The effects of service design on digitalization and the development of better service creation for stakeholders

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ABSTRACT

Service design and digitalization have received attention in academic research over the past years, however, there is still a missing link in academic literature about the relationship of service design and digitalization, and how the two can lead to the creation of enhanced services. This research paper aims to explore the effects that service design can have on the development of services for stakeholders and the influences that it can have on digitalization. The objective is to determine if these effects can result in improved service creation. A single case study was conducted to collect primary data on a German university. Due to the qualitative approach and limited sample size, the conclusions should not be generalized. The results of the interviews and academic literature review suggest that service design can have positive effects on digitalization and the quality of the services for stakeholders. This paper also addressed research on the acceptance of new services and the resistance to change factors that can influence a new service. Co-design practices have been shown to reduce the resistance to change and support innovative idea generation for digital services.

Since the intersection between service design and digitalization is still underdeveloped in academic literature, the findings from this study could benefit from further research.

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Keywords
Service design, co-design, digitalization, resistance to change

1. INTRODUCTION

In today's businesses, services gain more and more attention, and so does the use of service design. As services become crucial to successful business, the design of service solutions has also gained attention over the last years. In the past, services were often seen to be linked to a product. Nowadays, from a service design perspective, services might be considered as more than mere design object, but also as a means for organizational and societal transformations (Sangiorgi, 2011).

For this research the focus will be on a specific case of a German Corporate State University, which is currently transforming old, often manual, and paper-based processes into digital ones. While doing this, they also want to use the digitalization process to also improve these old processes. The specific problem analyzed in this research paper is concerned with the role of the course directors of the different study programs. The course directors have many different obligations in their day-to-day work, so it is of importance to have a service in place that enhances their daily work. New services for course directors at the university are part of the overall organizational transformation towards digitalization.

This case will be analyzed in regards to the needs of the course directors and possible solutions that service design may provide for this case will be examined. To analyze the case, interviews will be conducted and subsequently the theory will be put into practice.

Service design literature emphasizes collaboration in designing services, and thus co-design will also be a point of attention for this case analysis. The use of co-design can lead to enhanced service quality and increased stakeholder satisfaction (Steen, Manschot, and De Koning, 2011).

Furthermore, resistance to change factors will be taken into account, to ensure that the stakeholders are more likely to accept the new service in the end. A new service is also a change for the affected stakeholders, therefore, it should be actively worked on making the transition smoother and reducing the risk for resistance to the new service.

This research will complement the service design literature, as there is not much academic literature that is concerned with the link between digitalization and service design. Service design and digitalization are both relatively new concepts in academic literature and thus there are not many academic articles available pertaining to the various aspects of their intersection. Literature is still very limited and so far, is mostly focused on defining service design rather than using the concept of service design to create better digital services in practice. This research will pose a relevant contribution to the service design literature.

This research will focus on using service design concepts to improve digital service at a specific case example. It will also demonstrate new opportunities and limitations that service design might have in practice. Some academic literature has already focused on applying service design concepts in healthcare institutions. However, there were limited resources available concerning the use of service design methods applied to educational institutions. Furthermore, this thesis will also focus on internal customers for the service rather than external ones.

This paper will first introduce a general overview of service design, co-design, resistance to change, and digitalization based on a literature review. Second, a study will be presented where interviews were conducted with course directors from different study programs. Finally, the paper will conclude with a segment were theory will be put into practice.

1.1 Research Question

As this research focuses on the issue of using digitalization processes to improve service, the digitalization aspect should not be neglected in the research question. The Corporate State University already has a service in place, so the focus is not on creating an entirely new service, but rather about innovating the current service with the use of service design methods, with the end goal of creating a quality digital service. The research question is thus:

How can service design support the development of better services for stakeholders within the dynamics of digitalization?

However, since the end goal is to create an improved service for stakeholders, factors for resistance to change will also be taken into account to complement the service design methods that will be used. To answer the research question with greater confidence, the following sub-questions have been considered:

1. Why service design?
2. What role does service design play in digitalization?
3. How does service design support co-design?
4. What do the course directors need from a new service design?
5. What is the course director's perception and use of digitalization?
6. Can co-design help to reduce resistance to change? If yes, how?

These sub-questions will be answered throughout this research paper, leading to a response to the main research question. The first three sub-questions will mainly be answered by the literature review and in the implications section. Sub-questions four and five are answered by the interview outcomes, while the last sub-question will be answered by the interviews and the implications section.

2. LITERATURE REVIEW

In this section, literature regarding the topics of service design, resistance to change, co-design as collaboration in a design process, value, and digitalization will be analyzed.

2.1 Why Service design

As service design is a human-centered approach, it takes all affected stakeholders into consideration for the design. It is a unique approach that aims to create value for all stakeholders, not just the customers or suppliers. Service design does not need a perfect plan at the beginning of the process; instead, it is an iterative cycle that aims at including everyone. This offers the opportunity to find the real problem before starting to design for service.

2.1.1 Service design

Mager (2004) defined service design as a process of planning and organizing, which involves people, infrastructure, communication and material components of a service. For Mager (2004) the end goal is to improve the quality of the service, which includes the quality of interactions between the provider and the customer, and also the customers experience of the service.

A broader definition of service design came from Stickdorn and Schneider (2010), who view service design as an approach that can be applied to a wide variety of service innovations. For Dubberly and Evenson (2010) service design has the means to provide a service that fulfills the needed qualities by an organization that are of economic and strategic nature.

The most exciting and fitting definition for the purpose of this paper however, comes from Meroni and Sangiorgi (2011). The authors see service design as a human-centered and creative

approach that developed into a design led approach to service innovation, as also mentioned in the later work of Yu and Sangiorgi (2018). Stickdorn et al. (2018) came up with the evolution of service design principles and how they have changed from the year 2010 to 2017. They came up with the following:

1. User-centered → human-centered
2. Co-creative → collaborative
3. → Iterative
4. Sequencing → Sequential
5. Evidencing → Real
6. Holistic → Holistic

The approach taken on service design in 2017 focuses more on all stakeholders rather than just on the customers of a service. Instead of just taking the relevant stakeholders into account when designing, the stakeholders should rather be actively engaged in the design process. To do a successful service design project Stickdorn et al. (2018) also recommend to look at service design from different perspectives. The first perspective should be to use 'service design as a mindset', where "service design can easily be thought of as a mindset of a group of people" (p. 21) that has the user in mind. The next view on service design is 'service design as a process', that is concerned with finding innovative solutions through research and development. Service design as a process is also dependent on early user engagement and feedback. The last important view of service design should be on 'service design as a toolset', which often is what people think about in the first place. Service design offers tools such as customer journey maps, but without the right mindset and process, the tools cannot be used effectively.

