: "Yeah, I mean like obviously there are prettier buildings, but I feel like, in terms of a university library, it's pretty clean and looks nice."
		Location	M25: "I also like the location because there's a pond there and if you sit by the window, it's really nice. And I also like that I have a place to study and be concentrated. And I'm so close from my house and I mean, yeah, it's something to appreciate maybe."
			S21: "The balconies really nice because it's almost always in the sun. So that's good."

Category	Sub-category	Sub-sub category	Illustrative quotes from the data
Negative experiences	Infrastructure	Chairs	K22: "There are some cushioned chairs and then I see people like waiting for someone to get up and be like that's mine!"
			A19: "I always make sure to get the chair with wheels that have the cushion thingy because on the other ones I'm really short."
		Lamps	I18: "The lights above your thing, they just turn off and on like every single time."; "At the end of the day, around 16, it starts, because it's getting dark outside. You need those more and sometimes they just turn off and then on again and off and on. It's really annoying."
			N19: "So downstairs, for example, it's darker and the light is very intense. Sometimes it can get really stressing to just be in this light."
			A19: "It's really artificial, especially when it's dark outside."
		Blinds	M22: "But at the same time sometimes the light blinds you a lot and the, how do you say, the blinds? [Interviewer: Yeah.] M22: Those don't always work in the way they're supposed to. So, sometimes they protect you from the lights, but sometimes you just have the light shining straight onto your laptop and you can't see anything."
			S21: "Yeah on the windows. Sometimes those tend to roll up and roll down really randomly and it's a full minute of annoying sound. That's annoying."
		IT	M25: "If you want to use a computer, there are not many spots available for computers provided by the library." "it's really hard to find a computer here. And sometimes there's not the programs you need on it."
			A19: "I think maybe there are too many computer spots because I don't see people using computers that often."

		Temperature	**D19**: "Sometimes it's too warm, especially on sunny days."
			I18: "When for example, it's too warm, my focus, in the library itself when it's too warm, my focus goes down really quickly because I'm like, I want to get out of here.[...] then I was like, okay, I'm just going home because I'm very annoyed right now because it's so warm here."; "I would say when it's too warm in the winter. Like the temperature. That's again because I lose focus of that just destroys the aim of me being there."
			N19: "At the entrance, there's like this few tables, but if you sit there, it's really cold."
		Water refill	**D19**:"Sometimes the water thing inside, you know how there are water fountains? That breaks and that's pretty annoying"
			M22: "Sometimes I go to the handicapped toilet and I fill up my water bottle, but usually also in the bathroom and not in the water dispensers because they're pretty loud. "
			G21: "I would put the water thing that fills the water bottle outside because I think it's very good that we have like a thing to fill a bottle, but sometimes it's noisy because it's inside."
		Books	**A28**: "I took once in four years maybe, but I don't like that. It's annoying that every month or every three weeks you have to update the day, so you can take it for a longer period."
			D21: "The only issue is that I would want to keep them longer [...] But except for that, I think it's nice."
			K22: "To this day I've been living in the library and still don't know how to get a book. I really don't. I don't know the rules of it if I want to take it out, or can I just take it whatever it is? Because I went to ask the first time I was in the first few weeks that I was there and there were so rude at the counter that they were like we don't have time to explain you, you have the internet, you are a student, how come you don't know? It was so bad."
	Noises	Other people	**D19**: "now everyone decided to come to the library which is not good because it's not as silent anymore."; "I counted it on my phone, 15 minutes chatting over and over again and it's chatting. You're in the silent area if you want to talk just go outside, you know. There's no point of talking."; "And people talking in general, when they talk. That's very annoying. "
			G21: "Unless you have the typical guy next to you, the very noisy one who moves a lot or stands-up and leaves and comes back again. These kinds annoy me."
			M22: " I'm emphasizing the aspect of noise a lot, but like if you are actually there to focus and you have like somebody constantly talking, that's when I get distracted out of my workflow and I kind of want to go home then."
			N19: "Sometimes it can be really annoying if people really start talking to their neighbors or to their friends in the library. Sometimes people talk to them for like 20 minutes straight and the whispering can be even more annoying than the normal talking."
			S21: "Then just loud people I guess."
		Eating inside	**A28**: "That's annoying. Really. Especially if they are loudly eating."; "They eat and it's very noisy "
			D21: "What really bothers me is when people eat big meals. The food smell and the sound, I don't really like that."
			A19: "and people eat at their place and then you hear noises, which is annoying."
		Frustrating doors	**A28**: "another thing I don't like is that there is this door that says only staff, and then you have to go upstairs, and then go downstairs to get to the level downstairs. You know? Like why can't we just go through?"

