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The Success of Employee Self-Service Portals

How Self-Service can result in Cost Reductions and Improved Employee Satisfaction

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Master Thesis

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MANAGEMENT SUMMARY

Employee self-service portals support the business processes of organizations, because these portals can cut costs and improve employee satisfaction. However, it was not clear which self-service features should be included in employee portals. The goal of this research was to determine which key features should be included in employee self-service portals.

Different self-service feature categories have been identified for this research: HR information, IT services, procurement, time or expense reporting, and training. These self-service feature categories have been placed in Maslow's Hierarchy of Needs. The updated IS Success model by DeLone & McLean (2003) has been used to identify the relevant constructs to test the success of the different self-service feature categories. Organizations can only benefit from self-service portals when these portals are extensively utilized. Furthermore, the main reasons for organizations to implement self-service portals are cost reduction and improve employee satisfaction. Therefore, the dimensions (Intention to) Use, Use Satisfaction and Benefits (e.g. cost reduction) have been used for this research.

cases studies have been conducted to test the conceptual model. A questionnaire was sent to end-users of self-service portals to test the effects of the five self-service features categories on Intention to Use and User Satisfaction. Furthermore, the relationships between (Intention to) Use and User Satisfaction have been studied. Then, interviews were held with decision-makers to test the relationship between Use and Cost reduction.

The results showed positive effects of the self-service feature categories on Intention to Use and User Satisfaction. Therefore, it is suggested that organizations implement self-service portals. When organizations would like that their employees are willing to use self-service portals then self-service features for HR information, IT services and, time or expense reporting should be offered by the organization. Furthermore, when organizations would like to emphasize the user satisfaction then self-service portals for IT services, and time or expense reporting should be implemented. The positive effects of User Satisfaction on Intention to Use and Use on User Satisfaction have also been proven in this research. The case studies showed that cost reduction is not one of the main reasons for the organizations to implement self-service portals. The interviewees mentioned improvement of business processes as main reason to implement self-service portals. These organizations also did not measure cost reductions caused by the use of self-service. Therefore, the relationship between Use and Cost reduction has not been supported in this research.

PREFACE

This thesis is the final work of the master program Information Technology for Enterprise Management. This program consists of the master degree Information Management at Tilburg University in the Netherlands and the master degree Global Information Technology Management at the University of Turku in Finland.

I would like to thank a number of people for their help during the project. First of all, I want to show my gratitude to my supervisor, Matthijs Verhulst, for his advice, guidance and support throughout this thesis writing.

This report was written in collaboration with Accenture in the Netherlands. I want to thank Klaasjan Schroten, Manager at Accenture, for his supervision, help with establishing contacts with potential case study organizations and his input during the project. Furthermore, I would like to show my gratitude to Bert Savelkouls for his time and input.

At last, I would like to thank the case study organizations, the interviewees and everyone else who supported me during the thesis process.

November 2016
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1 INTRODUCTION

In this chapter, the topic of this research is introduced. In the problem statement, a more detailed explanation of the research is discussed, followed by the research questions. Thereafter, the research design and, the theoretical and managerial relevance of the research are explained. At last, the outline of this report is given.

1.1 Problem indication

1.1.1 Background to the problem

Employee portals give employees one place where they can find all information and services. Employee portals can be personalized so that only the features and resources the employee need, are available to the employee. Over the last decade, these portals have been evolved from low-end intranets into highly integrated information systems. Nowadays, employee portals integrate information, communication, applications and business processes (Urbach, Smolnik, & Riempp, 2010b). These portals could cut costs and improve morale of employees (Hansen & Deimler, 2001).

Employee portals also contain self-service features. The main characteristic of self-service technologies, like online banking and online brokerage systems, is that users perform the services by themselves and there is no direct involvement of a Service Provider. This can cut costs since fewer resources are needed to perform these tasks. Organizations can benefit from these systems when self-service systems are utilized extensively by users. Increasingly many organizations are investing in these kinds of self-service systems (Saeed & Abdinnour, 2013). Daniel & Ward (2005) described several clusters which explain the different services of employee portals. One cluster is about personal efficiency and the services of this cluster can be associated with employee self-services.

Nowadays, organizations are implementing self-service features for their employee portals. However, the features of these employee self-service portals could be different for each organization. Therefore, it is important to study which self-service features have a positive effect on use and user satisfaction, and should be included in employee self-service portals.

1.1.2 Company information

This research is done at Accenture Operations. They help clients to improve their business processes through infrastructure, cloud and business process outsourcing services. Within the function Operations, there is a team working on “Infrastructure Services”. In this team, people are working on projects which are related to employee self-service portals.

Accenture is a multinational management consulting services company. Since 2009, it has its headquarters in Dublin, Ireland. Accenture also has several offices in the Netherlands and its headquarters in the Netherlands is located in Amsterdam. Around 2300 employees are working at this location. Most of the projects are related to management consulting and/or information technology. Accenture serve clients in different industries. Furthermore, the projects can be different for each client and therefore Accenture has specialized itself in five areas: Strategy, Consulting, Digital, Technology and Operations. The organizational structure of Accenture can be found in Appendix A: Organizational structure of Accenture.

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1.2 Problem statement

As explained before, employee self-service portals support the business processes of organizations, because these portals can cut costs and improve employee satisfaction. However, it was not clear which self-service features should be included in employee portals. Large organizations are often using employee portals, but there is no unambiguous way of developing, implementing and managing self-service features in these portals. Therefore, this research supported in discovering the key features for employee self-service portals.