Service design includes all affected stakeholders of a service; it is not only a mechanism to satisfy the end user but enables the service to provide value to all stakeholders involved.

2.2 Resistance to change

Resistance to change has been defined as "an adherence to any attitudes or behaviors that thwart organizational change goals" (Chawala & Kelloway, 2004, p.485). Oreg (2006, p.76) defines resistance to change "as a tridimensional (negative) attitude towards change, which includes affective, behavioral, and cognitive components". McGuire (1985) distinguished between three main components that make up how people feel about change. The first one is the 'affective component' that is concerned with how people feel about the change. The second one is the 'cognitive component', which is concerned with what someone thinks about a change, and the third one is the 'behavioral component' that is related to the actions taken in response to a change.

Related to McGuire's view Kotter and Schlesinger (1979, 2008) studied what causes resistance to change. They found that change is often feared because it leads to the disturbance of routines. They also identified the many different ways in which individuals, teams or groups react to change. For the purpose of this research, most relevant are Kotter and Schlesinger's (1979, 2008) findings on the most common reasons for resistance to change. They grouped the main reasons into four groups, which are parochial self-interest, misunderstanding of the change and the consequences, belief that change does not make sense, and a low tolerance for change.

> Parochial self-interest is concerned with the belief to lose something of value as a result of change. Misunderstanding of the change and the consequences relates to a lack of trust, which shows if the change and its implications are not understood, and the fear of losing more than will be gained comes up. This often occurs if the trust is lacking between the person initiating the change and the person acting on the change. A common situation for this is if the manager initiates change, but the trust between the manager and the employees is lacking, employees might refuse to act on the change.
>
> The third common reason for resistance to change is the different assessment of a situation, where an employee assesses a situation differently than the manager, which can lead to the employee thinking that there will be more costs than benefits, not for them, but for the whole company.
>
> The last reason is a low tolerance for change, as some employees might fear that they will not be able to develop a new skill or behavior that is required of them. The low tolerance for change especially happens if an organization requires their employees to change too much and too quickly.

Kotter and Schlesinger (1979, 2008) also came up with different approaches to deal with resistance to change. The one most fitting for the study of this paper is the participation and involvement approach, where potential resisters are involved in the design process. If resisters are involved in the design process, the designers have the chance to listen to those whom the change affects and can learn how to satisfy them.

2.3 Co-design

Some of the early definitions of co-design are concerned with the benefit of user involvement that co-design methods can have, which is supported by the work of Alam (2002). Alam identified co-design to have unique benefits and better value for users, along with that a better acceptance of a service. Alams view is backed by the findings of Kujala (2003), where benefits for users regarding ICT system designs were studied. Kujala (2003) found that co-design can lead to better system quality and a better fit for unique user needs, resulting in a higher user satisfaction. When co-design methods were used, Burns et al. (2006) also identified better communication across disciplines. This is also supported by the work of Sanders and Stappers (2008), who identified co-design as "collective creativity as it is applied across the whole span of a design process" (p. 6).

Next to better ideas and higher user satisfaction, co-design can also lead to lower costs of development (Roser & Samson, 2009). Co-design methods take into account all the different perspectives of the stakeholders, not just the customer or supplier side (Steen et al., 2011). Steen et al. (2011) also found that to foster employee commitment, employee involvement in all stages of the project is critical.

Furthermore, Steen and colleagues also identified benefits for the different stakeholders. Starting with the users, they experience the benefits when the service is provided, but not during the development process. However, co-design methods lead to a better quality of the service and thus to higher user satisfaction. The organization can also profit from involving employees from different disciplines to reach a better focus on the users. Lastly, the service design project itself can also profit, as co-design activities can foster better idea generation and lead to lower development costs, shorter development time, and more successful services.

2.4 Value

As the whole purpose of designing a new service is to create value for the stakeholders, it should be understood what value means in this context. Vargo and Lusch (2008) concluded that

value is linked to the individual user's life. Value is created while a user is experiencing and using the service (Sangiorgi, 2013). From an actor's view point, value is created in context, only if the service contributes to the wellbeing of a user (Vargo & Lusch, 2012). As different users in different situations use the same service, the value for these users is also assessed differently. Over the past, the view on value has moved from a focus on exchange (G-D logic) to value as being co-created in the use context (Chandler & Vargo, 2011), where value is dependent on the specific situation (Vargo, Lusch, Akaka, & He, 2010).

2.5 Digitalization

Digitalization should not be confused with Digitization. Digitization is "the material process of converting analog streams of information into digital bits" (Brennen & Kreiss, 2016, p.1), while digitalization is concerned with the power in IT shifting to the users (Brenner et al. 2014). Digitalization refers to "the adoption or increase in use of digital or computer technology by an organization, industry, country etc." (Brennen & Kreiss, 2016, p.1) and can also be seen as a way in that many domains of social life are restructured around digital communication and media infrastructure (Brennen & Kreiss, 2016).

The digitalization can be seen as a wave "fueling innovation and creating opportunities in businesses" (Legner et al. 2017, p.301). For Legner et al. (2017) "digitalization describes the manifold sociotechnical phenomena and process of adopting and using technologies in broader individual, organizational, and societal contexts" (p.301). The authors identified three waves of digitalization, which are 1. Replacing paper with computers, 2. Internet as global communication infrastructure and 3. (today) Digital technologies complement and enrich existing services.

Digitalization is a prominent topic, which also results from outside pressure from the society and the government, which leads to companies feeling locked-in in their traditional ways of working. One of the key reasons why companies want to improve their digitalization, is when customers and partners expect the organization to digitalize, resulting from outside pressure. However, customers and partners should be involved in the design process, as they can be a source of value generation (Legner et al., 2017).

3. METHODOLOGY

This research is based on a specific case example and the following methodological approach has been chosen based on the case example and the previous literature review that both laid the foundations for this research.