			I18: "The only thing that always annoys me is if you kind of sit next to the door, then people are outside of the door talking and you hear it so loudly every time someone comes in. So, then you're like, okay someone comes in you hear people talking so it's not silent anymore. That's the only thing, that the doors are kind of misplaced in a sense. Or people should just leave from there."
			M22: "I still don't get why you can't go to the silence area from directly when you come in. But you have to walk up and the go around and stuff. Maybe helps to avoid noise and stuff. "; "Right next to the doors. [...] Because then every time somebody walks in, you are like hmm? Because the door sometimes slams closed. "
	Opening hours	Opening earlier	**A19**: "I was just confused if they open at 10 on the weekends or at 9."; "Then it opened it like 9:55 or something. So, when you come at 10:04, of course, I get a spot, but it was hard to get a spot downstairs."
			D19: "Also, I don't know I've been meaning to ask them but I never do because I don't know why I think on weekends there are opening earlier than 10 a.m."
			D21: "I feel like it should be longer. I think it should it should be 24/7. But yeah, I mean it would be ideal but obviously, it needs staff and everything."
			I18: "before the exams, [...] we were there at 9 and officially opens and 10. We were there at 10 on a Saturday. And it opened at 10 and it was full. So, they opened at 9:45 apparently, so everyone was already there and there were almost no spaces left at 10:00 when it opens. So that's really kind of annoying."; "But they opened and it was just like we were there at 1 past 10 which you would assume that there are not that many people yet. And everyone was already working and sitting. And we were like that's not possible in one minute if the library opens at 10. It's 1 past 10, not everyone can already be like on their laptops working and everything, that cannot be done in one minute."
		Weekends	**N19**: "Also, that it opens at 10:00 on the weekend. I think they should open at 8:00. That's a normal time I think. "
			A19:" I really don't like is that they only open at 10:00."
	Capacity	Availability	**A28**: "But lately I'm not coming here to the library because there is no space literally. So, I now go to T-3 computer rooms or Polak."; "No seats. To be honest."; "Not having enough spaces. Even though it's a lot of spaces, but still it's not enough."
			D21: "So, because I want the place in the silence, which is much harder to get, so I need to go early in the morning in order to get it. Otherwise, it's going to be really full after like 10 or something"; "First the seats, because if I want to study in the library, I need to go at 9. So, I need to wake up early. I basically need to be there early if I want to sit in the silence, which I don't really like. I would ideally want to start studying at 11. Wake up at 9. "; "It's super competitive. And the time plays so big role."
			I18: "That there are not a lot of spaces. You need to like be there at 8 or to get someone to do this share your chair sign so that you have a chair."
			K22: "In the morning, right when it opens because I've had so much bad experience with not having places to sit. Sometimes it's completely empty and sometimes when people have exams it's so full. I always go the second that it open so I can ensure that I have a seat."
			M22: "Just the fact that you go there to study but you can't find a study space is the most devastating thing to do. Because it costs a lot of your time when you have to go to some other places."

			M25: "My problem is that there are not enough spots I think."; "the number one thing is that there are no not enough spots and sometimes you walk around aimlessly for like half an hour."
			S18: "It's normally just the fact that I can't find a seat that made me go back home and study there. "
		Spot monopolization	**D21**: "You still notice what's happening around you and he would be like, okay that person is gone for two hours. It's just one book is there. Or sometimes you can really tell because like if a person just puts a scarf on the table, it really means that they are not here. You kind of can see from the way the table is."; "It's definitely that they put it for friends. And then also, you yourself you go in the morning, for example, if you have classes."
			M25: "usually I leave something there so people will understand that a space that is kind of reserved [...] it's really hard to find a spot there, so you have to like mark your spot somehow ha-ha."
			N19: "Also, the fact that some people just leave their spot and come back again after like five hours. That's what some people do. They leave all their stuff there without putting the share chair thing. They don't really respect this thing. They don't put it there. And then they come back after 5 hours and continue studying."
		Share your chair	**D19**: "Because there are people who are putting them overnight. No, I've never done it. But yeah, there are people doing that."
			A28: "And what is the most annoying things is that sometimes you come to in the morning and people put these signs of reserve-reserve-reserve, and there are no one. So, it's friends I think that put for them. But I think it's unfair because what if I need to do something for a few hours, you know."; "But it's also annoying because a lot of people even though you come early, a friend of someone that came here a bit earlier than you, saves a lot of spaces."
			K22: "you have a deadline until when you can work. I don't like that. [...], I wouldn't sit there because if I don't know when I'm going to finish, I don't feel comfortable with someone coming and telling me to leave. I would feel even worse."; "Especially with IBA. Like when IBA has exams, that's usually the way that they go and they put it for their friends."
			A19: "the share-chairs are a good thing for your own spot, but of course, people misuse it by placing it for their friends"
	Obstacles	Hygiene	**D21**: "Maybe is that sometimes the seats or the table are dirty. I mean when someone ate there"
			N19: "It might be a bit, but the bathrooms, for example, it's also not the cleanest. And so, the cleanliness of the entire building.[...] you can feel how it drops when you go there at 8:00 or at 19:00 in the evening. It's not that clean anymore. People should check more often."
			M22: "I use the toilets a lot, usually even go to the handicapped bathroom because bathrooms in the library sometimes tend to be, not filthy, but no toilet paper there or no drying towels for your hands."; "Yeah, but every time I know I have to go to the toilet now. I'm like umm I hope it's like clean this time."
		Thieves	**M25**:" I mean sometimes I have left laptop there but usually, I try not to because you never know what can happen. I don't think that people would steal from here, from the university library, but you never know."
			D21: "That there were thieves in the library."; "my course mate, she went to the bathroom and when she was in the bathroom her wallet got stolen from her bag. And actually, when I studied last year, I also noticed that at one point there were strange people walking around. Like you could see that they are not students"; "So, I just take my computer and wallet and I leave

