## Maija Hakala

# Retaining Job Applicants and Creating Value to Recruitment Processes

Information Behavior Theory and Service Design Perspective

# **ÅBO AKADEMI UNIVERSITY – Faculty of Social Sciences, Business, and Economics**

Abstract for master's thesis

Subject: Governance of Digitalization

Writer: Maija Hakala

Title: Retaining Job Applicants and Creating Value to Recruitment Processes Through

Information Behavior and Service Design

Supervisor: Shahrokh Nikou Supervisor: Gunilla Widén

Abstract:

The digitalization of business processes has taken place expeditiously in the modern economy, especially over the last decade. In order for companies to be able to keep up with this change, their services are required to be assessed and developed accordingly to meet the needs of the modern day's demanding service users. This fourth industrial revolution has shaped the methods of service provision alongside the expectations of service users. Opportunities brought by digitalization include faster processes, which are enabled by new technologies. Open and collaborative innovation ensures these opportunities.

The aim of this thesis is to understand the current digital recruitment process at The Adecco Group and to identify the gaps in the process from both the recruitment and applicants' points of view. A conceptual framework has been developed to create a comprehensive understanding of the methods and actions required to reach an extensive customer understanding with the theories of information seeking, information retrieval, and service design in a digital environment focused especially on recruitment. These theories fill a research gap which has not been fulfilled before.

This thesis has been conducted as a qualitative study. Through the conducted interviews, the findings provide insights into the current recruitment process and pinpoint the aspects in need of development. Digitalization has shaped recruitment as a process, making it more agile and flexible than ever before. The applicants' need for information is now met before the applicants themselves need to search for information themselves.

Keywords: Digitalization, Information Behavior, Recruitment, Service Design

Date: 02.05.2022 Number of pages: 61

### TABLE OF CONTENTS

TABLE OF CONTENTS	2
1. INTRODUCTION	4
1.1 Area of research	4
1.2 Research gap	7
1.3 Research objectives	
1.4 Research questions	
1.5 Expected results	
1.6 Limitations	
1.7 Structure of the thesis	
2. LITERATURE REVIEW	
2.1 Information Behavior and Service Design	
2.2 Digitalization	
2.2.1 Challenges	12
2.2.2 Benefits	
2.3 Service design	15
2.4 Information behavior	
2.4.1 Information seeking	20
3. CONCEPTUAL FRAMEWORK	23
3.1 Motivation	23
3.2 Conceptual model	
4. RESEARCH METHODOLOGY	26
4.1 Respondents	26
4.3 Formulation of questions	
4.4 Questions	27
5. DATA ANALYSIS	30
5.1 Employee background	
5.2 Current process	
5.2.1 Description and tools	
5.2.2 Employee viewpoints	
5.2.3 Value creation	
5.2.4 Changes through COVID-19	
5.3 Applicant viewpoints 5.3.1 Current process.	
5.3.2 Why Adecco Finland / Sihti?	
5.3.3 Differing viewpoints	
5.3.4 Questions regarding practicalities	
5.4 Best functions	
5.5 Areas of development	
5.5.1 Adjusting ways of working	
5.5.2 Functions requiring development	46
6. DISCUSSION	48
7. CONCLUSION	51
7.1 Research questions	51
7.2 Theoretical contributions	
7.3 Practical implications	
7.4 Limitations and Future Research	54
REFERENCES	55
TABLES AND FIGURES	

Table 1 Interview questions	28
Figure 1. Opportunities brought by digitalization (Almeida & Monteiro, 2020)	4
Figure 2. Thesis framework	
Figure 3. Digitalization challenges (Ayhan, 2017; Parviainen et al., 2017)	12
Figure 4. Digitalization benefits (Ayhan, 2017; Trischler & Westman Trischler, 2021)	14
Figure 5. Double diamond diagram (British Design Council, 2005)	17
Figure 6. Information searching strategies (Wilson, 1999)	20
Figure 7. Basis for development of a digitalized recruitment process (Bawden, 2007; Ingwersen, 1996;	,
Zomerdijk & Voss, 2010)	24
Figure 8. Process of forming interview questions	27
Figure 9. Current application process (simplified).	30
Figure 10. Applicants' view of the digital recruitment process (simplified)	38

#### 1. INTRODUCTION

#### 1.1 Area of research

For the past decade, digitalization has proceeded to shape the ways of working more than ever. New tools are replacing manual work and changing the customs of workplaces, making processes efficient and cost-effective. The change has also been called the fourth industrial revolution (Harteis, 2018). Digitalization has forced businesses to re-evaluate their methods and processes, which has provided new opportunities (Figure 1) but also caused issues due to rapidly changing technological services (Lerch and Gotsch, 2015).

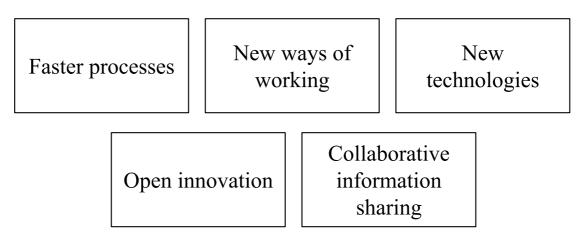


Figure 1. Opportunities brought by digitalization (Almeida & Monteiro, 2020)

Opportunities brought by digitalization include faster processes, which are enabled by modern technologies. Open and collaborative innovation ensures these opportunities. Other examples are new, more efficient ways of working, as well as collaborative information sharing (Almeida & Monteiro, 2020). The challenges include concepts such as expectations for new skills, cybersecurity, and privacy issues. (Davidsson et al., 2016)

Digitalization has become one of the greatest factors to shape the modern working world. The concept of digitalization is about taking advantage of digital tools in businesses which can profit from enhanced processes provided by digitalization. Processes and business models have been transformed so that new revenue and value-

producing possibilities are created. The previously existed methods might not have been replaced, but at least enhanced with the digital tools (Harteis, 2018; Avhan, 2017).

The current talent shortage has resulted in fewer job applicants, as the labor market is in a tight setting at the moment and the field of recruitment is requiring solutions. Therefore, the variety of tools used in recruitment could be expanded, as diversity is the key (ManpowerGroup, 2022). As digitalization affects every aspect of businesses, human resources and recruitment, in particular, are in the front line. LinkedIn, among other services, has made recruiters' jobs more efficient, but there is also an abundance of other services which can only make their jobs more difficult. Therefore, it is important to understand when to adopt new technologies, and when to decline the opportunity (Parviainen et al., 2017).

This thesis is focused on enhancing applicant retention in the digitalized recruitment process through the lens of information behavior theory and the service design perspective. The thesis examines how digitalization has impacted individuals' information behavior in the information era, and in an information society.

This thesis is conducted for the world's largest recruitment and human resources operator, The Adecco Group (hereinafter Adecco). The focus is specifically on the two brands which it has operating in Finland, Adecco Finland and Rekrytointipalvelu Sihti (hereafter Sihti) and the short-term jobs they offer. Adecco Finland operates generally in every field, whereas Sihti is especially focused on the fields of construction and mining (Adecco, 2021). This thesis will investigate how Adecco is currently dealing with digitalization and where the specific issue of applicant retention lies.

The current state of recruitment and human resources is problematic (Bhagia, 2022). Businesses around the country are facing labor shortages, which results in even higher value on the current employees and applicants who can be attracted and retained within an organization. Therefore, it is currently even more important than ever to stand out from the competition (Manpower Group, 2022). This thesis seeks to determine whether there are digital solutions which Adecco is already using or is lacking, and if so, how this situation could be addressed.

Theories such as information retrieval, information seeking and the diverse ways information is being used provide invaluable insights into how to enhance the current processes in an organization (Al-Samarraie et al, 2017). How potential applicants locate Adecco's websites, how they interact and how they perceive the path has a notable effect on the final number of applicants, as the process of applying is required to be done online. Information behavior seeks to understand what an individual's need for information is and how the search processes, information seeking, or avoidance are carried out during the need of applying for a job (Ford, 2015). It determines the ways people conduct and handle information in different contexts.

The discovery of the most effective methods for a digitalized recruitment process is conducted through a deeper understanding of the methods of transforming information to the final use and purpose, to serve the needs of information users (Wilson, 1999). Service design provides assistance to ease the process of development of digitalized recruitment (Almqvist, 2018). The service design principles which should work flawlessly in this context are a user-centered viewpoint and evidencing. These aspects provide experiences from users' points of view and visualization of non-material services presented through concrete objects if the current service is designed to serve in an experience and customer-centric setting (Zomerdiik & Voss, 2010).

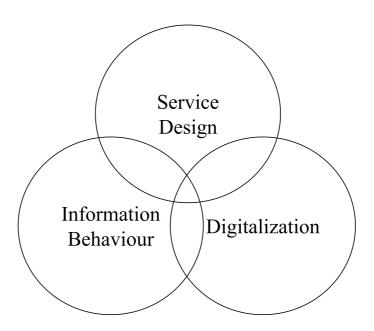


Figure 2. Thesis framework

To create a comprehensive perspective, a triangle consisting of service design, information behavior and digitalization has been developed to support this thesis (Figure 2). The combination of these three concepts creates a perspective of consumer understanding which is cost-effective in the long run. Resources are not needed as much as previously to find potential clients and applicants, as the new ways of working make the processes easy for all stakeholders. When functions operate as efficiently as they should, the well-being of the organization's employees is also at a higher level, leading to a committed and dedicated workforce, and thus value is generated for the company (Hamidi, Shams & Khajeheian, 2019).

#### 1.2 Research gap

Despite some research having been conducted regarding the connection between digitalization, information behavior and service design, there remains a greater need for examination of the effect of all three concepts on the development of processes in a digital environment. In today's world, service design is closely attached to digitalization, as the two concepts support each other and make themselves available and enhanced. (Meyer, 2020) Therefore, this thesis seeks to explore the possibilities

digitalization, information behavior and service design are able to create for digital recruitment processes and applicant retention.

#### 1.3 Research objectives

This thesis seeks to understand the current digital recruitment process at Adecco and to identify the gaps in the process from both the recruitment and applicants' points of view. The importance of service design and information behavior is assessed and studied from the viewpoint of how they can affect applicants' experiences while proceeding through the application process.