As the purpose of this paper is to research how service design can lead to better service creation within the dynamics of digitalization, it is crucial to find the best research design, which also includes a well-fitting data collection method. For the research design, it is essential to determine which fits the purpose of this paper the best. This paper is based on a basic qualitative research study with the overall goal of understanding how the researched stakeholder group makes sense of their experiences (Merriam & Tisdell, 2016). This basic qualitative research study will be based on a single case study.

> „The single case study documents, in detail, the operations of a single plant. […] It provides a careful and detailed documentation of practices, to be used as the basis for research. This may be used in conjunction with survey research, or some other type of comprehensive data gathering effort, to develop explanations for some of the findings on a more comprehensive basis." (Flynn et al., 1990, p.256).

After choosing a research design, an appropriate data collection method has to be chosen. Data collection methods include historical archive analysis, participant observation, interviews, or questionnaires. For the purpose of this research, the data collection method of interviews will be used. Interviews offer an advantage if the participant cannot be observed in their natural setting, and through interviews participants can also share historical information, such as experiences (Creswell & Creswell, 2017). The three common types of interviews are structured, unstructured and semi-structured (Dunn, 2005).

For this research, the semi-structured interviews are chosen. In these interviews certain questions are standard, while others can also be asked depending on the direction of the conversation. This offers the opportunity to make the interviews somewhat comparable without risking the depth of the conversation (Flynn et al., 1990). It also allows for open responses to what the interviewee thinks is important (Longhurst, 2003). The semi-structured interviews were also chosen with the purpose of understanding the specific stakeholder needs.

3.1 Unit of Analysis

For the purpose of this study, course directors from a specific university have been interviewed first, and afterward a meeting with the director of the IT department was held.

A list of the interviews can be found in Appendix 10.1.1, due to confidentiality the names of the interviewees will be left out. All persons interviewed for this study currently have the position of study course directors or have been working in this position in recent years. In total five participants were interviewed. The interviews were conducted via Zoom, Skype or Phone. The interviews lasted between 25 and 36 minutes.

At the beginning of each interview, the participants were asked to explain what they do in their job and what challenges they face. To give an overview over the job of the course directors, their tasks will be shortly described. The tasks of the course directors include the communication, recruiting, and advising of partner companies. They are also responsible for supervising and advising the students of their study program. To ensure the quality of the program, the course directors are also responsible for organizing the teaching and the compliance with the curriculum (Landesrecht Baden-Württemberg § 27 d, 2014).

After the interviews were conducted and analyzed, a meeting with the director of the IT department was conducted, to review the outcomes of the interviews in regards to feasibility and limiting factors. This meeting lasted 43 minutes and more insights into the administrative structures of the university were given.
The gathered data from the interviews with the course directors and the meeting with the IT director will be used to inform the discussion later in this paper.

3.2 Data Collection

For the data collection the method of semi-structured interviews was chosen, as it offers the advantage of having a deeper conversation with the interviewee. A total of five course directors has been interviewed. With the semi-structured interviews, it is possible to really find the problems the course directors have in their day-to-day job and what things are important for them as users of a new service.

For the semi-structured interviews, a list of open-ended questions was used to give some structure to the interviews, however, due to the open nature of these interviews a high amount of flexibility was given, especially concerning the order of the questions. Another big advantage of semi-structured interviews is the possibility to ask questions that come up during the conversation, but were not planned or written down beforehand (Longhurst, 2003).

As the interviews are semi-structured, a few questions have been written down beforehand and make up the base of the interview guide (see Appendix 10.1.2). The interview guide will give some guidance during the interviews, but it is also possible to ask follow up questions during the interview that are not written down in the interview guide (Bryman, 2012). However, the interview guide can also be helpful if the conversation reaches a dead end.

The interview questions were structured under three main topics, which are *customer needs*, *co-design* and *resistance to change*.

For the interviews, the questions with the highest priority for the research were asked in the beginning of the interview, to make sure that the most relevant data for the research has been gathered. This was also due to time constraints on the interviews, to ensure that the relevant questions were answered before the end of the interview.

Before starting with the interview questions, each participant was told that they can withdraw from the interview at any point and that they do not have to answer a question if they feel uncomfortable with it. At this point it was also asked if the participant would allow for the interview to be recorded and the way that their data would be treated was also explained.

The actual interviews then start with questions on the customer needs, as the priority was to find out how the interviewees feel about their day-to-day job, what they like, what problems they face and what kind of experience they have with finding solutions for problems and getting help. Asking the participants about their daily job is also a question that the participants feel confident in answering and is thus good to ask in the beginning of the interview (Longhurst, 2003).

The co-design questions are concerned with the interviewees willingness to be a part in change projects. Questions regarding past projects and changes, but also questions regarding future projects were asked. Furthermore, questions about their willingness to participate in such change projects were asked, and if they have special reasons to contribute to these projects or not.

As resistance to change is a broad topic with many different reasons for resistance, the questions asked were focused on the four main reasons for resistance to change, which have been identified by Kotter & Schlesinger (1979, 2008). The questions were thus related to the interviewee's self-interest, their understanding of the reasons for change, and their trust in the initiator of change. As the questions related to the participant's resistance to change are more sensitive, they were asked towards the end of the interview, as the participant is more likely to feel confident answering sensitive questions at this point (Longhurst, 2003).

3.3 Data Analysis

In order to properly analyze the data, all interviews were transcribed. Due to the use of recordings and transcriptions of the interviews, the data presented here is thus accurate. In Appendix 10.1.3 the transcripts from the interviews can be found.

To support the process of organizing the answers from the interviews to the research question, the interviews were coded, with the use of a computer software, to be able to provide a good overview of the gathered data.

The coding was used to find reoccurring patterns and organize the data (Kalpokaite & Radivojevic, 2019). The data was coded in multiple steps, starting with auto coding to give some structure to the transcripts and becoming familiar with the content. As a second step each segment was analyzed individually to gain a better understanding. The codes that were created during the first steps are then revised and are grouped into categories. When grouping the codes, it is common that some code names will be used as category names (Kalpokaite & Radivojevic, 2019). After these steps, it is already possible to link the answers and opinions of different participants that relate to the same thing. After all the codes were grouped, and relationships between different categories are found, the transcripts are being reviewed and read through again, to verify the conclusions that were made earlier in the coding process. Some of the clusters emerged during the coding process, as links between the different participants and their opinions showed, while other clusters are based on questions that were asked to each participant during the interviews.