Daniel & Ward (2005) described several features which can be included in employee portals. They also made distinguish between several clusters of features and one of these clusters is "personal efficiency". This cluster included mainly self-service features and the authors described also why organizations have focused on implementing these features. This theory was used to identify which possible self-service features can be included in employee portals. Then, the theory about the updated IS Success Model (DeLone & McLean, 2003) was studied to determine how self-service features can influence the use of these features and the user satisfaction. It is important for organizations that employees would use the self-service features, otherwise the implementation of these features would not result in cost reductions. So, the theory about possible self-service features and the IS Success Model were both used in this research as a basis for the further development of the theory about employee self-service portals.

The goal of this research was to determine which key features should be included in employee self-service portals. Therefore, it was important to define the meaning of the terms in this research goal. "Key features" are defined as important features which are meaningful and cannot be forgotten when an organization is implementing an employee service-service portal. The importance of features can be based on the use of these features by employees and the user satisfaction. An "employee portal" is a central place where employees can find all the information and applications for doing their tasks. A subset of these applications or services can consist of self-service technologies. These "self-service technologies" are defined as technological interfaces for employees or customers that enable them to produce a service independent of a direct Service Provider (Meuter, Ostrom, Roundtree, & Bitner, 2000). Employees do not have to contact the Service Provider directly by email or phone, but they do the request for the service via a technical interface.

This research was mainly conducted from the end-user perspective. End-users of employee self-service portals were asked what they thought about certain self-service features in terms of use and user satisfaction. Then, this information can be used by the developer or the provider of self-service portals. The provider is the organization which is developing and implementing the employee portals. In this case, Accenture is the provider of employee self-service portals. With the knowledge of this study, Accenture can give improved advices about key features in employee self-service portals to their clients and customers who would like to implement these systems. Also users of employee portals could benefit, because they could use the set of features for employee self-service portals which they really need to do their tasks more efficient. Better tailored self-service portals may also provide higher levels of employee satisfaction.

The problem solution is an overview of which key features should be included in employee self-service portals. This research only included the possible key features of employee self-service portals, so other variables were not included in this research (e.g. project management, or non-functional requirements). The problem solution can be used to determine which self-service features should be included in an employee portal before the development phase. It is also possible to compare the overview of the key features with the result of implementation.

1.3 Research questions

Accenture runs projects where they implement employee portals for their clients and the self-service features of these portals can be different for each client. Accenture was interested in which key features should be included in employee self-service portals. Therefore, the research question of this study is:

Which key features should be included in employee self-service portals?

To answer this research questions, several sub-questions were answered. The sub-questions are stated below.

First, possible self-service features for employee portals were researched. It is important that only self-service features were included in this research. This information can be used to discover which features could possibly be included in employee self-service portals. Therefore, the first sub-question is:

1. *What are possible self-service features for employee portals?*

Second, organizations can currently use different features in their employee self-service portals. Therefore, it is meaningful to know which self-service features organizations are using nowadays in their employee portals. The second sub-question is:

2. *Which self-service features are organizations actually using in their employee portals?*

At last, the importance of each self-service feature was determined. Based on the importance of the self-service features, it was possible to decide which features are key features and should be included in employee self-service portals. Therefore, the third and last sub-question is:

3. *Which self-service features for employee portals are important and can be defined as key features?*

The answers to these sub-questions provide an answer to the main research question and the problem statement.

1.4 Research design

First, the possible features of employee self-service portals were studied and described. Also theory about the success of information systems could help to determine which measures were relevant for identifying the importance of self-service features. Therefore, a literature search was conducted to look for theory which was already known about this topic. Also information about projects at Accenture which were related to employee self-service portals could help to get more information about possible features. Based on the theory, a conceptual model was drafted to identify which key features should be included in employee self-service portals.

Thereafter, case studies were conducted at organizations which are using employee self-service portals. Organizations can use different kinds of self-service features in their employee portal and these employee self-service portals are mostly customized. The employee portal only consists of features which the organization or department would need for their specific business processes or tasks. Therefore, it was interesting to conduct case studies at different organizations, because self-service features in employee portals can vary between organizations. A questionnaire was sent to the employees of these organizations to study the use of self-service features and the user satisfaction. Furthermore, semi-structured interviews were held with decision makers who were involved in the decision-making about developing and implementing self-service features in the employee portals. In these interviews, questions have been asked about different features and their intended benefits why they were using employee self-service portals (e.g. cost reduction, improved employee satisfaction).

At last, the information which was found in the case studies was used to test the conceptual model. The results were analyzed and conclusions about key features in employee self-service portals were drawn.

More information about the research methodology can be found in 4 Methodology.

1.5 Theoretical and managerial relevance

As the level of academic knowledge on this topic was low, this research helped in discovering new insights about the concept of employee self-service portals. This study contributed by making more information available about which possible self-service features can be used by organizations for their employee portal and which features should be implemented when an organization will implement new self-service features. Furthermore, the effects of different self-service features in employee portals on user satisfaction were studied. In the past, user satisfaction has often been studied but never in relation to employee self-service portals. This research also contributed so that the IS Success model was used in the context of employee self-service portals. Information about different kinds of employee portals was available in the literature. Also literature about self-service technologies can be found, but specifically about customer self-service portals and not about employee self-service portals. This research brought both concepts together and especially in relation to user satisfaction and the IS Success model.

Furthermore, this research had managerial relevance. The use of the right self-service features in employee portals does not only have financial benefits in terms of lower operational costs but employee self-service portals can also result in a higher employee satisfaction. Tasks can be done more efficient and employees can do tasks easier without direct involvement of a Service Provider. Accenture was doing multiple projects which involve the implementation of self-service features in employee portals. Each client can have their own preferences about the features in the portal and therefore each project can be different. This research also helped Accenture in identifying which features should be included in employee self-service portals. When features for an employee self-service portal were similar for a project or for the same type of clients, then it would be easier for Accenture to carry out these projects. Processes during the project can be more standardized and this would result in less risks for Accenture during carrying out the project. At last, clients often did not know what they want and what they exactly needed. When there are certain key features for employee self-service portals, Accenture can give their clients improved advices. This research helped Accenture to acquire more knowledge about key self-service features of their clients' employee portals. Acquiring more knowledge about employee self-service portals also helped Accenture in creating sale opportunities for self-service features in employee portals.