			everything else there. But that's a bit uncomfortable.”; “I would like to not worry about my stuff and carry them when I go for lunch. “
		Cleaner	**N19**: “Sometimes if its exam phase, I'm very early in the morning. I mean it's normal, but they still clean for example, and that's very loud. And if you really concentrated and you really have to focus on your stuff, and they're cleaning next to you, it just it takes a while for them to finish and clean.”
			A19: “When you come really early I think cleaning lady still there.”

Category	Sub-category	Sub-sub category	Illustrative quotes from the data
User suggestions	Infrastructure	Chairs	**A19**: “Maybe nicer chairs.”
			D19: “Maybe the chairs could be more comfortable.”; “Maybe like have chairs with armrests.”
			I18: “Get other chairs, even though I like the chairs, I would still get more comfortable where you have like arm leaning stuff and like arched back and not straight. So, like everything perfectly comfortable chairs”
			S21: “I would make all the chairs the good chairs.”
		Tables	**I18**: “I mean, they're probably more technological stuff, like changing the heights of the desks and everything. [...] According to a lot of research, it's the best thing to stand when you're studying and working because it's better.”
			M22: “Now that you say, in Polak building they have a few of those tables which you can adjust the height, so you can basically study while you stand up. [...] And then having this in a separate area, because sometimes when everybody sits down and you're the only one putting your table up with the sound of [zzzzzz] ha-ha.”
			S21: “What would be awesome is, you know in Polak, they have like the higher tables which sometimes are also quite nice, especially when you just need to smash out something really quickly. I don't know for some reason it's like a different kind of productivity for me because I feel more like, standing desk.”
		Lamps	**I18**: “Lights that you can control by yourself per cubicle per seating area”; “The lights. That's what I would say to the management. That would still be in their reach of being able to do.[...] Just a simple button. Like that I control when it's on and off.”
			A19: “It would be nice to adjust it yourself.”
			M22: “It would actually be nice to have this personal lamp, actually personalized, because I think you can't really control it. Sometimes it just turns on and off. So that will be nice if you had the power over this lamp”
	Capacity	More supply	**A28**: “Maybe building more study spaces could be an option.”
			I18: “The fullness is hard because you just have to expand more but then more people will be there so it will be full again. I don't think you can ever truly solve that issue. “
			D19: “I think is more just having more space.”
			G21: “: I maybe would add space for group meetings. Because sometimes I have a lot of group projects and we try to find a place and it's quite hard because you know, if you find a spot it just for one person and you cannot talk.”
			A19: “it would be nicer to just have more spots”
		Better organized	**N19**: “I would also use this space more efficiently as I said. I feel like some spaces are just used to show how nice the library is, and how good the interior design is. “