The outcomes of the collected data are summarized in table 1.

3.3.1 Validity and reliability of the Data

In the context of qualitative research, validity refers to the tools and processes used to gather the data as being appropriate and accurate, while reliability refers to the consistency of the research (Leung, 2015; Gibbs 2007).

The first step is to know which factors pose a risk for error to ensure that the gathered data is valid and reliable. Brink (1993) found that the higher the risk for error, the less accurate the gathered data is. Brink found four main reasons that can cause error, which is 1. The researcher, 2. The subjects participating in the project, 3. The situation, and 4. The methods of data collection and analysis. To reduce the researcher's risk, Brink proposes that the first step to avoid the risk is to know that the researcher can be the reason for bias. To avoid the risk from the participant, the truthful response is the biggest concern; however, this risk can be mitigated by informing the participants about the details of the research. The situation of the data gathering can pose a risk, especially if privacy concerns arise, which can be reduced by choosing a neutral setting. The last risk concerning the methods of data collection can be handled by choosing participants that are able to provide relevant information to the research and using recordings of the interview. Brink further recommends to code for categories.

The risks identified by Brink (1993) have been mitigated for this research, as the participants have been informed about the nature of this research project first by email and again at the start of each interview, where also the opportunity for questions from the participant to the researcher was given. The interviews were done via skype, zoom or phone, which did not pose privacy concerns on the interviewee, as all participants were free to choose what they felt most comfortable with. The participants for the data collection were all chosen on their job position of course directors, as they can share experiences and insights about the position of course directors the best. All interviews were transcribed and coded afterwards.

4. INTERVIEW OUTCOMES

In this section the findings from the five interviews and the meeting with the IT director will be summarized. Here, the user's challenges and needs are explored, and later used to inform how service design can help with digitalization. Three participants of

the interviews are currently working in the position of the course director, and two participants have worked in this position in the recent past. All participants were able to share their experiences from this position.

The findings of the interviews can be grouped into five main priorities, which are *time*, *alignment of expectations*, which includes satisfying the students and the company partners, the *administrative work*, the *role of own interest for change* and the *understanding of reasons for change*.

Table 1: Course director priorities

	participant 1	participant 2	participant 3	participant 4	participant 5
challenges					
satisfying students	x	x	x	x	x
satisfying company partners	x	x	x		
aligning expectations	x	x	x	x	
organization/ administration	x	x	x	x	x
time	x			x	x
Ideas					
online meetings	x	x		x	x
alignment of systems	x	x			
self-service system		x	x	x	x
standard forms	x			x	x
Change					
own interest is important	x	x	x	x	x
trust is important	x				
understanding reasons is important	x	x	x	x	x

4.1 Summary of main findings

In this section, the aforementioned five categories are analyzed.

4.1.1 Time

One of the main challenges for the course directors is the time factor, as they have many different obligations, and it can be challenging to get work done in time. As one course director said during the interview:

> "We keep cutting down trees, but don't have time to sharpen the ax" (Interviewee D, 2020).

All participants mentioned that administrative work takes up a majority of their time, which is why the course directors would like to have more efficient tools for administrative work. The problem here is that they often do not even have the time to first learn how to use a new service and thus keep on working inefficiently.

Three of the course directors would also appreciate if meetings could be done online to a certain extent. Their main concern with real-life meetings is that traveling takes up much time and that due to the travel times, these meetings are hard to organize, and many people still do not show to the meeting. Especially the experiences made during the Corona Pandemic show that online meetings are easier to schedule and that participants are more likely to show.

Some participants mentioned that they would appreciate if they had more time to focus on the quality of the study program, rather than doing inefficient administrative work or traveling to meetings.

4.1.2 Aligning expectations

Almost all interviewees face the challenge of aligning the expectations from the students and the company partners. Managing these different expectations and problems that occur with that is a challenge that three out of five interviewees prioritized. Some course directors mentioned during their interviews that a tool such as standard forms would be of great help in this case.

Especially tricky in aligning the expectations is the content and material that is thought to the students. The students still have to follow a general study curriculum in order to graduate, and not a purely tailored program that fits best for the partner company purposes. Managing the expectations of the two parties already poses a challenge to the course directors, but the course directors themselves also have certain expectations, especially regarding the quality of the study.

4.1.3 Administration

Another reoccurring challenge is the organization of the study, which involves creating a schedule, exams and other study-related things. According to most interviews, this is something that can take up more than half of their time.

Moreover, most course directors mentioned during the interviews are standards that are missing in their daily job. Especially standard forms that can be worked with online would be of great help. Three of the course directors also mentioned that they would like to have a self-service system for the students that makes it possible for the students to register their things directly online, without the need to hand it to an office where someone has to handle the information manually again.

Right now, many course directors use inefficient tools and methods to keep up with their administrative work, such as massive excel tables. The administrative part of the course directors job offers many opportunities for digital change.

4.1.4 Own interest in change

All of the course directors emphasized that their own interest is very important if a change is supposed to happen. They want to not only be taken into account, but they want to have a voice if something affects them and their daily job.

As course directors are their own boss, they also mostly care for their own needs. One interviewee said:

> "In my own study I am the king, I decide." (Interviewee A, 2020).

The own interest in a change thus also influences the willingness to contribute to co-design projects. As the course directors would be more willing to contribute if they can see how they are affected by it from the start.

However, the role of the own interest is not equally important for all course directors. Some course directors said that they would accept negative consequences if the overall goal of something is very positive and important.

4.1.5 Understanding the change

Adding to this is the role that understanding the reasons for a change plays when change is about to happen. For all interviewees understanding the reasons is important, as they as course directors are also responsible for the consequences.

> "If something happens and I cannot comprehend why and also cannot see how to come to an agreement, I will act against it." (Interviewee B, 2020)

However, it is not as extreme for all course directors. Another participant mentioned during the interview that the trust in the

colleagues is big enough to also trust them with decisions in different knowledge fields.