1.6 Outline

In this report, first the theory about employee self-service portals, user acceptance and satisfaction, and the updated IS Success model was described and all concepts were linked. This led to the conceptual model. Thereafter, the methodology for this research has been described. Then, the conceptual model was tested by doing cases studies at different organizations which were using employee self-service portals. Interviews were held with decision-makers to study the intended benefits of implementing self-service portals (e.g. cost reduction). Furthermore, end-users of case study organizations have been asked what they thought about the use and user satisfaction of the self-service features at their organization. The results have been described in this report and at last, conclusions were drawn. The process of this research can be found in Figure 1.

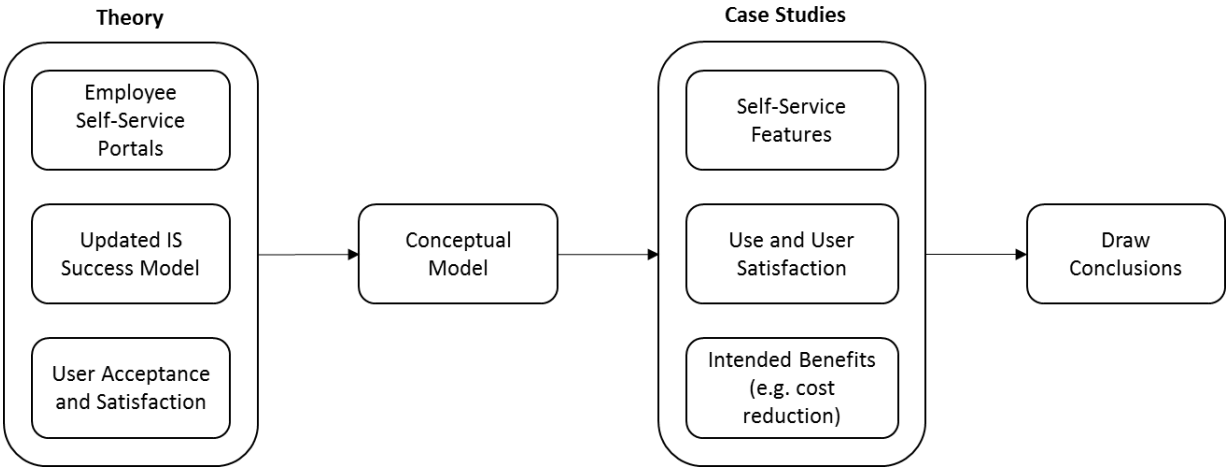

Figure 1: Overview of the research

2 THEORETICAL FOUNDATION

The theoretical foundation for this research is addressed in this chapter. First, the concepts about employee portals and self-service technologies are explained and then possible self-service features within employee portals are described. Thereafter, the updated IS Success Model by Delone & McLean (2003) is outlined. The success of employee portals is described as well and based on previous studies, relevant dimensions of the IS Success Model were identified which were used to determine the success of self-service features. Thereafter, the concepts about user acceptance and satisfaction are explained. User acceptance and satisfaction are important aspects to determine if users will use the technology.

2.1 Employee self-service portals

2.1.1 Employee portals

Employee portals can be defined as platforms for employees that enable the front-end integration of applications, business processes, communication and information (Urbach, Smolnik, & Riempp, 2010a). In the last decade, different terms have been used to refer to employee portals, for example enterprise intranet portals, business portals, corporate portals or business-to-employee portals. These terms can be used interchangeably (Benbya, Passiante, & Belbaly, 2004). Employee portals have been evolved from low-end intranets to highly integrated information systems (Urbach et al., 2010a). Nowadays, the portal does not only give employees one place from which they can obtain information, employees can also use services within the portal (Hansen & Deimler, 2001). Employee portals can be used primarily for internal purposes, but the portals can also be used to exchange information with external organizations, for example suppliers or customers. Benbya et al. (2004) distinguished two types of employee portals: extranet portals and intranet portals. First, extranet portals are mainly used for business-to-business communication and e-commerce solutions. Intranet portals support in internal communication and knowledge management, and these portals are mainly working as home bases for employees. Nowadays, these two types of portals are more and more integrated in one portal. Employee portals should provide employees in an organization access to relevant internally and externally sourced information (Scheepers, 2006). In this research, the focus was on features which give employees the possibility to produce services by themselves without the direct involvement of a Service Provider. These features can have been integrated in both intranet and extranet portals.

Different solutions for employee portals are available in the software market. In most cases, these solutions are customized to the requirements of each organization (Urbach et al., 2010a). Scheepers (2006) described a framework for the implementation of employee portals. This framework is based on marketing fundamentals such as product, place, promotion and price and the framework could help to reduce the complexity associated with the different needs of users. Standard software solutions are customized to the requirements of each organization, but these employee portals can also be customized for specific departments or users. Each user segment could use a different mix of content (product), distribution (place), promotion and cost (price) and this mix of content should be part of the overall implementation strategy. Employee portals give users a single gateway (e.g. web-page), which can be customized to take into account which resources the employee needs and what function the employee performs in the organization (Hansen & Deimler, 2001). Furthermore, the portal can be customized and personalized so that users only have access to the information which is relevant for them (Scheepers, 2006).