This thesis seeks to answer how information seeking, digitalization and service design can together create a comprehensive understanding and perception of ideal methods of applicant retention in the field of recruitment. In addition, this thesis aims to understand whether the current challenges are based on digitalization and technology, or if they are more about mindsets and behavior in the workforce, or perhaps both.

#### 1.4 Research questions

Based on the thesis objectives, four research questions have been formed to answer the objectives of this thesis in addition to the main research question, "How can applicants be retained, and value be created through information behavior and service design?"

The following are the research questions for this study:

- How has digitalization shaped the activities of recruitment?
- How satisfying do the applicants find the current application process?
- How do recruiters need to change their behavior to efficiently work in a digital space?
- What are the key advantage/disadvantage points for applicants in the digital application process?

#### 1.5 Expected results

This thesis is expected to provide insights into the current recruiting process and the application funnel the applicants undergo to become recruited, and later continue applying through Adecco for future jobs. The findings of this thesis provide new insights and knowledge of any weak spots in the process, as well as the development ideas with the guidance of service design and information behavior concepts and practices to make the experience more pleasant for the applicants, as well as retaining them within the organization.

#### 1.6 Limitations

During the time this thesis was conducted, the rapid changes in digitalization especially brought by COVID-19 were still in a transition period. This limits the results for later application regarding applicant adaptation to new digital tools. This thesis focuses on the application process of one organization with insights from recruiters and sales personnel working on recruitment-related tasks, but the insights concerning applicants and their viewpoints were second-hand information.

This thesis was conducted as a case study for a company, which could have limited the publication of all discovered results. In addition, it was conducted while being employed by Adecco.

#### 1.7 Structure of the thesis

This study begins with an introduction as to how the thesis is formed, and what the overall aims and goals are. The introduction also includes the limitations of the study. It familiarizes the reader with the topic and content of the thesis through the background of the content.

In the second chapter, the literature and main concepts are introduced and discussed further. Concepts of customer retention, value creation, information behavior and service design are at the center of this chapter. Also, the field of recruitment is addressed as the domain of this thesis. Aspects such as how value is measured when discussing customer retention and what insights information behavior and service design can provide in this situation are explained.

The third chapter has its focus on the theoretical framework of the thesis study. It includes the main theories of information behavior, such as information seeking, information retrieval and navigators and explorers. The methods of service design and recruitment processes are discussed as well, and the relation between the frameworks is presented.

Research methods and approach for the study are discussed in the fourth chapter. The validations of the chosen methods are explained. How the qualitative research has been conducted, including the interviews of different parties and how more insights have been found through data analysis are presented. Also, the motivation behind the chosen methods is explained.

In the fifth chapter, the analysis of the results is conducted.

The sixth chapter discusses the results correlating to previous research. Also, a theoretical framework is considered when reviewing the results and compared in detail.

In the final chapter, the conclusions that follow from the study are presented. Furthermore, the key findings are discussed, including the possible future areas of research related to the thesis study.

#### 2. LITERATURE REVIEW

This chapter provides relevant background information for digitalization and service design and a theoretical base for information behavior. Research regarding the relation of information behavior and service design has been conducted, but studies combining digitalization, information behavior and service design do not yet exist, despite their shared contexts and goals.

#### 2.1 Information Behavior and Service Design

The relationship between information behavior and service design in business development processes has been studied before in a general setting. For example, Harviainen and Kumpulainen (2019) focused their study on the general viewpoint of their topic "Service design for information searching". They discussed how service design can be practiced in information retrieval and search processes and how they could be improved. They discovered that companies, which consider themselves as search-oriented were found not to be customer-oriented. These companies and their service processes were based on the goal of high quantity, whereas the design viewpoint should be focused on qualitative methods to achieve customer satisfaction.

Service design literature and information behavior concepts support each other. Both theories aim to understand customer or user behavior, as information behaviour aims to recognize the reasons why people act in a certain way (Chowdhury & Chowdhury, 2011). Furthermore, the goal of service design is to understand what in the produced service results in certain behavior, and if that behavior can be changed through developing the user path (Morelli & Simeone, 2021).

Huvila et al. (2019) discussed in their panel how information activities can be enhanced for design and development purposes. They argued that information behavior is still facing challenges when aiming to inform design processes. There is a specific need to develop services, which function in a way that makes the information retrieval efficient while ensuring to meet the expectations and behavioral patterns of users. The retrieved

information is required to be in a format which is easily accessible, as well as easily understood based on the context they are viewed in.

Design methods are enabled by information and knowledge. Bertola and Teixeira (2003) considered design methods to be a "knowledge agent", which can assist in integrating knowledge to organizations and acquiring competitive advantage through enhanced processes. Different design methods, including service design, can be applied, and merged to create or develop infrastructures to serve the constantly evolving needs of stakeholders. Especially important in the design process was discovered to be the adaptation to the changing context for the expected design process, to be adjustable to divergent aspects in different business operations.

#### 2.2 Digitalization

Digitalization as a concept means the use of digital tools and technologies to adjust or modify a business model (Hagberg et al. 2016). This generally means the digital transformation of economy enabled by digital innovations, to enhance processes and create new competitive advantage for organizations. One of its purposes is to create value by automation and structured data, improve processes and the company culture to stay competitive and relevant (Lerch & Gotsch, 2015).

#### 2.2.1 Challenges

Digital transformation has brought multiple challenges, which can make the adjustment to the new working methods a struggle (Ayhan, 2017). Carrying out a significant business transformation to stay relevant is not effortless and simple, but vital for the survival of the business (Harteis, 2018). Examples of the digital transformation challenges are listed in Figure 3.

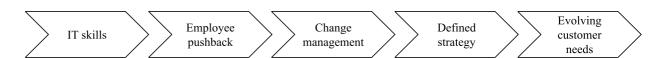


Figure 3. Digitalization challenges (Ayhan, 2017; Parviainen et al., 2017)

IT skill shortage is one of the fundamental issues retaining an organization from pursuing or successful implantation of a digital transformation, which has an effect to the entire organization. This includes both IT professionals, as well as other employees. A dedicated IT team is required to implement a demanding digitalization process, which can consider concepts such as cybersecurity, data analytics and enterprise architecture. (Ayhan, 2017)

Digitalization is a significant change in employees' work environment, which can lead to concerns regarding ways of working and changes in responsibilities, among other matters. This can catalyze employees resisting the digital transformation and preferring the old ways of working, also known as change resistance. (Parviainen et al., 2017) It is directly associated with previously mentioned IT skill shortage. If there is a possibility for the IT team not being able to carry out a digital transformation accordingly, employees working in tasks unrelated to IT are affected. (Ayhan, 2017)

Lack of change management on an organizational level or outdated structures can delay and disrupt the progress of digitalization. Previously mentioned change resistance can make a setting such as this seem impossible. (Parviainen et al., 2017) Therefore, a clear strategy to implement the transformation process is in place. If the goals and priorities for the project have not been set, a project can be exceedingly difficult to execute. Inconsistent aims and goals regarding the whole organization can create an unclear clutter of project parts, which transforms the work environment and has an impact on employee satisfaction rate. (Vartolomei & Avasilcai, 2019)

Customers' needs and expectations evolve throughout years and decades, now faster than ever before. If an organization is not able to follow through on digital transformation, it is not able to provide what is expected of it in the modern markets. (Trischler & Westman Trischler, 2021) A well-managed organization is able to maintain a high level of customer satisfaction through rapid changes of processes, as the employees are motivated and strive to work towards common goals. (Mykhailichenko et al., 2021)

When focusing on digitalization in recruitment in particular, there are multiple challenges to be addressed. The main issue is the lack of IT skills, not being able to benefit from the digital recruitment tools and possibilities available. The received applications might be irrelevant, the applicants might be under- or overqualified or there is deficiency of suitable applicants or applications among those received. (Ayhan, 2017; Trischler & Westman Trischler, 2021)

#### 2.2.2 Benefits

Digitalization has a vast number of benefits when it is successfully applied to a company. Vartolomei and Avasilcai (2019) and Trischler and Westman Trischler (2021) listed some of the most notable gains digital transformation can bring (Figure 4). Neumeier, Wolf, and Oesterle (2017) discussed that the most significant impact of digitalization takes place among the customers and business processes.

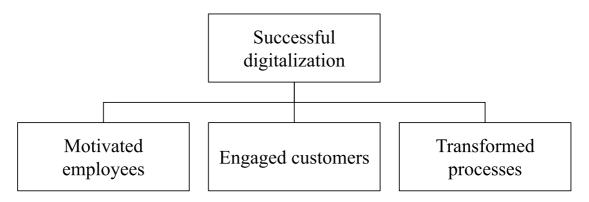


Figure 4. Digitalization benefits (Ayhan, 2017; Trischler & Westman Trischler, 2021)

Communication and ways of working have become mobilized, resulting in flexibility in everyday actions. Efficient mobility provides the freedom to the employees to work from where they want, in a time best suitable for them. Efficiency and flexibility result in highly motivated employees, which then improves employee retention. (Trischler & Westman Trischler, 2021)

Customers are more engaged due to the improved customer experience digitalization and its tools have made possible. Services are faster and more efficient, and therefore also more likely to answer to the needs and expectations of customers. (Trischler & Westman Trischler, 2021)

As processes are transformed to become more efficient and faster, time-consuming administrative tasks have been digitized or simplified. This means higher productivity in activities which have higher investment rate. Workflows and information sharing is enhanced. Decision-making takes less time as information retrieval is made easy and efficient. (Ayhan, 2017)

#### 2.3 Service design

Service design provides the tools to make business processes efficient and pleasant to the user. The service offered by an organization should place the experience to the very core (Zomerdijk & Voss, 2010). As Pullman and Gross (2004) discussed, "an experience occurs when a customer has any sensation or acquires knowledge from some level of interaction with the elements of a context created by a service provider".