> "There are things that I do not understand, so I will rely on the expertise of those who have dealt with it." (Participant A, 2020)

The relationships between the different categories, as concluded from the interviews, can be seen in figure 1.

4.1.6 Conclusions from the Interviews

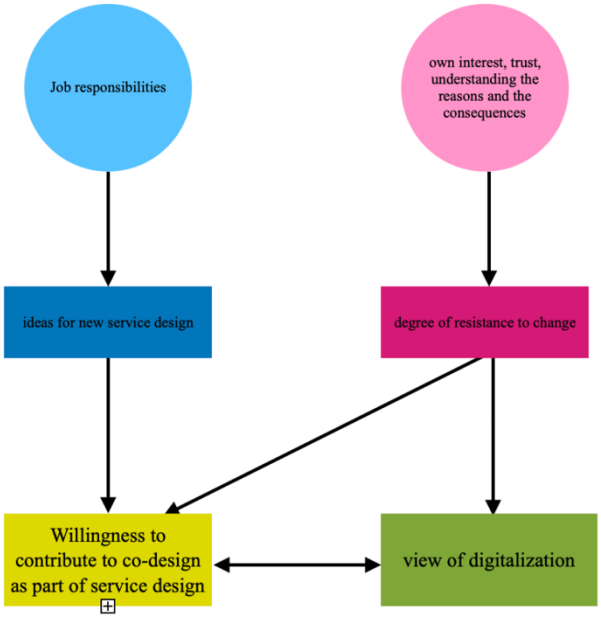

FIGURE 1: RELATIONS CONCLUDED FROM INTERVIEWS

As this research aims to find the relations between service design and digitalization, a framework (figure 1) has been created to show the influencing factors that became prominent during the interviews and the coding process. Especially interesting here are the influencing factors on digitalization, as digitalization is not a main priority for the course directors.

The perception of digitalization is influenced by the degree of resistance to change, and a mutual relationship exists between the digitalization and the willingness to contribute to co-design projects. If an individual's degree of resistance to change could be minimized, it could also have a positive effect on the view of digitalization. If an individual, in general, has a low tolerance for change, digitalization processes in the own work environment could possibly be perceived as negative.

The willingness to contribute is influenced by the course director's ideas, degree of resistance to change, and their perception of digitalization. However, the three influencing factors might differ in weight for each course director.

The relation between the view on digitalization and the willingness to contribute can be seen as being mutual. If an individual has a positive view on digitalization, they might want to foster innovation and change towards digitalization. If an individual is willing to participate in a co-design project, they will encounter different views and ideas from other stakeholders, which can influence the own perception of digitalization as well.

Adding to the influencing factors, the effects of co-design and possible design solutions on the course director's priorities have also been analyzed. In table 2 the direct and indirect positive effects that co-design can have on the main priorities; the possible effects of the three named solutions during the interviews, *self-service*, *standard forms*, and *online meetings*, have also been taken into account.

As can be seen, a co-design project can have positive effects on all of the main priorities of the course directors, as it takes all stakeholders into account. The proposed solutions during the interviews might be a good starting point, but with a co-design project and the involvement of all affected stakeholders more fitting solutions can be found.

4.1.7 View from the IT Department

This section summarizes the main findings and views that emerged during a meeting with the IT director.

Currently, the course directors and other employees who work at the universities main campus use barely any software, while smaller campuses sometimes do. There is no standard way of working with software and IT at the university. The base that already exists is a complex campus management system that requires training before use. This system offers many opportunities to integrate the software solutions that the course directors need. However, at the same time it is barley being used by course directors at the moment. The software that this system runs with can be used for any university, but might not be ideal for this specific university and its partner companies.

The software currently does not provide enough perceived advantages for course directors to be used. As some course directors said during the interviews, they often use inefficient and old processes rather than efficient and digital ones, because they do not have enough time to learn how to use new systems. There are no regulations that tell the course directors how they are supposed to do their job, which also implies that general announcements and introductions of new services from the IT department are not always recognized. Thus, the IT department's challenge will be to create a service that is easy to use without many explanations or training needed. Next to creating this new service, it will also be important to have the course directors on

Table 2: effects on customer priorities

x = direct positive effect i = indirect positive effect		possible way	possible solution		
		co-design	self-service	standard forms	online meetings
priorities for course directors	time	i	x	x	x
	aligning expectations	x	i	x	x
	administration	i	x	x	i
	satisfy students	x	x	i	i
	satisfy company partners	x	i	i	x
	own interest in change	x			
	understanding reasons for change	x			

board to provide feedback and input at different stages, and actively help to co-design.

5. DISCUSSION: OPPORTUNITIES FOR SERVICE DESIGN

In this section, opportunities and practical implications from service design towards service creation and digitalization will be discussed.

5.1 Digitalization opportunities

In this section, the opportunities that service design and digitalization offer for each other will be analyzed.

5.1.1 Opportunities of digitalization

Before mentioning the effects that service design can have on digitalization, it is worth noting the opportunities digitalization can have on the development of new services. Some of these opportunities offered by digitalization have especially been of value during the beginning of the Corona Virus Pandemic, as the participants of the interviews also mentioned. It was prohibited to travel, and social distancing became the most important thing. Due to new regulations to slow down the pandemic, travel bans were issued by many countries and municipalities worldwide.

With modern, digital services, it is possible to meet virtually, even if people physically are at different locations. The opportunity to meet online also offers the chance for many diverse people to take part in meetings. For most organizations that want to improve their services, it is likely that most of their customers will not live in the same area. With the use of new technologies, there is no need to travel, which often times restricts people to attend meetings. Long travel times and money spent on transportation are no longer necessary; thus, fewer people feel resistance towards attending a meeting. This way, focus group meetings with relevant stakeholders can be made more accessible. Another opportunity from the digitalization are services that can be used during such focus group meetings. There are tools available such as online voting platforms, giving every participant the chance to express their opinions.

5.1.2 Opportunities of service design

As can be seen, the digitalization offers opportunities for service design, but to answer the research question, it is relevant to find what opportunities service design projects offer for digitalization. Many of the prominent service design tools help to find the real problem of stakeholders. The identification of such problems and the realization that digital services can solve some problems is most likely the biggest opportunity for service design to offer digitalization. Often times, change does not happen if the need is not apparent or relevant enough, but with service design tools, such as customer journey maps, and focus group meetings, the problems become visible for all stakeholders.