As mentioned before, employee portals are mostly customized for organizations, departments or even single users. The portal only consists of functions which the organization, department or user would require for their specific business processes or tasks. Therefore, the use of employee portals could result in organized and structured information and reduced access time (Raol, Koong, Liu, & Yu, 2003). Employee portals could also result in a more productive work force and thus in major cost reductions. Furthermore, employees have direct access to relevant information in the employee portal and this will improve employee satisfaction (Hansen & Deimler, 2001). So structured information, cost reduction and improved employee satisfaction are important reasons for organizations to implement employee portals.

Employee portals can consist of different applications, tools, entities and capabilities. Aneja, Rowan and Brooksby (2000) described possible features of employee portals in the corporate portal framework. The authors distinguish nine categories for possible features. These categories with the possible features can be found in Table 1 on page 16. The corporate portal framework consists of two layers: The core of any portal framework includes the applications and the second layer consists of various web-based drivers which are for the openness and the easy access capabilities to the databases and reports generated (Raol et al., 2003).

Table 1: Possible features in employee portals adapted from Aneja et al. (2000)

Websites	**Collaboration**	**Documents**	**Business Content**	**Business Services**
Internet	Email	Office	Marketing	Benefits
Business	Calendar		Human Resources	Library
Group/Project	Discussions			
Personal				
Analysis/Reporting	**News**	**External Services**	**External Content**	
Data Warehouse	News feeds	Travel	Stock	
Decision Support Systems		Reservations	Weather	

In the following section, the concept about self-service technologies is explained. The scope of this research included self-service features in employee portals. Therefore, it is important to understand why these features are different from other features in portals. Thereafter, possible self-service features in employee portals are described.

2.1.2 Self-service technologies

Cost reduction is the main driver for organizations to implement self-service technologies (Scherer, Wünderlich, & Von Wangenheim, 2015). Self-service technologies are integrated IT systems which allow users to perform tasks on their own without human intervention (Mithas, Tafti, Bardhan, & Goh, 2012). These self-service technologies are interfaces which allow users to produce a service independent of direct service employee involvement (Meuter et al., 2000). Employees or customers can perform tasks on their own (e.g. ordering a product via the internet or requesting access to an application). In this research, the following definition was used for self-service features in employee portals:

Self-service features in employee portals allow employees to produce a service on their own, without direct involvement of a Service Provider.

Since users can produce services on their own, it reduces labor costs because less service employees are needed (Mithas et al., 2012). For customers, self-service technologies are used for e-commerce, e-government and customer support and this lead to greater efficiency, cost reduction and potentially convenience for customers. However, customer self-service also risks lowering customer satisfaction (Barrett, Davidson, Prabhu, & Vargo, 2015). A mix of self-service and human interaction help to maintain customer satisfaction (Scherer et al., 2015).

Employee self-service portals are different from customer self-service portals, because the target group is different. Employee self-service portals are used by employees within the organization while customer self-service portals are used by external customers. Self-service features make employees' jobs easier and less stressful, because interaction time and effort can be reduced for administrative tasks and employees can more focus on their actual work. Less interaction time and effort for administrative tasks would improve employee satisfaction. Employees would also enjoy to interact with service employees when it is about complex service requests (Hansen & Deimler, 2001).

2.1.3 Self-service features in employee portals

There is limited literature on possible self-service features for employee portals. More literature about customer self-service features is available (e.g. ATM, self-service counter at airports), but these features are mostly not relevant for employee portals in organizations. Daniel and Ward (2005) studied which services are provided in employee portals. The authors distinguished different types of services in employee portals and they assigned these to clusters. Four clusters were identified: personal effectiveness, organizational effectiveness via process change, personal efficiency and inter-organizational collaboration (Daniel & Ward, 2005). The cluster "personal efficiency" included functionalities which can be associated with self-service features for employee portals. The activities identified by Daniel and Ward (2005) in this cluster are: HR info, training, time or expense reporting, and procurement. These activities are mostly administrative tasks and can be done more efficient when employees can perform these tasks on their own without direct involvement of a Service Provider. For example, organizations are moving their Human Resources function to the intranet. These systems allow employees to view their current leave balances and they can apply for a leave. Employees can also book trainings via the self-service portal. Employees experience the self-service portal for HR information as improving work and life balance and the system allows access to information for better decision-making (Hawking, Stein, & Foster, 2004). Projects at Accenture could also contain implementing self-service features for IT services. Examples of these features are doing a password reset or requesting access to an application. Since self-service features for IT services enable users to produce more IT services on their own, this category of self-service features was added to the list.

Based on the research of Daniel and Ward (2005) and the information available at Accenture about possible self-service features in employee portals, the following self-service feature categories for this research have been identified: *HR information, IT services, procurement, time or expense reporting, and training*.

2.2 IS Success Model

The updated IS Success model and its dimensions are discussed in the following sections. Also the reasons why the model is relevant for this research are explained.

2.2.1 The model

In 1992, DeLone and McLean published an article about information systems success. In the information management discipline, there was at that time no consistent way to measure the success of information systems (IS) and it was essential that there would be a well-defined dependent variable which is measureable. Based on previous researches, six aspects of information systems were identified: System Quality, Information Quality, Use, User Satisfaction, Individual Impact and Organizational Impact (DeLone & McLean, 1992). After ten years, DeLone and Mclean discussed the research contributions of that decade and they proposed minor refinements to the IS Success Model based on those researches. Service Quality have been added as an extra dimension to the model and Individual Impact and Organizational Impact were replaced by the dimension Net Benefits (DeLone & McLean, 2003). The updated IS Success Model with its dimensions can be found in Figure 2 on page 19.