Service design focuses on creating solutions for the users which ensure their retention on the business. When conducting a service design project, there are specific target groups which should be included in the process. Users are required to be in the center of the development. How the customers perceive the service, what are their expectations and requirements are the main questions to be asked. (Stickdorn et al., 2018) All stakeholders should be included and involved in the design process, ensuring co-creation and taking into account all possible requirements for the service. It should be visualized into a sequence of different interrelated actions. Non-material services should be presented through concrete objects. Finally, the whole environment of services provided should be taken into consideration. (Harviainen & Kumpulainen, 2019)

Service design is partially based on P:s. In this case, there are four of them (Watts, 2017):

- 1. People
- 2. Products
- 3. Partners

#### 4. Processes

People need to be in the center of the development in order to make it succeed. Service provider, as well as the service users/customers, need to be included. Meaning, that the customer will feel content about the service they will receive, in relation to its costs. (Watts, 2017)

Product is about the service provided for customers, including the technology which makes it possible. The service infrastructure, environment, data structures and interfaces, for example, are the factors that make the service work. (Watts, 2017; Zomerdijk & Voss, 2010)

Regarding partners and delivering IT services, outsourcing at least a part of the development has become a norm. No matter if the outsourced service is even the tiniest part of the development process, a well-working relationship between partners and the service-providing business needs to be there. IOS (outsourcing of services) happens typically in Asian countries, such as India, China, and the Philippines. (Kedia & Lahiri, 2007)

Processes include all the roles and responsibilities as well as tools and management controls that are needed to carry out and deliver the needed goods. Some of the processes can be automated, some on the other hand can be manual, depending on the nature of the process. Requirement of today is that old processes in the organization will be updated to respond to the needs of newly established service design plans and solutions. (Watts, 2017)

According to Lammi et al. (2007), user involvement especially in innovation processes has been notable for the past few decades. According to their study, the main issue happens to be tacit knowledge, also known as implicit knowledge. Tacit knowledge is non-verbal knowledge, which can be attained through experiences or intuition, for example. Tacit knowledge is difficult to pass on to others verbally, as it might require doing a certain action, such as sewing a button or training a dog (Bryson, 2011). This issue can be tackled by examining carefully user understanding and becoming

acquainted with the consumers' behavior better. This can happen by making the communication and development process between customers and the organization deeper and more frequent. (Bessick & Naicker, 2013)

Need analysis can assist in service design to figure out the needs of customers as well as their identity and characteristics. It helps managers and leaders to develop a service design process that would develop the value proposition, as well as help them to find alternative services. After developing such understanding, values should be rethought and checked on what kind of value is given to customers and redefine the overall goal of the organization as well as the mission, if necessary (Zomerdijk & Voss, 2010).

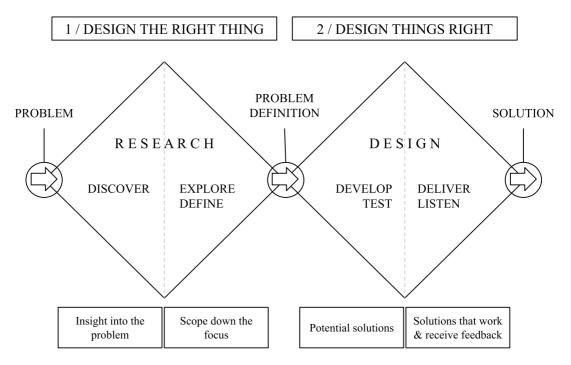


Figure 5. Double diamond diagram (British Design Council, 2005)

The double diamond framework (Figure 5) provides a comprehensive and clear representation of what the design process should look like. It has four elements: discover, define, develop, and deliver. All these steps are required to be carried out to proceed with the process. The two diamonds provide a process of exploring a problem, which will make a different way of thinking possible than what the service designer has been used to before. It is not a linear process, but sometimes it is necessary to go back

until you are confident that all the elements have been taken into consideration. The double diamond helps to evaluate ideas that are still in a very early stage of development, as feedback is vital in order to create a well-functioning service. (British Design Council, 2005; Tschimmel, 2012)

#### 2.4 Information behavior

Information behavior seeks to understand what an individual's need for information is and how the search processes, information seeking, or avoidance are carried out, for instance. It determines the ways people conduct and handle information in different contexts. The reason to study information behavior is to find a deeper understanding of the methods of transforming information to its final use and purpose. (Wilson, 1999)

Context is an especially important, but difficult factor. According to Mervyn and Allen (2012), context can be "a persistent and thorny problem in the field of information behaviour". It is often conceptualised as when and where the behavior occurs. What makes the context slightly difficult is the fact that it has three dimensions – spatial, social, and temporal. The spatial dimension is usually about the physical environment where the information behavior takes place, the social dimension can be about the societal norms, and the temporal dimension consists of time, such as how long a certain information behavior process takes time. (Chouinard & Milley, 2016) This thesis focuses mainly on the spatial dimension.

It is essential to remember that context is not the same as a situation. The situation is considered to be the circumstances where the need for information originates. Context, on the other hand, consists of the larger picture where the information seeker/user operates. Usually, it involves an information system that has been created to serve such or similar needs, to provide any potential information. (Absar et al., 2014)

Information behavior is always embedded in some sort of space. According to Savolainen (2006), there are three different spatial approaches: objectifying, realistic-pragmatic and perspectivist approach. Focus is especially on the objectifying and perspectivist approaches in this thesis. The objectifying approach considers the spatial

factors as something close to entities such as objects, which has the primary goal of holding down the information seeking as a part of an information behavior process. Therefore, people conducting information behavioral models have to accustom their actions to respond to the existing structures and systems. (Wilson, 1999)

The perspectivist approach on the other hand is critical towards the before mentioned objectifying approach. It accentuates the perception of subjective and situation constrained spatial factors and wants to find out how people subjectively estimate and determine how important different information sources are. (McGuire, 1989)

When applying these two approaches in the development of information services, it is recommended to start with the perspectivist approach. As it focuses on individuals seeing things from their perspectives, it is taken into account in the service design stage – when a user experience (and the user interface) is being designed and developed. As users see services based on their views and expectations, it is vital to take this factor into account in the development stage. (Zomerdijk & Voss, 2010)

Another point of view where the perceptions approach could be used is when the target groups of any information service are being defined and chosen. This is what then leads to the before said user experience, and how that should be planned. As there are clearly defined user segments, which have an equivalent way of viewing and perceiving the service, the development of the service itself is easier to start. (Wilson, 1999; Dinet, 2014)

Information services tend to be user-centric, and therefore it is vital to also remember the objectifying approach. As the services provided to the users today mostly follow the same wireframes, customer journeys and other related concepts and factors, it is important to consider the ways the possible service users will perceive the information service in progress. (Chowdhury, 2009)

If the service designers would like to try out any new, innovative actions or functions in the service, it would be important to remember to first give a test target group a try on it to see how they view it. If a service causes more confusion than gives answers or relief, it will not become a hit among greater audiences, if even among the smaller ones. (Cook et al, 2002)

#### 2.4.1 Information seeking

Information seeking is a process used to find required documents or other forms of information. The aim is to alter or change the current knowledge base by active participation. On certain occasions it can also be carried out as passive seeking – this can be made possible by spotting and identifying relevant information when unintentionally discovering it. (Alaterä & Halttunen, 2002)

Information seeking is enabled by information systems, which are collections of data that give the system users the possibility to find any required information through certain actions. These information systems store the data and process it to easily accessed forms, such as lists and catalogues to enhance information seeking. (Alaterä & Halttunen, 2002)

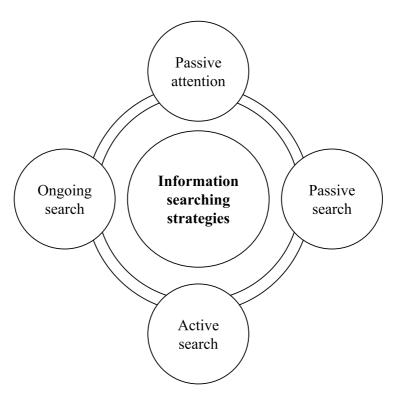


Figure 6. Information searching strategies (Wilson, 1999)

According to Wilson (1999), the information searching strategy differs depending on the need of the information. As presented in Figure 6, there are four different strategies. Passive seeking as a strategy only occurs when relevant information is stumbled upon. Previously mentioned passive search is conducted by knowing what kind of information is needed and doing certain actions such as reading newspapers regularly in order to find the needed information sooner or later. An active search is conducted by shaping the information need to the form of a question and aiming it for an information system. Finally, an ongoing search is the longest and most time-consuming method of the four. It is done by actively and regularly seeking information, as the aim is to continuously update the information and knowledge of the topic at hand. Employees who are working in the same company have most likely different information-seeking rituals and methods, which all are important to take into account. (Schmidt, 1996; Wilson, 1999)

#### 2.4.2 Information retrieval

Information retrieval as a concept was first introduced by Calvin Mooers in the 1950s. The original purpose of information retrieval was about document retrieval systems, but the concept has developed since and today it is about storing, organizing, and accessing text and multimedia resources (Chowdhury, 2009; Dinet, 2014).

Ingwersen's model (1996) presents five different actors in the information retrieval process. These are cognitive actors, interfaces, social/organizational environments, information systems and information objects.

Social/organizational environments are about the domains of information retrieval and the strategies, goals, and tasks. It is in interactive communication with cognitive actors, and it influences information objects and information systems. Cognitive actors, also known as individual users' cognitive space, include for example the need for information and the information behavior, problems and/or goals and the current cognitive space. It has interactive communication with both interfaces and social and organizational environments and transforms and influences information objects and information systems. (Ingwersen, 1996)

Interfaces are the channel of using information systems and gathering the information, to make the functions "come true". Therefore, it is in a cognitive influence and transformation of information objects and information systems. It is also in interactive communication with cognitive actors. Information objects are about how the knowledge is being represented – in text, pictures, or something else. As mentioned earlier, it is being influenced by interfaces, cognitive actors, information systems and the environment. (Ingwersen, 1996)

Lastly, information systems are about the search language, databases and how the computer which help do the search work. It is the technical side of information retrieval and gathering information. As the previous one, it is being influenced by all parts of the process. (Ingwersen, 1996)

#### 2.3.3 Differences between information seeking and information retrieval

Information retrieval is the process of searching information or documents in an information system, whereas information search is to purposefully look for information to solve a problem or meet a specific need. Information retrieval is an aspect of information seeking, which is focused on systems – therefore it cannot be executed without an information system. (Bawden, 2007).