Within service design projects, stakeholders with various backgrounds work together to find innovative solutions. The creative idea generation in service design projects can lead to innovative digital services. So, service design does not only bring attention to digitalization itself but also fosters innovation for digital services in this regard.

This kind of innovation and human-centered process can unfold customized digital services that are an excellent fit to specific situations, and not a one fits all solution. Due to specific and tailored digital solutions, the acceptance of digital services and digitalization, in general, can also benefit, as resistance to digitalization might be reduced.

5.2 Service design theory in practice

In this section, possible methods and tools will be explained that can be useful for the university's case example. As can be seen in table 2, with the right tools a co-design approach could possibly have positive effects on all proposed priorities of the course directors. During the interviews the course directors already mentioned ideas to solve their problems, such as student self-service systems and standard forms. These ideas might be a great start for discussion in a co-design project, but it should be strived for innovative solutions that satisfy all the stakeholders involved. What can also be learned from table 2 is that there is not a single solution to the problems and that possibly more than one new service design will be needed to create value for the course directors and other stakeholders.

The methods and tools presented in this section will show how to start a service design project best, taking into account the resistance to change factors and the opportunities given by digitalization, but also checking for the influence on the course director's priorities.

5.2.1 Co-design and resistance to change

According to Kotter and Schlesinger (1979, 2008), the factors for resistance to change are parochial self-interest, misunderstanding of the change and the consequences, the different assessment of a situation, and a low tolerance for change. Co-design activities in a service design project can help to reduce the risk of resistance to change, especially those risks concerned with understanding the change, the consequences, and understanding the overall situation.

Service design is a human-centered approach that takes all stakeholders affected by the service into account. It also gives the opportunity to reduce uncertainty and misunderstandings among the different stakeholders. When actively involving the different stakeholders in the design process, they can also make sure that their voices and concerns are heard and taken into account, which should also satisfy their self-interest to a certain extend.

During focus group meetings, every stakeholder group can raise their concerns or mention their ideas, which leads to creative exchange of information and opinions between the different stakeholder groups. An important aspect for the focus group meetings is also to include resisters to change, so that the design team can take their opinions into account.

Co-design can thus support to reduce the risk of resistance to change coming from self-interest, misunderstanding the change and the consequences, and assessing situations differently.

This is especially of importance for the university case, as the course directors all said that their own interest in a change is important for them to pursue change, and that they also would not accept change if they do not understand the reasons. Focus group meetings are a powerful way to satisfy these concerns. Another advantage of focus group meetings is that the expectations of the different stakeholders are all heard and can thus be aligned, as a common understanding is created.

5.2.2 Service design tools to use

Before starting the co-design process, the initiators of the new project for better services should take a few steps into account. The first step should be to distinguish between tools and methods. Tools are the things that are used, such as customer journey maps, while methods describe how to work with these tools (Stickdorn et al., 20, 18). Before starting a new project, the most important however is to find what the real problem is at the moment (Stickdorn et al. 2018).

5.2.2.1 Personas

Personas can be a creative tool in service design projects, to create a better feeling for the stakeholders that makes them feel less abstract (Stickdorn et al. 2018). Personas are fictional characters that are created based on research on the specific stakeholder group, as each persona represents a specific stakeholder group, but not every information used should be fictional (Pruitt & Grudin, 2003). Depending on how detailed the persona should be, different creative methods are available. One of the most common types of personas is a CV-like document, but also posters or collages are used (Pruitt & Grudin, 2003). However, if the need for a more detailed representation of a stakeholder group is there, personas can also be done in more creative ways, but they should always be backed up by appropriate data. Personas can also be a useful starting point for stakeholder maps (Smartsheet, 2020).

For the university case personas could be created not only for the course directors, but also for students and company partners. The course directors are the main stakeholder for the proposed service design, but for the course directors the priority is mainly on the students and the company partners. Creating personas could thus not only help to understand the stakeholder group of course directors in more depth, but also the people that are important for their daily work.

5.2.2.2 Customer journey map

To understand the real problem, it can be useful to create a customer journey map, as it can help to identify what the customer experience is like. It shows the touchpoints where problems occur and thus shows at which points new solutions are needed. For customer journey maps, it can be distinguished between the experience-centered and the product-centered journey map. The experience-centered journey map shows the experience that the customer is going through, while the product-centered journey map instead shows the touchpoints, which are the interactions between the customer and the service. However, both of these customer journey maps help the team members to visualize and understand the customer's experience.

It can also be useful to use the customer journey maps to find what other actors are involved in the experience (Stickdorn et al. 2018).

The customer journey maps, similar to the personas, should be done for all relevant stakeholders in the university case. If a priority of the course directors is to satisfy their students and company partners, customer journey maps should be done for all three of these stakeholder groups.

5.2.2.3 Stakeholder map

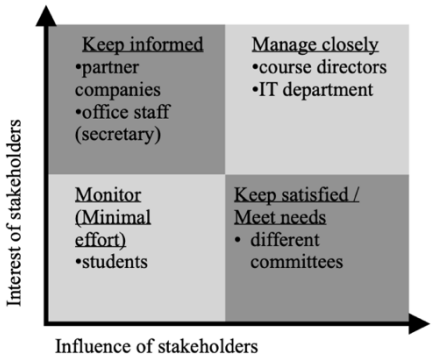

FIGURE 2: STAKEHOLDER MAP

It can be useful to create a stakeholder map, as a stakeholder map includes all the various stakeholder who are involved or affected by the service. If it is known who the stakeholders are, the different stakeholder's relationships can be understood (Stickdorn et al. 2018).

The stakeholder map is a visual tool to organize the different stakeholders according to predefined criteria. The criteria for organizing the stakeholders can vary for each project, but criteria such as interest or influence are common (Smartsheet, 2020). To find which criteria to use for the stakeholder map questions such as 'Who is most affected by the project?' and 'What is the motivation of the stakeholders?' should be asked.

A possible stakeholder map as an example for the University case can be seen in figure 2. The assumption for the stakeholder map in figure 2 is a new service for the course directors to create their schedules and plan classes in a digital service application. Affected by such a service would be all stakeholders who are involved with lectures, administration, and IT. The affected stakeholders are arranged after influence and interest that they have on the project. The more interest and influence a stakeholder group has, the more it should be involved in the design process. In the example of the university that would be the course directors and the IT department.