The updated IS Success Model by DeLone & McLean (2003) can be useful to identify which set of self-service features are important and should be included in employee portals. The model consists of six dimensions, but the importance of each dimension may be different for different systems and applications in the IS discipline (Petter & McLean, 2009). In the following section, each dimension and the relationships between the dimensions of the IS Success Model are explained.

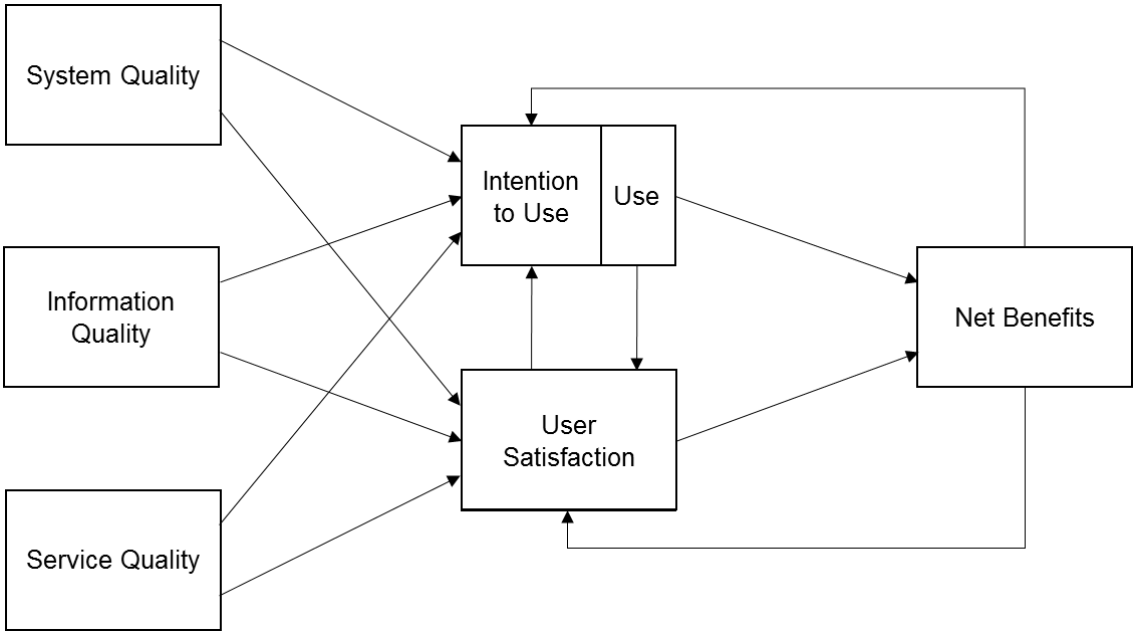

Figure 2: The updated IS Success Model adapted from DeLone & McLean (2003)

2.2.2 Dimensions of IS Success Model

The IS Success Model of its original form consisted of six dimensions: System Quality, Information Quality, Use, User Satisfaction, Individual Impact and Organizational Impact (DeLone & McLean, 1992). The dimension Service Quality had been added to the updated IS Success Model, because IS support is becoming more and more important in the IS discipline and especially in the e-commerce environment, customer service is crucial. Therefore, the Service Quality could have a significant impact on the user satisfaction and use of an information system. Furthermore, Individual Impact and Organizational Impact have been replaced by Net Benefits, because some benefits could simply not be placed in individual or Organizational Impacts, for example inter-organizational or industry impacts (DeLone & McLean, 2003).

System Quality, Information Quality and Service Quality are typical characteristics of an information system and the level of these dimensions have an influence on the Intention to Use and the User Satisfaction. For example, a higher level of System Quality is expected to lead to a higher level of User Satisfaction and Intention to Use. Therefore, these quality-dimensions have to be measured or controlled. Then, the Intention to Use, and User Satisfaction are dimensions which are mostly influenced by the quality-dimensions. Intention to Use is more like an attitude, for example when the system or application is not available yet for the user and the dimension Use is a behavior (DeLone & McLean, 2003). The Use and

User Satisfaction both influence the Net Benefits of the system and therefore the success. Examples of Net Benefits are cost savings, time savings or expanded markets.

The relationships between the dimensions of the updated IS Success Model have been tested by several researchers. Petter & McLean (2009) found evidence for example strong relationships between the dimensions User Satisfaction and Intention to Use. Furthermore, a moderate relationship strength was found between Use and Net Benefits (Petter, DeLone, & McLean, 2008). To measure the success of different self-service features, some dimensions and relationships can be more important than other dimensions and relationships. In the next section, the success of employee portals is described and then relevant dimensions and relationships for this research are identified.

2.2.3 Success of employee portals

The IS Success Model has often been used by researchers to study the success of employee portals. Urbach et al. (2010a) used all the dimensions of the original IS Success Model. The authors also added Process Quality and Collaboration Quality as dimensions to their research model. Furthermore, they added control variables such as management support. The hypotheses on the relationships between Use and User Satisfaction are supported. Also the dimensions Use and User Satisfaction have respectively a medium and positive effect on the benefits of employee portals. The Quality-dimensions did not have a great influence on Use or User Satisfaction, or these hypotheses were not even supported. Al-Debi, Jalal and Al-Lozi (2013) studied the success of employee portals as well. These researchers adapted the IS Success Model by replacing the dimension Benefits by Job Performance. Strong relationships between Use, User Satisfaction and Job Performance have been found (Al-Debei et al., 2013). The influence of the Quality-dimensions was not as great as the influence of Use and User Satisfaction on Job Performance. This outcome shows that Use and User Satisfaction have a positive influence on Benefits and that these dimensions are important to determine the success of employee portals. This positive relationship would not be any different for self-service features in employee portals, because organizations can only benefit from self-service technologies when these technologies are extensively utilized by users (Saeed & Abdinnour, 2013).