#### 3. CONCEPTUAL FRAMEWORK

Relevant literature has been reviewed and the conceptual framework for the research has been developed. This chapter describes the chosen models to support the research questions and provides reasoning for the chosen theories.

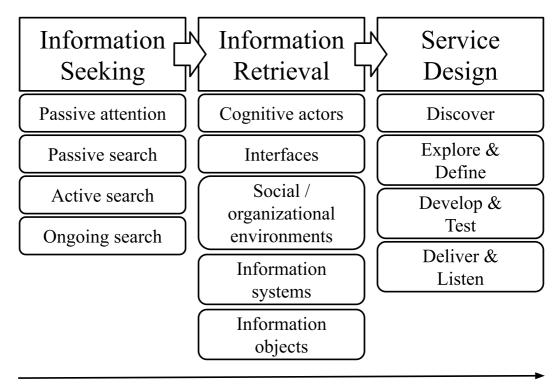
#### 3.1 Motivation

The concept of information behavior in the context of recruitment process enhancement through service design has not been introduced before. Studies regarding information behavior and service design have been covered in previous research but is still yet to be studied more broadly. This research gap offers a possibility to conduct a study which has not been conducted before.

As reviewed in chapter 2, information behavior and service design share common aspects when discussed user and customer experience and understanding. Service design proceeds to benefit from this understanding to enhance and develop services. When aiming to create a comprehensive picture of the current recruitment process and to provide a possibility for development guidelines to follow. Service design has been comprehensively proven to benefit from user and customer behavior, especially when seeking underlying factors which shape the way a service is perceived. Based on previous studies,

#### 3.2 Conceptual model

A conceptual model has been created to serve the purpose of this thesis, which is presented in Figure 7. Development of a digitalized recruitment process serves the evolution and enhancement which is expected of processes in the modern day to serve and meet the needs of the demanding service users.



Development of a digitalized recruitment process

Figure 7. Basis for development of a digitalized recruitment process (Bawden, 2007; Ingwersen, 1996; Zomerdijk & Voss, 2010)

The development process regarding a digitalized recruitment process consists of three aspects: information seeking, information retrieval and service design. The two theories of information behavior provide the need and methods for gathering information as well as conduction of the retrieval through an information system. This methodological insight ensures invaluable information for service design phase, which requires the understanding of a user's journey through the service and application funnel. Both steps regarding information behavior are expected to be monitored and completed in order to gather a comprehensive understanding of the development need, to make the service design stage possible.

Information seeking is the source of insight regarding the needs job applicants have towards job seeking. The diverse needs of applicants are taken into account when considering changing information requirements, whether they were passive, active or something else. This stage is the beginning of the process development. As a potential

job applicant has a need for information, they are able to start information seeking which can lead to information retrieval. (Alaterä & Halttunen, 2002; Bawden, 2007)

Information retrieval offers the understanding of the methods of job seeking and other related actions conducted through an information service. This phase consists of concrete activity, such as reviewing different job portals, browsing openings, and applying for chosen jobs. This activity is guided by cognitive actors, interfaces and information objects surrounding the information user. (Ingwersen, 1996)

Lastly, the service design stage of the development process brings together the insights provided through information behavior methods mentioned before. Discovery and Exploration phases have been covered with these insights, and the Development and Delivery phases are ready to be carried out. (Zomerdijk & Voss, 2010)

#### 4. RESEARCH METHODOLOGY

This thesis is conducted as a qualitative study. In order to answer the research questions, a series of semi-structured interviews are conducted for six employees at Adecco Finland and Sihti. These employees are working as HR consultants or in a related role in recruitment. The data needed from the employees is focused on their insights about the digital transformation of HR processes, pinpointing the application funnel and their viewpoints on different digital solutions and their effectiveness. As Kvale (2008) stated, interviews are used as "attempts to understand the world from the subjects' point of view, to unfold the meaning of peoples' experience, and to uncover their lived world to scientific knowledge".

A qualitative interview allows a semi-structured form for the interviews. In this setting, the interviewed employees are able to talk about the topics they want to, which is a significant motivating factor. In addition, as versatile answers will be provided as possible. (Tuomi & Sarajärvi, 2018) The semi-structured form enables follow-up questions, which help in understanding the answers and respondents' views better. It works both ways – if the questions are difficult to understand to the respondent, they can be explained or simplified when needed. Every respondent will be seen as an individual, to acquire more personal answers. Non-verbal communication is easy to notice in a face-to-face setting, as it might have a significant effect on the way the answers will be interpreted. (Alasuutari & Alasuutari, 2011)

#### 4.1 Respondents

The respondents needed for this research project were HR consultants and other recruitment personnel at Adecco Finland and Sihti. At the time of conducting this thesis there were six consultants working at the Turku office. They were prioritized in this thesis to ease the process of gathering the data as efficiently as possible.

#### 4.3 Formulation of questions

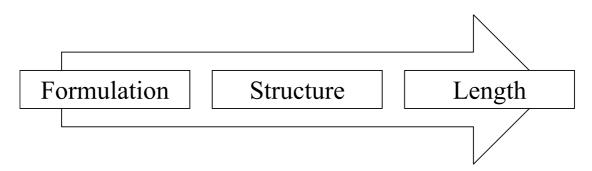


Figure 8. Process of forming interview questions

The process of forming the interview questions has been presented in Figure 8. In order to formulate the questions, it has been vital to remember to keep the majority of them open, with a possibility to present follow-up questions. It is also important to make sure that the questions are easy to understand and to avoid unintentionally leading the respondents to give certain answers but to let them talk freely. (Alasuutari & Alasuutari, 2011)

The structure of the interview has to be taken into account. Some questions will be related, which means they need to be asked after one another. Timing is the key as if the questions are scattered instead of being divided into topics, the quality and the depth of the results will decrease. (Alasuutari & Alasuutari, 2011; Hyvärinen et al., 2017)

Lastly, the length of the interview should be long enough to gather the data required, and short enough to keep the respondents' motivation and interest up during the interviews. (Hyvärinen et al., 2017)

#### 4.4 Questions

The formed questions have been divided into five different segments, as presented in Table 1.

#### **Employee background**

How long have you been working at Adecco / Sihti?

Were you working in HR or recruitment somewhere else before coming to work here?

#### **Current processes**

How would you describe the current digital recruitment process – what tools do you use, what kind of value do they bring?

How do you personally view the digital recruitment process at the moment?

How well do you know the applicants and their needs?

How is value created and provided to the applicants through the application funnel?

Has COVID brought significant changes to the ways of working, and if so, how has it affected recruitment?

#### **Applicant viewpoints**

How do applicants view the current recruitment process?

Why have the applicants chosen Adecco, and not a competing business?

How do your and the applicants' viewpoints differ on the digital processes?

How many questions do the applicants ask about jobs and practicalities?

#### **Best functions**

What works well in the process?

What are the applicants happy about in the process?

#### **Areas of development**

How have you adjusted your ways of working to meet the needs of the applicants?

Are there functions in the recruitment process which are not working as well as they should?

What would you personally change?

Table 1. Interview questions

To ensure the respondents truly understood the topic and goal of the thesis, background information was provided before presenting any of the questions. The main focus is on digitalization, service design, recruitment processes and applicant experiences, and is vital that the respondents focus on these aspects.

The interview began by becoming acquainted with the respondents' backgrounds, to understand better where they come from and if they have any previous experience in different companies in the same field, for example. This part was intended to provide reasonings behind certain answers viewpoints during the later parts of the interview.

The next part focused on gathering information about respondents' views of the current processes, and how digitalization has shaped them in the past years. This part focused on digitalization and information seeking.

Following, the next segment covered the applicants and the feedback they have given. The focus was on what the consultants have heard and understood when being in contact with the applicants. This part is mostly about information retrieval.

To pinpoint the processes and functions which are working well in the current setting, the best parts were discussed separately.

The final segment focused on the need for development, what should be changed or different in the current processes. If there were any functions that the consultants knew did not work, and if there was something they would have liked to change personally. These two last parts combine service design, information behavior and digitalization to create a bigger picture.

The answers were transcribed for later analysis.

#### 5. DATA ANALYSIS

The data gathered from the interviews have been analyzed based on transcriptions. It represents the responses of the interviewees in a categorized manner.

#### 5.1 Employee background

The six respondents have a background in recruitment and HR with having work experience from 1 to 22 years at Adecco Finland, Sihti and previously in different companies. Two of the respondents were working mainly in sales, meaning that their place in the recruitment process focused mainly on creating contracts with clients, defining the focus groups, and reporting the suitable applicants to the clients. The remaining four employees were working in HR and recruitment processes, which are more visible to the applicants, including creating job adverts, conducting interviews, and choosing the most suitable candidates to be reviewed by the clients.

#### 5.2 Current process

The employees described the applicants to be generally satisfied with the current recruitment process (Figure 9). The number of complaints has remained low in the past few years.

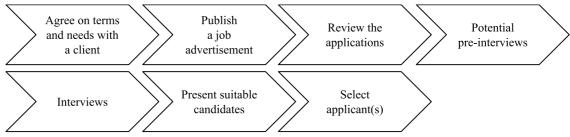


Figure 9. Current application process (simplified).

The process begins with agreeing on the terms and needs of the client company. Based on these requirements and qualifications, a job advertisement is created and published on Adecco Finland's or Sihti's website and local job boards. At the end of the application period, applications are reviewed, and potential preliminary video interviews are carried out for a selected group of applicants. This guides the recruiter's

selection regarding applicants proceeding for concrete interviews. As the interviews have been carried out, a sufficient number of suitable candidates are presented to the client, who proceeds to choose who to employ.