5.2.2.4 Prototype

A prototype can be seen as a staged experience (Stickdorn et al. 2018) used by designers to explore the user experience and find the optimal solution (Yu & Sangirogi, 2018). With the use of prototypes, the full user experience can be explored, including how they emotionally and cognitively engage with service elements (Yu & Sangiorgi, 2018). This can be done during different activities during the service design project, as it is precious for the designers to identify important aspects of the design (Stickdorn et al. 2018).

Especially software prototypes can have many different forms, as they could be mock-ups, rough drafts, or even working pieces of software. Prototypes are a way to explore the user experience that allows for failure and thus gives the opportunity to understand the experience better. As Yu and Sangiorgi (2018) found, prototypes can help to find user problems and design for better services that can optimize the use of resources.

Especially for the design team, useful information can be gained from prototypes, as reactions from different stakeholder groups can be seen. With these different responses to the prototype the design team can work on satisfying all affected stakeholders with the new design of a service.

5.2.3 Possible solution to University case

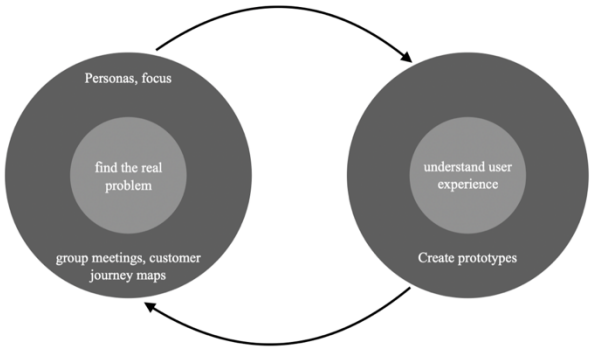

FIGURE 3: TOOLS

To come back to the service design project of the university, different solutions can be found. To give general guidance, it should be kept in mind that service design is a process that takes place as an iterative cycle. Based on this, it is recommended to start with finding the real problem, as can be seen in figure 3. The first step to finding the real problem has been done in this paper,

as the main users have been interviewed, and a first understanding of the problem has taken place. As some of the main problems for the course directors, alignment of expectations and administrative work have been found.

However, if the end goal is to create a quality service for the course directors, a basic understanding will not be enough to satisfy them and to create value. To better understand the problem in its holistic view, different tools can be used. The first tool that can be used is the creation of personas of the course directors, but also the students and company partners. This offers a creative way to understand these stakeholder groups better as a whole. The next tool and one of the most important ones to use are focus group meetings. These meetings should be done with all relevant and affected stakeholders. Stakeholders who are involved in a co-design project should thus keep in mind that different people may need different methods to illustrate their viewpoints; it should be strived to find common ground for different stakeholders (Kankainen et al., 2012).

If all these different people are given the chance for creative exchange and discussion, the current problems for all relevant stakeholders will become prominent and can be discussed and understood in detail. Creative exchange can be done with storytelling, paper and pen or even other creative ways such as building with Lego blocks.

Based on the insights on the current problems, the design team can then start to build prototypes. As the university already has a software in place that offers many opportunities for the mentioned problems, this software can be used as a base for the prototypes. Based on these prototypes and earlier experiences with the current software, insights on the user's interaction with the service can be gained.

With the use of the gained insights, from the focus group meetings and the prototype reactions, customer journey maps can be generated, as they can help to find the exact place where a specific problem occurs.

This cycle should be used until the identified problems are solved and a solution that creates value for the stakeholders has been found.

6. IMPLICATIONS

In this segment, the theoretical and practical relevance and implications of this research will be presented.

6.1 Theoretical Implications

Service design and digitalization are both relatively new concepts in academic literature, and thus there are not many academic articles to be found on the various aspects of their intersection. As literature is still very limited and so far, has mostly focused on defining service design rather than actually using service design to create better digital services in practice, this research paper will pose a relevant contribution to the service design literature. As this research is focusing on using service design to create a better digital service at a specific case example, it shows new opportunities that service design might have in practice. Some academic literature has already focused on applying service design in healthcare institutions. However, there was not much to be found on the use of service design methods being applied to educational institutions.

This paper researched the opportunities that service design offers to digitalization and digital service creation for stakeholders. The intersection between the digitalization and service design deserves more attention, as both subjects have been expanding over the past, but have not sufficiently been studied in relation to each other. In doing so, it offers new insights on the intersection of service design and digitalization, but also raises questions in regards to generalizability that give reason for future research in this field.

6.2 Practical Implications

This bachelor thesis is of high practical relevance, especially to the university of the aforementioned case, as their case is used as an example in this thesis to elaborate on how service design concepts can help to create improved services for customers. Also highlighted is the importance of co-design in this case example.

A framework with possible first steps to take has been created and can give guidance when executing the service design project in practice. These results might help the university to create a satisfying service for their relevant stakeholders.

With the example of this case, other organizations, especially educational institutes, can also profit from the results, as they might be applicable to many more situations where services need to be improved. The thesis might be even more relevant to German organizations, or others that have not started to transform into the digital age yet and find themselves struggling with not only implementing digitalization at their organization, but also with using it to make processes easier and slimmer, to create better value for the stakeholders.

7. CONCLUSION

This qualitative research study examined the relations between service design and the influence on digitalization and better service creation for stakeholders. Throughout this paper, the different tools that service design offers were discussed and put into context of a university as a case example. As the main question was to find how service design can lead to better service creation, different influential factors were analyzed. As mentioned in the paper multiple times, service design is a human-centered approach that offers the unique advantage of taking into account all affected stakeholders when designing a service. Service design provides different tools to involve all the stakeholders, reach common ground, and strive for innovation together.

To see how this theory can work in practice, a case example was used to describe, with the use of real customer needs, what service design tools could be used to find innovative solutions to these specific problems. For this case example interviews with multiple course directors were conducted and analyzed, with the purpose of identifying the most common customer needs of this stakeholder group. To find a possible solution to the university case problem, different service design tools were introduced.

The service design tools were also checked for resistance to change factors, to ensure that the stakeholders are open for change and more likely to accept a new service design. As service design methods have already been discussed in academic literature in recent years, a particular interest of this paper is also on the effects that service design can have on digitalization.