2.3 User acceptance and satisfaction

Previous studies on the success of employee portals showed that the dimensions (Intention to) Use and User Satisfaction of the IS Success Model are important constructs to determine the success of these portals. These constructs are also important to determine the success of self-service features in employee portals. Before employees are willing to use the self-service technologies, they have to accept it. Therefore, the user acceptance is described in this section. The Technology Acceptance Model described factors that influence the decision of employee if they would accept the technology and if they are willing to use this technology (Venkatesh & Davis, 2000). Furthermore, employee portals could improve employee satisfaction (Hansen & Deimler, 2001). Therefore, the right set of self-service features available in employee portals would also improve employee satisfaction. When employees are more satisfied, then this could also have a positive influence on their willingness to use self-service technologies. Therefore, the construct user satisfaction was studied as well.

2.3.1 User acceptance

Before employees have the intention to use self-service technologies, employees have to accept the new technology. The availability of self-service technologies also depends on the readiness of organizations to adopt and use self-service technology (Ramaseshan, Kingshott, & Stein, 2015). Four factors have been described by Ramaseshan et al. (2015) for organizations to effectively use self-service technologies in their operations and be ready to implement these technologies:

1) Understand why self-service technologies are critical for their operations;
2) Be clear on the strategic aims of self-service technologies;
3) Assess the capabilities of the organization for self-service technologies;
4) Develop clear plans to adopt self-service technologies in the organization.

Once organizations are ready to implement self-service technologies and the technology have been implemented, the acceptance of employees is important so that they will use the employee self-service portal. Self-service technologies only have benefits when people are using these technologies (Saeed & Abdinnour, 2013). Davis (1989) described in the original Technology Acceptance Model that Intention to Use has a direct impact on the Usage Behavior. The construct Intention to Use is influenced by Perceived Usefulness and Perceived Ease of Use. Employees will only accept and have the intention to use self-service features in

employee portals when they believe that using the self-service technologies will enhance their job performance and when they believe that it does not cost any effort to use the system. The original Technology Acceptance Model has been extended by Venkatesh and Davis (2000) and several factors have been added which could influence the Perceived Usefulness. Subjective Norm could also have an influence on Intention to Use. Subjective Norm is defined as the perception that most people who are important to the user should or should not use the new technology. Also Experience with similar systems and Voluntariness to use the technology have a positive effect on the Intention to Use (Venkatesh & Davis, 2000). The extended version of the Technology Acceptance Model can be found in Figure 3.

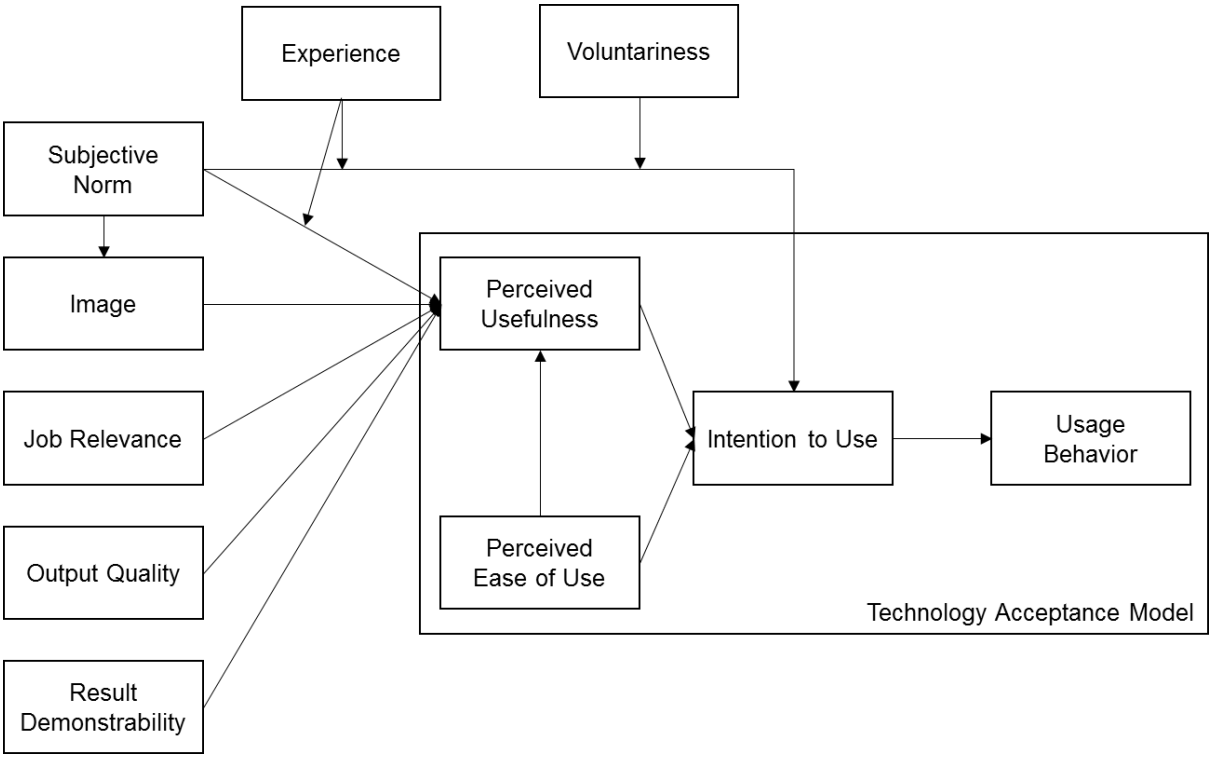

Figure 3: Technology Acceptance Model 2 adapted from Venkatesh & Davis (2000)