#### 5.2.1 Description and tools

There are multiple different tools in use for recruitment. The most mentioned were the customer relationship management (CRM) software, HireVue, LinkedIn, Microsoft Excel (hereinafter Excel), Microsoft Teams (hereinafter Teams), and local job boards (Oikotie, Monster etc.).

The CRM software brings applicants and their data together to an easily accessed and managed form. It saves time from manual work and stores the data in a secured manner. HireVue is used for video interviews and video answers for preliminary questions. It helps the recruiter to screen a large number of applicants quickly. The pre-video interview model is not tied to a time or a place, allowing the applicant to answer the questions in a time and place of their choosing. Respondents 2 and 3 from both Sihti and Adecco had slightly different user experiences:

"HireVue is a video interview and meeting tool, which creates value as an applicant is not required to come to the office for the interview, and still an interview with a real-life feeling can be conducted. Of course, it is not exactly like the real thing, but quite close anyway." (Respondent 2)

"It is for one-sided interviews; I haven't used it much as there has not been a need on the construction side of recruitment." (Respondent 3)

LinkedIn helps to headhunt potential applicants easily. Respondent 1 described its benefits as such:

"Automation and AI in LinkedIn brings maybe the most value to my work. Depending on the needs and what kind of a potential applicant you are looking for, (LinkedIn) can offer you the right people." (Respondent 1)

Excel was mentioned to be used in Sihti's recruitment. It was used between two employees who were at different ends of the recruitment process, HR, and sales.

"(On the Excel sheet) is the employee side with all the open orders (from clients), which is used to manage this palette. The number of employees is large, so it is a place that can be used to store information about an employee. Otherwise, I could not remember it all." (Respondent 5)

Teams is also used for video interviews, and it was the most mentioned of all the tools in use. It is remarkably similar to earlier mentioned HireVue, and one of the respondents described it very similarly as respondent 2 did HireVue:

"On Teams, you will get a visual on the person you are interviewing, you can see all the facial expressions and gestures and generally the person who you are talking to. It does not replace the traditional interview method but is a good alternative. A benefit is that the interviews can be recorded and saved, which enables the recruiter to review the interviews again if necessary. (Respondent 3)

#### 5.2.2 Employee viewpoints

Employees had differing viewpoints regarding the current digital recruitment process. All the respondents agreed that the current process saves time but does not replace a physical encounter with an applicant.

"(Digital recruitment process) does still require work, the services and systems are still developing. Organizations that have the best functioning systems succeed the best, especially in fast-paced situations. Adecoo is not aiming to win in a speed game, and there would not even be a possibility system-wise at the moment." (Respondent 1)

"(A digital process) does not replace the genuine encounter with another person but is as close as it could be. It is a more straightforward alternative. When people are located in their own homes, they are more comfortable. It is more formal at the office, more casual on Teams." (Respondent 2)

"Travelling is not needed, which saves time and speeds up the processes. It is efficient, especially when it comes to larger volumes of applicants. HireVue provides the possibility for a one-sided interview as if there are ten potential applicants based on their application and CV. It can be used to prune the number of applicants." (Respondent 3)

"(Digital recruitment process) is an essential step towards the future." (Respondent 4)

A respondent who had worked in another company in a similar position had a possibility to compare the processes from an employee's point of view.

"In my previous workplace, the systems were top quality, now not so much. They are not as flexible as they could be – information is not found as quickly and easily as then. Of course, the systems most likely will never be completely finished, there is always something new to develop.

But it does ease things if you think how (recruitment) has been done previously.

Applications have all been in one person's email inbox, which is quite tricky. If one of our colleagues would leave for a holiday and all the applicant data is behind them, regardless of it everyone is able to access the information nowadays." (Respondent 5)

#### 5.2.3 Value creation

Several methods for value creation for applicants were discovered. Especially the possibility of being able to provide personal service, be available and view the applicants as individuals were pinpointed in the answers.

"Value is created by knowing and being familiar with the job market and being able to connect an applicant's skills to a specific field or company." (Respondent 1)

"Applicant can openly be in touch and let us know that they are looking for a job. Then we will get to know their current situation and background, which leads us to offer them a suitable job." (Respondent 1)

"Our application process might not be any easier than any others, but I personally am always available, and applicants can reach me whenever." (Respondent 2)

"Consultants listen to the applicants. It is our job to listen to what they want to say, and that helps us to find them a suitable job. It is about personal service – matching applicants and jobs." (Respondent 4)

"(Value) is created with expertise. We know what we are talking about, and we are available." (Respondent 5)

The recruiters need to be able to offer applicants different possibilities for employment. Respondent 1 demonstrated the expectations of the employment markets:

"We need to be able to offer different choices to the applicants. Especially then it is important to be familiar with the applicant, to be able to offer possibilities, which the applicant might not have even thought about." (Respondent 1)

In addition, good service is provided by keeping the applicants aware of the schedule of the recruitment process. The process includes waiting periods which can be deal breakers for some applicants, and therefore it is essential to stay in touch and ensure them being aware of the situation.

"Applicants like to stay up to date with the process – what is happening now and what will happen next. Now as there is no need to come to the office, it saves time and makes the applicants more comfortable. One-sided interviews through HireVue can be a struggle for some applicants, but there is no social pressure while doing them and they can be done in applicant's own time, the way which is most comfortable for them." (Respondent 3)

Value could be created through visibility in environments familiar to the potential applicants. Being available and visible in schools or workplaces promotes the possibility for application.

"The value I bring to the process is not immediately visible to the applicant. I have plenty of contacts from companies that are in need of employees. I also stay in touch with schools, and teachers can contact me when they have students graduating and in need of a job. I bring these two instances together. We arrange job fairs and other events to help in this matter." (Respondent 6)

#### 5.2.4 Changes through COVID-19

The pandemic has shaped working to become more flexible, which all of the respondents agreed on. It saves time but is not as pleasant as it previously was.

"During the pandemic, it has become clear that not all interactions need to take place face-to-face or through physical presence. Materials can be delivered electronically, and meetings can also be arranged virtually." (Respondent 4)

"Our work has become a lot more flexible, as it does not require physical presence from us nor the applicants anymore. The applicants do not consider digitalized recruitment process as a bad service, as it does give them flexibility. Before the applicants would have had to come to the office during office hours for an interview which would have meant them having to leave from work in the middle of the day. Now it is much easier to arrange." (Respondent 1)

"Depending on the situation, a Teams interview can sometimes correspond to a face-to-face interview." (Respondent 1)

"I did prefer people visiting the office for interviews and to have a talk." (Respondent 2)

"We are not able to meet the applicants physically, which on the other hand is more efficient through Teams or video calls. Work towards clients, on the other hand, has become more difficult." (Respondent 2)

"A lot of meetings have been changed to be virtual and we are not able to arrange meetings or interviews face-to-face however we like. Time has freed up in our calendars, as no time is spent moving between physical places. We (recruiters) do not need to worry if an applicant has arrived for an interview or not." (Respondent 4)

"I would say it would not be even polite to invite our stakeholders for a face-to-face meeting. But keeping up our client contacts has become more difficult than before, maybe due to the performance-oriented Teams meetings. You cannot see under the surface as well as before.

Teams meetings require more preparation than face-to-face meetings, as the awkward silence can feel worse on Teams than in a physical meeting, where it can be easier to get over with. I have to be prepared to talk constantly. On the other hand, on Teams you can get a peek at the other person's life – you can have small talk regarding their newly renovated kitchen which is visible in the background. You get to be on a more personal level." (Respondent 6)

The employees had not used Teams for conducting interviews before the pandemic. It replaced Skype, which began malfunctioning at the beginning of 2020. In addition, HireVue has become a valuable tool in the interview phase.

"A new tool which we have gotten due to COVID-19 is Teams. Before Teams, we used Skype, which we did not use with applicants as it was not necessary then. We changed it to Teams as at the beginning of the pandemic it stopped working properly due to the large volume of users. We have started using HireVue more, even though we did have it before the pandemic already." (Respondent 1)

"Teams has shaped my own thoughts about conducting interviews through various channels, and they are not needed to be tied in place and time. I have started using

HireVue much more – previously I used it mostly during general job searches. It actually helps when using it in different profiles and our clients have been satisfied as they have gotten a glimpse of the applicants themselves as well, before conducting any following interviews." (Respondent 4)

Digital marketing had arrived to enhance the recruitment process and to reach potential applicants which would not have had the possibility to see the open positions otherwise.

"Digitalization has also brought us digital marketing; we now have visibility packages which affect recruitment towards our clients. We get to reach a lot more passive applicants than before." (Respondent 4)

"Due to COVID-19 we were not able to meet our stakeholders, so I called them more often and asked how they were doing. I have also visited construction sites to meet our employees. I really do not use teams with the stakeholders, I do prefer calling we usually talk about minor things." (Respondent 5)

The pandemic has had its effect on the job markets as well. It has changed to become simpler to seek for a job, than for a company to find an employee.

"In recent times the job market has changed. There are plenty of jobs available, but the number of applicants has notably decreased. If a company has gotten a hold of a valuable employee, they are retained in the company by investing in employee wellbeing, general motivation, and interest towards their job." (Respondent 6)

### 5.3 Applicant viewpoints

### 5.3.1 Current process

The current process includes multiple waiting periods for the applicants (Figure 10). According to the respondents, applicants were satisfied with the process and considered it to be working well. They considered themselves to be adapted to the digitalized

process. The elderly applicants were the ones, which had the most issues and challenges, as they are naturally not considered as tech-savvy as the younger applicants.

"Adecco has been operating in Finland for over 20 years, and we have become well-known in the job markets. As we are still here, it has made us valuable to the applicants." (Respondent 6)

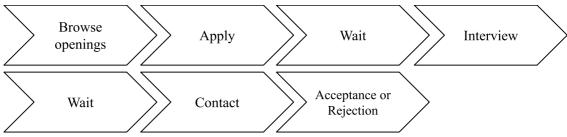


Figure 10. Applicants' view of the digital recruitment process (simplified).

"Current situation and the changes it has brought to the process has been received well among the applicants. Even those who are not digitally as competent as others and would prefer to visit our office have been very understanding. Even if they have not used Teams before, they are willing to try it out. If the applicant has not been able to use Teams in any way, we have also had interviews here at the office or through the phone.