The results from this research propose that there is a mutual relationship between digitalization and service design, as they can profit from each other. With the human-centered approach of service design and the involvement of all stakeholders, including IT specialists, new digital service solutions can be discovered that offer value to stakeholders. Service design has been an innovative approach from the start, but especially significant is how the use of service design and digitalization can lead to innovative and creative service solutions. With the connection to resistance to change literature a limiting variable on these innovative solutions has also been taken into account and analyzed for, with the end goal of providing some guidelines for the first steps of a service design project.

This paper provides a possible solution to the university case, which focuses especially on the beginning stages of a service design project and can thus be used for guidance when starting a project.

7.1 limitations and future research

This study gives a first impression on how service design can lead to improved service creation for customers within the dynamics of digitalization, but a more quantitative study is needed to prove the points made in this paper.

The first limiting factor for this paper is the small sample size. To be able to make more generalizable assumptions and statements, a study with a bigger sample size is needed. This could also include course directors from multiple universities, to find more about problems and possible service innovations that could be relevant for the whole secondary education sector.

To test the recommended steps for the creation of a new service, a follow-up paper to this one would be needed to explore the effects that service design had on service creation and digitalization. For this comparison to be feasible, a study with a larger time frame would be needed. In such a study, more factors to a service design project could become relevant, and tools suggested by service design and resistance to change literature could be tested. Such a tool could be focus group meetings. This would also provide an answer the proposed research question from this paper, as evidence needs to be found to prove the assumptions.

Another limitation is the Covid-19 pandemic, which did not allow for in person interviews. For future research, it would be beneficial to conduct a study with a longer time frame and use different methods for data collection, such as observation, focus group meetings, and interviews.

As this research paper focuses on a German university, the results should not be generalized, as the country and region-specific factors that have influenced this paper might differ. For generalization of the results, a bigger study with an international scope and a country/region comparison with the use of a wider variety of data collection methods would be needed. Especially for the resistance to change factors, culture might have different effects in different regions.

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10. APPENDIX

10.1 Appendix A: Interviews

10.1.1 Interview first findings

Table 1: main findings from Interviews

Interview	Experience as course director	Main challenges	ideas on how to make the Job easier	willing to contribute to co-design	role of own interest for change	role of trust for change	role of understanding the change for change	view of digitalization
A	currently working in position of course director	- satisfying students and company partners (meeting different expectations) - organizing	- online meetings - alignment of processes within the university	yes	important, but depends on the situation	trust necessary to make change happen	very important as I'm responsible —> in complex situations trust in colleagues	positive
B	has worked as course director in the recent past	- aligning expectations - administration	- CRM system - Self-service system - alignment of scheduling systems	yes	depends, profit of all should be important	not necessarily important	very important	generally positive, but can be negative if lock-in occurs
C	has worked as course director in the recent past	- hard to know what is important when new in the job - communication with main campus - data protection - use of digital devices during lectures	- student self-service system - online communication for announcements	yes	important	n.a.	important to see the alignment with the overall goal	positive, but concerns about use of digital devices
D	currently working in position of course director	- alignment of expectations with company partners - pitch in when necessary - time	- standard processes for routine things - alignment and standardization of scheduling - standard forms that can be handled online - online meetings	yes	important	n.a.	important	positive
E	currently working in position of course director	- quality management - time - keeping up to date with research	- standard processes - automating routine processes - standard forms that can be used online - self-service for students - online meetings	yes	important	n.a.	important	positive

10.1.2 Contacted persons for interviews

Table 1: Overview of contacted persons

Person	Way of contact	Answered	Interested	Date	Type of Interview	Duration	Info
1	E-mail	Yes	No	-	-	-	course director
2	E-mail	Yes	No	-	-	-	course director
3	E-mail	Yes	Yes	14.05.2020 2:00 pm	Zoom	36 min. 58 sec.	course director
4	E-mail	Yes	Yes	19.05.2020 2:30 pm	Skype	31 min. 42 sec.	course director
5	E-mail	Yes	Yes	28.05.2020 10:00 am	Zoom	35 min. 31 sec.	course director
6	E-mail	Yes	Yes	29.05.2020 10:00 am	Zoom	26 min. 54 sec.	course director
7	E-mail	Yes	Yes	29.05.2020 3:00 pm	Phone	24 min. 54 sec.	course director
8	E-mail	Yes	Yes	03.06.2020 10:00 am	BigBluebutton	43 min. 27 sec.	IT department

10.1.3 Interview guide

Interview template

Interview questions I want to ask to the course directors (the main customers of the new service)

Customer needs:

1. What are your core duties in your daily job?
2. What is the overall purpose/goal of your job?
    1. What problems are common?
        1. Are there already good solutions for these problems?
            1. If yes, what kinds
            2. If not, what do you miss
3. Do you get support if you have problems in your daily job / do you know where to get help?
    1. From whom?
    2. What kind of support?

Co-design:

1. What would help you to make your job easier? (As in digital services)
    1. Are there things in your job that take a lot of time due to complicated and bureaucratic processes?
        1. If yes, can you give examples
    2. Do you already have ideas how these things can be made easier for you?
    3. Would you get involved if digital processes that concern you are changed?
        1. If no, what might be reasons for that
        2. If yes, what are/were reasons for that
            1. If willing to but didn't do it so far, what were reasons why it didn't happen in the past?

Resistance to change:

1. In what way do you see digital process changes that concern your job?
    1. Why?
        1. What role does your own interest play in this
        2. Do you have trust in your colleagues?
        3. Is it important to you to understand why changes are made?
    2. What would you want to see in the process of digital change?
        1. What do you miss in the process of change right now?
        2. Would you like to get involved more (that they take your opinion into account)?
2. Do you see digital transformation as a force for good?

10.1.4 Interview transcripts

10.1.4.1 transcript person A

-removed due to anonymity of participant -

10.1.4.2 Interview transcript person B

- removed due to anonymity of participant -

10.1.4.3 Interview transcript person C

- removed due to anonymity of participant -

10.1.4.4 Interview transcript person D

- removed due to anonymity of participant -

10.1.4.5 Interview transcript person E

- removed due to anonymity of participant -