The Output Quality has been studied by Travica (2008) in terms of information culture in an organization. Information culture is about the artifacts, behaviors and beliefs that are related to information technology and information (knowledge, meaning and data). Employees should have the beliefs and trust that the information is reliable and processed in a correct way, otherwise it could have a negative impact on the acceptance of the new technology (Travica, 2008). Information culture is also related to the construct Result Demonstrability. Therefore, when the system produces positive results (correct information) then users would have a more positive perception of the usefulness (Venkatesh & Davis, 2000). The engagement

of the organization has an important role in determining the readiness of an organization for self-service technologies. Management should be involved, because they will finally decide about bringing self-service technologies into the organization (Ramaseshan et al., 2015). The involvement of management and other people is part of the construct Image in the Technology Acceptance Mode. When people with higher profiles or more prestige are using the system, it has a positive influence on the Perceived Usefulness (Venkatesh & Davis, 2000). Therefore, involvement of top management is fundamental for increasing the use levels of employee portals (Kassim & Mohammed, 2013). Furthermore, the engagement of users of employee self-service portals can lead to reduced resource requirements in providing services. In the long term, less service employees are required, because users know how to use the self-service features and they are willing to use the self-service features in employee portals (Saeed & Abdinnour, 2013). The Job Relevance construct in the extended Technology Acceptance Model is defined as the employee's perception regarding the degree to which the new technology is applicable to his or her job will be more positive (Venkatesh & Davis, 2000). Perceived Usefulness is directly influenced by Job Relevance. Therefore, involvement of users (e.g. during the development or implementation process) is very important so that users have the intention to use the self-service features in the employee portal. So, several factors could have an influence on the Perceived Usefulness and therefore also on the Intention to Use. Reliable information, top management involvement and the engagement of users during the developing and implementation phase would increase the acceptance of users and therefore the level of use of self-service features in employee portals.

2.3.2 User satisfaction

User satisfaction can be defined as the affective attitude towards the employee portal by an employee who interacts directly with the portal. (Sugianto & Tojib, 2006). User satisfaction of self-service features is about the extent to which users believe that the self-service features in the employee portals available to them meets their requirements. As described in the updated IS Success Model, user satisfaction has a direct influence on the use of employee self-service portals. Konradt, Christophersen and Schaeffer-Kuelz (2006) also added user satisfaction as a construct in the Technology Acceptance Model to study the influence of User Satisfaction on Usage Behavior in employee self-service systems. The hypothesis in this study that Perceived Usefulness is positively related to User Satisfaction and Usage Behavior, was

supported. A greater belief in the usefulness of employee self-service portals will result in higher user satisfaction and therefore an increased level of use.

The user satisfaction can be influenced by several positive or negative factors. Technology failures and poor designs are the most important reasons which could lead to dissatisfying users, respectively in 43% and 36% of the incidents (Meuter et al., 2000). Therefore, technology and design problems should be solved before the implementation phase. The involvement of users during the developing process could help in designing a good interface (Saeed & Abdinnour, 2013). Meuter et al. (2000) also described factors which have a positive effect on the use of self-service features. More than two-third of the respondents think that self-service is better than having direct contact with a Service Provider, because of the ease of use, time savings and users can use the technology when and where they want.

User satisfaction can be measured using different dimensions. Tojib, Sugianto and Sendjaya (2008) identified five factors to measure user satisfaction of employee portals:

- Usefulness
- Confidentiality
- Ease of Use
- Convenience of Access
- Portal Design

Usefulness and Ease of Use are also constructs in the Technology Acceptance Model (Venkatesh & Davis, 2000). Konradt et al. (2006) added the construct User Satisfaction to the Technology Acceptance Model and the Usefulness and Ease of Use had a direct influence on the User Satisfaction. Furthermore, a poor design has a negative effect on the user satisfaction. However, the convenience of access could have a positive influence on the user satisfaction, because users would like to use employee self-service portals when and where they want. So, user satisfaction can be measured with different factors which already have been used in other studies.

3 CONCEPTUAL MODEL

Based on the literature study, the conceptual model for this research is presented. The goal of this research was to determine which key features should be included in employee self-service portals. First, the relevant dimensions of the updated IS Success Model are explained, which were used to identify the success of features in employee self-service portals. Then, the possible self-service features in employee portals are listed. At last, the conceptual model and the hypotheses are presented.

3.1 Relevant dimensions of the updated IS Success Model

Relevant dimensions of the updated IS Success Model by DeLone and McLean (2003) were used to identify the success of self-service features. As mentioned before, Use and User Satisfaction are important aspects to determine the success of self-service features within employee portals. As cost reduction is one of the main drivers of employee self-service portal implementations, the dimension Net Benefits in the updated IS Success Model was used as well. In this research, I assumed that the degrees of the dimensions System Quality, Information Quality and Service Quality are sufficient. The level of these quality dimensions for self-service features will not be different for each self-service feature. Furthermore, researchers found that these quality dimensions do not have a great influence on Use and User Satisfaction (Urbach et al., 2010a; Al-Debei etl al., 2013). Therefore, the quality dimensions were not part of the conceptual model and were beyond scope of this research. The dimensions Intention to Use and Use are strongly related and Intention to Use will lead to Use. Intention to Use is an attitude whereas Use is a behavior (DeLone & McLean, 2003). Therefore, these dimensions were represented as one construct. The influence of different self-service features on the dimensions Intention to Use and User Satisfaction are tested. Also the relationships between these two dimensions were tested, because User Satisfaction and (Intention to) Use are linked. Moreover, only when employees are actually using the self-service features, it could really result in cost reductions. Therefore, the relationship between Use and Net Benefits is tested as well. The relevant dimensions and relationships of the updated IS Success Model can be found in Figure 4 on page 26.