The phone interview is our last option, as we do not see even the applicant's face, it is difficult to get a good picture of them or to remember them properly. We have carried out full recruitment processes through phone as well, and there has not been a notable difference in the result.

It is difficult to recruit for a physical job through phone, as we cannot tell if the applicant is capable of it." (Respondent 1)

"Nothing negative about the development of digitalization, as people understand the situation. Teams can cause difficulties to older people, and sometimes it feels that they do not even want to try. As a recruiter I need to adapt to the situation, so we have then met face-to-face or have done everything through the phone." (Respondent 2)

"Applicants have responded well to the current recruitment process, with some exceptions. Some would definitely prefer coming to the office for interviews, but Teams has then been fine for them as pretty much everyone is already used to it." (Respondent 3)

"The older the applicant is, the more they would prefer coming to the office for an interview rather than having it virtually. The default has been the interviews at the office, and there might still be a transition period in progress." (Respondent 3)

"Job-seeking has always been a struggle and a lot of work for certain applicants. On the opposite side, others see video interviews, suitability assessments and preliminary questions as obvious. Recruitment can be built out of vastly different steps." (Respondent 4)

"The applicants might think that we are quick in our processes. In a best-case scenario, we have gotten an application and we have been able to immediately call one of your clients to employ them. We really listen to the applicants, while the world has been a mess for the past years and the applicants have experienced worries and sorrow, we have faced them as individuals." (Respondent 5)

The applicants view the digital recruitment process as ordinary, as people have accepted the requirements of the modern-day. The employees mentioned that they do understand that receiving applications is way more fun than sending them, and therefore they have ensured that the process is easy for the applicants. Older applicants might have difficulties adapting to the digitalized process.

"All applicants are not enthusiastic about the digitalized recruitment process, not even the step where they submit their application through our system online. Job seeking is not about appearing at our office, introducing themselves and getting a job anymore." (Respondent 4)

## 5.3.2 Why Adecco Finland / Sihti?

There are several reasons why applicants have chosen to apply for jobs through Adecco Finland and Sihti. The applicant or someone they were familiar with had experienced good service before when associated with Adecco. Plenty of feedback is received through the grapevine, especially in the construction sites, which affects Sihti the most.

"Applicants have had good experiences in the past, which is one of the main reasons to reapply through us. Adecco has been in Finland for 20 years already, there are not many competing businesses that have been around as long. Most know us at least by name." (Respondent 1)

"Many have been working with us before, for example, 15 years ago. They might have worked somewhere else in between but have ended up searching for a new job and have chosen Adecco due to good experiences. This happens regularly." (Respondent 1)

"The company is familiar from before, and the applicant has received good service." (Respondent 2)

"People have heard good experiences from other employees at the construction sites and have gotten a hint to apply through Sihti." (Respondent 3)

The process for applying has been made easy and simple for the applicant. The data required to type in has been minimized and the emphasis is mostly on the CV. The applicant is not required to type in the same content multiple times, and the number of clicks needed to go through the application process has been kept at a minimum to simplify the application journey.

"At the end of the recruitment process, I tend to ask the applicants how the process was, how the systems worked and if everything went well. Competitors have similar processes. A plus is that here at Adecco applicant does not need to fill in the same information multiple times. Many other systems request to submit a CV, and then to type

in the same content all over again. Adecco's system automatically retrieves the information from the CV." (Respondent 1)

"Grapevine works well. People talk – if a friend has applied for a job through us, they have recommended the service for others as well. In Finland, Adecco is not as visible as it is in France, for example." (Respondent 2)

The main reason for applying is the need for a job as Adecco or Sihti had suitable openings at the time. The redeeming feature is that both brands combined provide jobs across different fields, so the variety and selection are very broad.

"We have a versatile selection of interesting positions open. We also conduct general searches which reach people who are looking for different positions. We are able to offer positions in various fields." (Respondent 4)

"We get applications thanks to our well-functioning processes. We see our applicants as individuals, and we pay them what they should get paid. Some competitors can see them only as a source of income." (Respondent 5)

Views about competitive advantage were reviewed from a critical view. Especially employees who had experience in other companies from similar roles were more critical towards the process and its functions.

"Applicants have chosen to apply through Adecco solely due to the openings we have – Adecco doesn't have any better features compared to other recruitment companies." (Respondent 2)

"I don't see a clear difference in the value provided by Adecco, vs. a competing business." (Respondent 4)

# 5.3.3 Differing viewpoints

Differences in the viewpoints regarding applicants and employees were reviewed. As the recruiters are heavily occupied, they do not have the possibility to provide as personal service to the applicants as they would prefer.

"Recruiters are currently heavily loaded with work. It would be great if we could tell every applicant personally why they did not proceed in the recruitment process." Something else than the general "unfortunately you did not progress in the application process." Would be great to add more personal service to our work, but currently it is not possible." (Respondent 1)

"A need for development would be in the length of our processes. At times they might take much longer than anticipated, and in those situations, we should be able to inform our applicants deftly and be in contact with them, not only leave them waiting."

(Respondent 1)

"Job seeking is not fun, and it takes time. It definitely is nicer to receive applications than sending them." (Respondent 2)

"Our job is made more difficult when we are not able to see the applicants face-to-face. We can get so much more out of a person when we see them physically, small talk is easier and we are able to see gestures and other physical behavior compared to Teams, where it is difficult." (Respondent 3)

"Very seldomly I have been required to deviate from my own ways of working due to lack of digital skills of an applicant. This mostly happens in the field of construction. Sometimes I need to guide an applicant through the process or give hints on how to make a good CV." (Respondent 4)

"Most of the time we can rather quickly see if an applicant is what we are looking for, even though the applicant would have spent a long time to make the application.

Salaries will be agreed upon without bigger issues. Our (Sihti's) website is in an awful condition at the moment, and we have gotten feedback about it." (Respondent 5)

# 5.3.4 Questions regarding practicalities

Most asked questions were regarding the practicalities such as recruitment schedule, what are the next steps and when the applicant would hear from the recruiter again. These kinds of questions have luckily been able to reduce, as the recruiters let the applicants know

"Mostly we get questions regarding the recruitment schedule, if any decisions have been made and what is the next step. The most typical question is "Tell me more about this opening", which we try to avoid by providing a sufficient amount of information in the job advertisement. Some applicants do call only to let us know they exist, to talk for a while and help the recruiter to remember them better." (Respondent 1)

"Applicants ask how the process will proceed and when, but I usually manage to tell these things before they get asked as it is my routine. I do get questions regarding salary, and which company the recruitment is for if it is anonymous. People do also call to let me know that they are interested in the position." (Respondent 2)

"How we will proceed from here, how many people have applied to the same position and when we will let the applicant know more. The focus is usually on what happens after the interview – which company is hiring and in which construction site."

(Respondent 3)

"I get very few questions, as I have a habit of telling the applicants how the process will progress. They might ask if it is possible to visit our client company to see the environment they would be working in, in what kind of team. Pay, working hours and collective agreement applied to the position are also applicants' interests."

(Respondent 4)

#### 5.4 Best functions

The process with the best functioning aspects was pinpointed. The LinkedIn algorithm was found to be a very useful tool when seeking for potential talents and passive job

seekers. When systems work, the work is more efficient – but this is not always the case.

"The better our systems work, the easier the work is. No one should spend a lot of time applying for jobs, as it should be the easiest step in the process. The fewer clicks, the better." (Respondent 1)

"After an applicant has submitted their application, we can instantly see it. The best functions are our quick action, which our systems make possible. Applicant can also choose our "quick apply" route, where they can simply leave their contact information and we will get in touch with them. The fewer clicks, the better and easier."

(Respondent 5)

Teams meetings save time, as there is no need for commuting or otherwise transferring somewhere, and that time can be spent for planning the interviews, meetings or whatever.

"Teams works well, it eases our work and saves time. Video interviews, pre-defined questions which the applicants respond on their own time are nice, and I can return to them later if needed." (Respondent 2)

As HireVue is used to conduct (preliminary) video interviews, it was considered to be a simple tool. The recruiter is able to return to the interviews regardless of time and place and capable of reviewing the answers whenever needed.

"Video tools ensure that we can hear about an applicant regardless of time and place. It is also secure to have all the applicant data in our systems instead of email, for instance. Now there are fewer applicants at the market, so with marketing, we are able to reach even those, who are not actively seeking for a job. Regarding applicants, the best they can get is a well-functioning, effortless process." (Respondent 4)

"For an applicant video interview is easy, as they can open their computer right after waking up and start the interview on their comfort zone." (Respondent 2)

"Foremost, digitalization and the tools it has brought eases the screening of applicants and offers the most suitable ones for every situation. It saves time." (Respondent 1)

"I can return to the interview recordings later. For the applicants, the Teams interviews are easy in the sense that they do not need to come to the office, which requires more time and preparation." (Respondent 3)

Unintended dissatisfaction can be created when systems do not function as planned. It might create uncertainty, which can then lead to the applicant choosing another company to apply through.

"If our rejection notifications have not gone through to our applicants, it naturally results in dissatisfaction." (Respondent 4)

# 5.5 Areas of development

Viewpoints regarding aspects requiring development were discussed. Answers regarding ways of working and adjusting to the expectations of applicants were covered.

# 5.5.1 Adjusting ways of working

When discussed about adjusting ways of working to the current needs of the job markets, employees had to adapt to video interviews, even when they would prefer meeting applicants face-to-face to gain a better understanding of the applicant. Teams meetings tend to take less time as people want to go through with it and focus on the topic at hand. As previously mentioned, flexibility is required to ease the process for some of the applicants.

"I have had to adapt to video interviews.." (Respondent 1)

"The transition from live meetings to Teams. It is difficult to deduce if an applicant is capable of doing physical work, so I have had to adjust on how to figure that out in accordance with good practice." (Respondent 2)

"Sometimes I need to meet the applicants halfway, if they struggle with Teams or they are in the belief that they are not capable of using digital tools. In that case, we might have taken care of the situation through phone, for instance." (Respondent 3)

"I try to brighten up the atmosphere in the beginning, to ensure the applicant is feeling comfortable. Our job requires flexibility, towards both applicants and clients. in the worst case, client's target profile might change in the middle of the process."