			A19: "Maybe you could arrange that in a better way to increase the capacity'
		Know when to come/ mobile application	**D19**: "You know, how in parking lots there are red and green lights? [...] So, something like that. So, every time someone sits down in the place, you just press a button and that would go to an app or something. It's a crazy thing but sometimes your home and they're like five spots and you have no idea and sometimes your friends are not at the library. And then if you knew, you'd come to the library. Sometimes you waste your time because you don't find any spots." "So, it's like I don't know an app to keep you up-to-date on the spots, you know."; "So, something like that. So, every time someone sits down in the place, you just press a button and that would go to an app or something. It's a crazy thing but sometimes your home and they're like five spots and you have no idea and sometimes your friends are not at the library. And then if you knew, you'd come to the library. Sometimes you waste your time because you don't find any spots."
			D21: "I know in other universities it's like an electronic system where you can book it and you can see what seats are available."
			N19: "Maybe just like having something like an app, where you can see the availability of study spots. I don't know how you can do that. Or just get an overview. I mean you have it example for the rooms, that you can see which room is available and which is not. [...] Just have something similar like that for the library or Polak. So you can see on average how full it is. "; "maybe there should be something like an app about the news in the library. But what is going on if there's going to be a case like the wi-fi doesn't work."
			S21: "Well guess what will be fair, maybe not really feasible, to have like an app where you can book off the tables yourself and then you can only do one day just for yourself. Like through your own student account or something. Because then you can actually be held accountable if you're not there. Because they know who reserved it. Because those cards they're just time and date, right?"
	Design	Nature elements	**K22**: "If it were up to me, I would put like greens and more plants and just make it a bit more Zen,"; "Do you know what we should do? Put a tree in the middle"; "I would try to switch up the interior a bit, maybe not with the tree but a bit more plants or something at least to start off with, because now it's such a big gap between Polak interior and this interior."
			M22: "Few trees. Like not big trees but few plans for sure and then maybe something like some flowing water kind of stuff, like a not a fountain as outside of Pavilion but some flowing water. I don't know. I think it's like really giving some people the Zen aspect of it. And then constantly having this touch of nature while you sit in the library."
		Social/relax area	**I18**: "Make like just an area upstairs where you can talk. [...] Like a take-a-break area."; "Take the comfortable chairs there that are already in the library, but next to the windows at the entrance. Those chairs, so you can chill. [...] Just a little space where you can literally take a break. But that's not meant for studying. And just like be there for 5 to 10 or like 15 minutes."
			M22: "[...] making everything on the outside as efficient as possible, but then still having this core with maybe some water elements or something. Where you can sit down while you study. Like if you really need a drink, it would be in a separate room but within."; "I think would be nice to have like a little break area where you have not beds, but like seats designed that you can take naps. You know? [...] Like having the lounge chairs in the library that they are right now, that yeah something like shutting off your face basically. Where you have your emotional privacy basically. So, when

			you just like put your head back that you could nap without anybody watching you pretty much."
			N19: "For example, I would really like if they had that spot somewhere where you could just relax for a second. Just get, not a room, but yeah, a room maybe. Where you can even take a nap or something like that."
			S18: "I think I would increase the silent area and then have a social area as well. Like where people could just like go and chill maybe with couches and stuff and talk to friends."
		Colors/ interior	**K22**: "I would also like to put everything in colors. So, I don't know and I would add those colors throughout the library as well because then it makes it feel cooler to study in."
			M25: "I mean, it's a good space but in the silent room, it's pretty monotone I would say. I mean the good thing is that you can see outside and it's nice, the pond is there. I remember in my mind it's like grayish or something. Maybe make it cozier and better. More color and more seats and I don't know, just things to make it brighter. Something that attracts you more to go and sit there. "
			N19: "And I would also make it more colorful. I feel like now it's very dark and gray and black everything and white. But if I'm somewhere where it's colorful and you have bright colors, I don't know, make a separate color for each floor, but not too bright because then you get distracted."
	Remainings	Share your chair	**I18**: "If you would for example link it to someone's official student accounts, only that person can reserve a chair if they're there and they're actually leaving for a few hours."; "Just like link it that student. I don't know how, but it has to be personal."
			S18: " Maybe start it after like 9:00or 10:00 a.m. the save my seat card. "; "talk about the save my seat cards maybe. Like to implement them at a later time, maybe after like 10."
		Staff	**D19**: "Yeah, that's the thing, I've never asked because I didn't know how to ha-ha."; "Actually, I think there should be more staff walking around."
			K22: "Well, I think the only thing that can solve that is humans, the people who work here. I think they should maybe check or something because I honestly think that if someone who works there came up to me and says, I'm sorry are you saving this for your friend or something? I would not feel okay lying to them."
			M22: "I think it would be quite nice to know that there's like someone around who belongs there. So just not that you have any questions, but in case you had any, you knew okay, there's someone. So, having like a little staff booth in every section of the library. But then the main staff service box sort of say close to the entrance."
		Cafeteria/ food	**D21**: "Also, in terms of food. I feel like there is no, like the coffee machines, but if you want to eat something you would need to go to Spar. So, you need to walk a lot. It would be nice if it had its own some kind of food there because also during the weekends, like Food plaza, I think most of the place is open at 12 or 11. "; "I think it would be really nice if it had something similar to Toasty."
			N19: "Maybe also like something food related for example. So, you can just grab a snack somewhere in between a break because right now they don't have anything like that there. And if you're really hungry you have to get out of the library and go to Food plaza or the cafeterias. "
			M25: "And maybe like they had snacks and coffee machine there."
			M22: "Then I think in this having the bean square in the library will be pretty nice. I think having a welcoming feeling that you can already grab a coffee when you are in basically, having some snacks available. "