(Respondent 4)

### 5.5.2 Functions requiring development

"There is always room for development regarding our systems. There are some functions still missing, but continuous development is happening." (Respondent 1)

Regarding the areas of development, communication to applicants was most mentioned. The employees do not feel that they have enough time to contact the applicants and let them know about any possible delays in the recruitment process or other related matters. Going through the entire process could be done quicker as it only leaves the applicants waiting, especially as there are not enough resources to keep them up with the process at the moment. Unfortunately, the process can be delayed due to the customer, and not Adecco.

More time and resources to provide personal service, to become acquainted with the applicants better and meet or even exceed their expectations.

Especially Sihti's website should be updated. It is under development at the moment, but it has been quite bad for a long time and the applicants give feedback regarding it.

"Applicant communication could be more personal, to ensure them to keep up with the process. Feedback and information about the progressing process should be provided better. It does not happen in many organizations; I am trying my best to do something about it, but the systems do not currently support it well. In addition, our workload does not make the situation any better at the moment. Occasionally applicants talk about

experiences in other companies, where they never heard anything back after leaving their application. Also, contact people might have been difficult to reach." (Respondent 1)

"Pre-qualifying questions could already be included in the application phase, so we could get a better view of the applicants earlier. The applicants should also be informed better about the process and keep them up with it." (Respondent 2)

"There is more to develop at our end, as we might not be able to get responses quickly enough from our clients. This can then result in the process becoming too long, and applicants getting employed elsewhere before we are able to act." (Respondent 3)

"We have had issues publishing our job adverts, as they might have not been visible on our website or other channels after publication. The system has errors, our rejection notifications might not go through which leaves the applicants to be uncertain about their situation. In addition, we should communicate the applicants properly about how the process proceeds, but we do not have the resources for that at the moment." (Respondent 4)

## 6. DISCUSSION

This chapter presents the discussion and provides an overview of the overall results gathered from the interviews. The key findings and the answers to the research questions are covered and discussed in this chapter.

Digitalization has changed the recruitment process, making it more agile and flexible than ever before. It has brought data security and shared responsibility for data management and job applicants. Applications are transferred directly to the application management system. In the past, prior to the introduction of such systems, applications used to be emailed to a single employee, which was not a secure method for managing the data. When an employee was on vacation, for instance, other employees did not have access to this specific mailbox. This delayed processes and made job seekers more dissatisfied with the service.

The introduction of video interviews has brought more opportunities for recruiters to work with. Job seekers answer pre-defined questions on their own time, and in their own comfort zone, which is a low-threshold interview method for the applicant, and a factor that facilitates the work of recruiters. Applicants can be screened at the beginning of the application process. In addition to the preliminary questions, the actual interviews are also conducted through HireVue or Teams. The most important factor in the digital interview method was found to be the independence from the location of the interviewer and the interviewee, which significantly saved employees' time. Job seekers also found this to be significantly beneficial, as they were perceived to be more relaxed in their comfort zone - most often at home - during the interview. This is a significant comfort factor for the employee, as the more comfortable the experience, the more likely they will remember the pleasant experience and they may return to the job search using Adecco's or Sihti's services again.

Virtual interviews through HireVue or Teams makes it easier for applicants to find a suitable time for the interview. Before COVID-19, interviews were conducted mostly face-to-face during office hours, when the majority of job seekers were working

themselves, and occasionally it was difficult to arrange interview time during those hours.

Despite their effectiveness, video interviews were perceived as superficial, and the physical job interview and the opportunities it brought did not replace the virtual process. In video interviews, for example, gestures and facial expressions were much more difficult to take into account, although in an interview situation, taking them into account is valuable additional information when determining an applicant's profile and motive.

The applicants' need for information was met before the applicants themselves had to search for information. The aim was to include a sufficient amount of information in the job advertisements so that there was no need to ask the most frequent questions and the applicants found the search experience as effortless and informative as possible. Also, in the later stages of the application process, the aim was to answer the applicants' questions before the applicants themselves asked the questions. This had already become a routine for the interviewers, as they wanted to make sure they provided the best possible service to the applicants.

Specifically older job applicants prefer traditional recruitment methods taking place in a physical setting. The application process has followed the same practices throughout history, and applicants have always been accustomed to face-to-face meetings. The change brought by digitalization has affected this part of the recruitment process so significantly that older, non-digital job seekers have not been able to shift to a new approach like the younger generations. This has led employees in recruitment positions to be more flexible in their own work so that these older generations feel that they have a good service experience and a smooth application process without additional stressors.

Job applicants' perception of the application process included multiple passive phases, in which they were expected to wait for a future contact from Adecco Finland / Sihti. These phases were found to be most crucial in applicant's satisfaction. To keep the satisfaction of the applicants high even during these waiting periods, a sufficient amount of contact and keeping the applicants up to date are the determining factors.

Due to the heavy workload of employees and systems which do not function seamlessly, applicant displeasure towards the process was discovered to be possibly increasing. Systems were not found to be malfunctioning often but in critical stages of the process, such as informing applicants about their proceeding in the recruitment process.

Adecco has operated in Finland for over 20 years and has increasingly become as one of the best-known recruitment service providers in the country. This was found out to be an advantage when compared to competing businesses.

Passive applicants had previously been challenging to reach. Applicants who would be willing to apply for a new job but have not been actively seeking were targeted with digital marketing, which had been found to be a useful tool. The policy had only recently been introduced.

Viewing applicants as individuals and providing them personal service was found to be an important competitive advantage. Applicants were listened to and seen as individuals, with their own pool of expertise and needs. As the biggest value generator in the process, the goal was to match the job seeker and the job so that both are satisfied. As the applicant is being listened to, they should also be offered job opportunities that they might not have been able to think about. The job search has changed so that the jobseeker no longer comes to the employer company, introduce themselves and say that they need a job. Job search is no longer focused on finding a single job, but recruitment is offered as a service to provide possibilities suitable for the applicant's needs.

#### 7. CONCLUSION

The main objective of this thesis was to observe how digitalization has affected recruitment, and how applicants could be retained to Adecco with the assistance of information behavior concepts and service design. The goal was to identify any potential gaps in the process from both recruitment and applicants' point of view. This was conducted by investigating the importance and effect of service design and information behavior in the application process. The aim of this thesis was to understand if the current challenges in retaining job applicants in a digital environment were based on digitalization and technology, or if the reason was behind the mindsets and behavior of the workforce.

The conducted interviews helped to explore the digital transformation of recruitment in the previous years and the impact it has caused in the application process from applicants' point of view.

### 7.1 Research questions

The research questions are once more assessed at this point of the thesis, to review the gathered materials and to provide sufficient answers.

Research question 1: How has digitalization shaped the activities of recruitment?

Digitalization has shaped recruitment in the way that it has become faster and more efficient, but not as personal as it could be. Face-to-face meetings are still considered better than any form of online meeting, despite its effectiveness.

Research question 2: How pleasant do the applicants find the current application process?

Applicants do find the current application process to be good at the moment, but there is room for development on updating services and systems to meet the expectations of the modern-day. Especially older applicants faced difficulties while transitioning from the traditional methods of applying for a job, but most of them were found out to be willing to learn and adapt to the new methods.

Research question 3: How do recruiters need to change their behavior to efficiently work in a digital space?

Recruiters have been required to adapt and accept the current state of digitalization, and to find new ways of working to provide good service to the applicants and to keep up the processes.

Research question 4: What are the key advantage/disadvantage points for applicants in the digital application process?

The most significant advantage points were discovered to be the flexibility the digital process has provided. Applicants were able to attend the interviews regardless of their location, in their own comfort zone. The main disadvantage was found to be the difficulty of using digital tools, if an applicant had not familiarized themselves to those beforehand.

#### 7.2 Theoretical contributions

This thesis contributes to the information behavior, service design and digitalization literature by presenting the findings on applicants' satisfactions and their retention towards the current digital job application process at Adecco Finland and Sihti. Prior studies regarding information retrieval and service design are found in literature, but little research on these has been conducted and is thus more difficult to find. The theory supported several factors which were discovered and identified in the study.

As Harviainen and Kumpulainen (2019) had discussed, information services can often have the focus on quantitative approach rather than qualitative, resulting in the services to have incompatibility with the expectations and needs of service users. Indications of

this viewpoint regarding Adecco's application services were distinguished within the gathered responses.

Applicant's cognitive space was found to be satisfactory when sufficient level of communication was achieved. If the social and organizational environment regarding the application process lacked in maintaining a contact to an applicant, the level of dissatisfaction became higher. (Ingwersen, 1996)

The conceptual model for development of a digitalized recruitment process was discovered to be applicable based on the high level of knowledge the information seeking, and information retrieval methods were able to provide. These aspects were competent to ensure the success of the service design phase based on these findings and insights. Service design was discovered to enable a sufficient amount of valuable knowledge and insights to ensure a successful development process with the double diamond framework.

### 7.3 Practical implications

This thesis provides practical implications considering applicant retention in a digitalized application process based on their information need and information seeking behavior. Based on the analysis, it has been found that simplification and ease of processes are the key factors for job seekers. The freedom and flexibility provided by digital tools support these expectations. However, if the job search process involves several steps involving uncertainty and waiting periods, a solution to these should be found and the information receipt verified. Information is sought when it is not automatically offered. The information must be readily available to engage job seekers to meet their expectations.

Employees at Adecco and Sihti were, on average, well adapted to the digital environment and perceived it as a functional and efficient way of operating. However, their work was influenced by the superficiality of digital interviews and communication, which may have had some effect on the challenging nature of recruitment.

This thesis offers practical contributions by exploring a topical theme. It can be a valuable asset for companies facing challenges brought by digitalization and expectations for new, enhanced services.

Based on the results, it can be concluded that digitalization has brought upon a transformation in the methods of working and recruiting the workforce. Despite the previously mentioned limitations, this research has resulted in discovering valuable insights regarding digitalization at Adecco Finland and Sihti. The connection between digitalization and the development of current processes' gaps were discovered, which were resulted due to the systems, not the attitudes of the employees.

This thesis has brought together concepts of information behavior, service design and digitalization in the context of recruitment. The combination of these concepts can be applied to other contexts which aim to understand user or customer behavior and to enhance the service path or develop innovations in services.

#### 7.4 Limitations and Future Research

To obtain better and more comprehensive results, the sample size should be increased. In addition, the sample should be broader geographically, as well as focus on more than one organization. Most of the employees interviewed were approximately 30-year-olds, and their age allows easy access to digital services compared to older age groups.

This thesis has also some limitations in terms of the progress of adaptation of new digital tools provided by digitalization, which provide possibilities for future research. The newest changes brought by COVID-19 are yet considered to be partially in a transition period, which means the results gathered might not be applicable in the future as digital transformation proceeds to progress. This thesis focuses on the application process of one organization with insights from recruiters and sales personnel working in recruitment-related tasks. The insights considering applicants' viewpoints were second-hand information.

## **REFERENCES**

Adecco Finland (2021). About us. https://www.adecco.fi/en-us/about-us/

Alasuutari, & Alasuutari, P. (2011). Laadullinen tutkimus 2.0 (4. uud. p.). Vastapaino.

Alaterä, A & Halttunen, K (2002). Tiedonhaun perusteet – osa lukutaitoa. BTJ Kirjastopalvelu, 2002.

Almeida, F., Santos, J. D., & Monteiro, J. A. (2020). The challenges and opportunities in the digitalization of companies in a post-COVID-19 World. IEEE Engineering Management Review, 48(3), 97-103.

Almqvist, F. (2018). Service design in the later project phases: Exploring the service design handover and introducing a service design roadmap. In ServDes2018: Service Design Proof of Concept-Proceedings of the ServDes2018 Conference, Milano, 18-20 June.

Andersson, P., Movin, S., Mähring, M., Teigland, R., & Wennberg, K. (2018). Managing digital transformation. SSE Institute for Research, Stockholm School of Economics.

Al-Samarraie, H., Eldenfria, A., Dawoud, H. (2017). The impact of personality traits on users' information-seeking behaviour. Information Processing & Management 53(1), 237-247.

Ayhan, B. (2017). Digitalization and Society (Edition 1). Peter Lang International Academic Publishers. 36-41.

Bawden, D. (2007). Information Seeking and Information Retrieval: The Core of the Information Curriculum? Journal of Education for Library and Information Science, 48(2): 125-138

Belkin, NJ (1990). The cognitive viewpoint in information science. Journal of Information Science 18:11-15.

Bertola, P., & Teixeira, J. C. (2003). Design as a knowledge agent: How design as a knowledge process is embedded into organizations to foster innovation. Design Studies, 24(2), 181-194.

Bessick, J., & Naicker, V. (2013). Barriers to tacit knowledge retention: An understanding of the perceptions of the knowledge management of people inside and outside the organisation. South African Journal of Information Management, 15(2), 1-8.

Bhagia, P. (2022). Dealing with the turnover tsunami: Strategies for attracting and retaining the best talent. AJO-DO Clinical Companion.

Brennen, J. S., & Kreiss, D. (2016). Digitalization. The international encyclopaedia of communication theory and philosophy, 1-11.

British Design Council. (2005). Eleven lessons. A study of the design process. 6-10.

Chouinard, J. A., & Milley, P. (2016). Mapping the spatial dimensions of participatory practice: A discussion of context in evaluation. Evaluation and Program Planning, 54, 1-10.

Chowdhury, G. (2009). Introduction to modern information retrieval. Facet.

Chowdhury, G. G. & Chowdhury, S. (2011). Information users and usability in the digital age. Facet.

Davidsson, P., Hajinasab, B., Holmgren, J., Jevinger, Å., & Persson, J. A. (2016). The fourth wave of digitalization and public transport: opportunities and challenges. Sustainability, 8(12), 1248.

Dinet, Jérôme. (2014). Information Retrieval in Digital Environments. Wiley.

Enwald, H. P., Eriksson-Backa, K., Hirvonen, N., & Huvila, I. (2020). Taking Health Information Behaviour into Account in User-Centered Design of e-health Services-Findings from an Ongoing Research Project. In PERSUASIVE (Adjunct).

Ford, N. (2015). Introduction to information behaviour. Facet.

Hagberg, J., Sundstrom, M. and Egels-Zandén, N. (2016). "The digitalization of retailing: an exploratory framework", International Journal of Retail & Distribution Management, Vol. 44 No. 7, pp. 694-712. https://doi.org/10.1108/IJRDM-09-2015-0140

Hamidi, F., Shams Gharneh, N., & Khajeheian, D. (2019). A conceptual framework for value co-creation in service enterprises (case of tourism agencies). Sustainability, 12(1), 213

Harteis, C. (2018). Machines, change and work: An educational view on the digitalization of work. In The impact of digitalization in the workplace (pp. 1-10). Springer, Cham.

Harviainen, J. T., & Kumpulainen, S. (2019). Service design for information searching.

Henriette, E., Feki, M., & Boughzala, I. (2016, September). Digital Transformation Challenges. In MCIS (p. 33).

Hjørland, B (2002). Epistemology and the socio-cognitive perspective in information science. Journal of the American Society for Information Science and Technology 53(4):257-270.

Hjørland, B (2006). The socio-cognitive theory of users situated in specific contexts and domains. In: Fisher, KE; Erdelez, S & McKechnie, LEF (eds.). Theories of information behaviour. Medford, N.J.: Information Today, 2006. Pp. 339-343.

Huvila, I., Enwald, H., Eriksson - Backa, K., Liu, Y. H., & Hirvonen, N. (2019). Information behaviour and practices research informing technology and service design. Proceedings of the Association for Information Science and Technology, 56(1), 541-545.

Hyvärinen, Nikander, P., Ruusuvuori, J., Aho, A. L., & Granfelt, R. (2017). Tutkimushaastattelun käsikirja. Vastapaino.

Karim, M., Nikou, S., & Widén, G. (2021). The role of youths' perceived information literacy in their assessment of youth information and counselling services.

Karpen, I. O., Gemser, G., & Calabretta, G. (2017). A multilevel consideration of service design conditions: Towards a portfolio of organisational capabilities, interactive practices and individual abilities. Journal of Service Theory and Practice.

Karwan, K. R., & Markland, R. E. (2006). Integrating service design principles and information technology to improve delivery and productivity in public sector operations: The case of the South Carolina DMV. Journal of operations management, 24(4), 347-362.

Kundu, D. K. (2017). Models of information seeking behaviour: A comparative study. Methodology, 7(4), 393-405.

Kvale, S. (2008). Interviews: An introduction to qualitative research interviewing. Sage Publications, California.

ManpowerGroup (2022). The talent shortage. https://go.manpowergroup.com/talent-shortage. Retrieved 4.1.2022.

Meyer, A. (2020). The effects of service design on digitalization and the development of better service creation for stakeholders (Bachelor's thesis, University of Twente).

Meyer, A., Fourie, I., & Hansen, P. (2020). A participatory design informed framework for information behaviour studies.

Morelli, N., de Götzen, A. & Simeone, L. (2021). Service design capabilities. Springer International Publishing.

Mykhailichenko, M., Lozhachevska, O., Smagin, V., Krasnoshtan, O., Zos-Kior, M., & Hnatenko, I. (2021). Competitive strategies of personnel management in business processes of agricultural enterprises focused on digitalization. Management Theory and Studies for Rural Business and Infrastructure Development, 43(3), 403-414.

Neumeier, A., Wolf, T., & Oesterle, S. (2017). The manifold fruits of digitalization-determining the literal value behind.

Nickpour, F. (2012). Information behaviour in design (Doctoral dissertation, Brunel University School of Engineering and Design PhD Theses).

P. Parviainen, M. Tihinen, J. Kääriäinen and S. Teppola, "Tackling the digitalization challenge: how to benefit from digitalization in practice," International Journal of Information Systems and Project Management, vol. 5, no. 1, pp. 63-77, 2017.

Pullman, Madeleine E. and Michael A. Gross (2004), "Ability of Experience Design Elements to Elicit Emotions and Loyalty Behaviors," Decision Sciences, 35 (3), 551-578.

Schmidt, J. B., & Spreng, R. A. (1996). A proposed model of external consumer information search. Journal of the academy of Marketing Science, 24(3), 246-256.

Sepashvili, E. (2020). Supporting digitalization: Key goal for national competitiveness in digital global economy. Economia Aziendale Online-, 11(2), 191-198.

Stock, W.G. & Stock, M. (2013). Handbook of Information Science, Walter de Gruyter GmbH.

Trischler, J., & Westman Trischler, J. (2021). Design for experience: a public service design approach in the age of digitalization. Public Management Review. Epub ahead of print. https://doi.org/10.1080/14719037.2021.1899272

Tschimmel, K. (2012). Design Thinking as an effective Toolkit for Innovation. In ISPIM Conference Proceedings (p. 1). The International Society for Professional Innovation Management (ISPIM).

Tuomi, J. & Sarajärvi, A. (2018). Laadullinen tutkimus ja sisällönanalyysi (Uudistettu laitos.). Kustannusosakeyhtiö Tammi.

Vartolomei, V. C., & Avasilcai, S. (2019). Challenges of digitalization process in different industries. Before and after. In IOP Conference Series: Materials Science and Engineering (Vol. 568, No. 1, p. 012086). IOP Publishing.

Wikipedia (2022). Double Diamond (design process model). https://en.wikipedia.org/wiki/Double\_Diamond\_(design\_process\_model) Retrieved 4.1.2022.

Wilson, T. D. (1999). Models in information behaviour research. Journal of documentation.

Wood, W. H., Yang, M. C., Cutkosky, M. R., & Agogino, A. M. (1998). Design information retrieval: improving access to the informal side of design. In International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (Vol. 80333, p. V003T03A001). American Society of Mechanical Engineers.

Zomerdijk, L. G., & Voss, C. A. (2010). Service design for experience-centric services. Journal of service research, 13(1), 67-82.