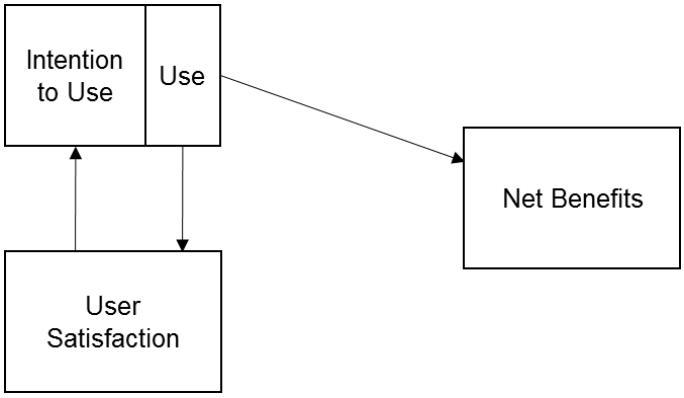

Figure 4: Relevant dimensions of the updated IS Success Model for this research

3.2 Self-service features

Daniel and Ward (2005) described several self-service feature categories for employee portals. Also information available at Accenture was used to identify possible self-service features. The following self-service feature categories for employee portals have been identified:

- HR information
- IT services
- Procurement
- Time or expense reporting
- Training

These self-service features could have different levels of importance. Maslow's Hierarchy of Needs has been used for the IT Value Hierarchy (Urwiler & Frolick, 2008). This framework described that specific IT needs such as infrastructure should be available before upon meeting other needs (e.g. security or integrated information). Maslow's Hierarchy can also be used to describe the needs for self-service features. Employees only have the need for some features when basic features are available. Each level of the hierarchy included different self-service features. The selection of these features was based on the MoSCoW-method. The letters of this prioritization method represents "Must have", "Should have", "Could have" and "Won't have this time" (DSDM Consortium, 2008). The hierarchy of self-service features can be found in Figure 5 on page 27 and the following levels for this hierarchy, which include the self-service feature categories, have been identified:

- The "*must have*" self-service features included the categories *HR information* and *IT services*, because these features are the foundation of any employee self-service portal. These self-service features are relevant for every organization and employees should have the possibility to request HR information and IT services on their own;

- *Procurement* and *Time or expense reporting* were categorized as "*should have*" features, because these features are only relevant for some organizations (e.g. consultancy) and other organizations or departments might not need these features;
- *Training* would be a "*could have*" feature, because training is an extra functionality for employees in self-service portals but it is not necessary for employees for doing their primary tasks.

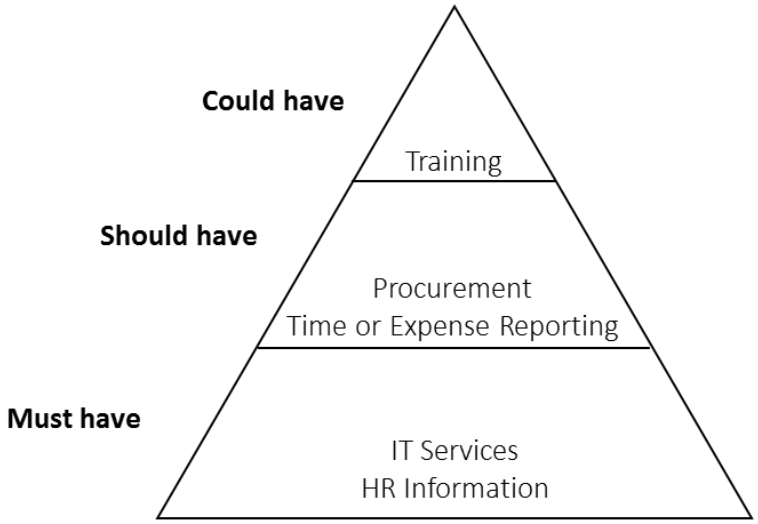

Figure 5: Hierarchy of self-service features

3.3 Conceptual model and hypotheses

The relevant dimensions of the updated IS Success Model and the hierarchy of possible self-service features in employee portals were both used to draft the conceptual model. The relationships between each level of the hierarchy and the dimensions Intention to Use and User Satisfaction were tested. Furthermore, the influences of the Use of employee self-service portals on User Satisfaction and User Satisfaction on Intention to Use were studied. At last, the dimension Net Benefits has been replaced by Cost Reduction, because cost reduction is one of the main drivers for organizations to implement self-service features. Net Benefits also includes more than only cost reductions (e.g. expanded market, time savings) and these are not as relevant as cost reductions. The relationship between Use and Cost Reduction was tested as well. The conceptual model can be found in Figure 6 on page 30.

First, the effects of each level of the hierarchy with the self-service feature categories on Intention to Use were tested. The presence of features in an employee self-service portal will have a positive effect on the Intention to Use of that system (*H1a, H1b, & H1c*). When features in employee self-service portals are available to employees, then employees would use these

features. However, some features in an employee self-service portal might have a higher positive effect on Intention to Use of that system than other features. The “must have” features in employee self-service portals are widely used by employees and relevant for every organization and employee. Therefore, the presence of “must have” features in an employee self-service portal will have a higher positive effect on Intention to Use than the presence of other features in an employee self-service portal (*H1d*). Based on this information, the following hypotheses were drafted:

H1a. The presence of “must have” features in an employee self-service portal will have a positive effect on the Intention to Use of that system.

H1b. The presence of “should have” features in an employee self-service portal will have a positive effect on the Intention to Use of that system.

H1c. The presence of “could have” features in an employee self-service portal will have a positive effect on the Intention to Use of that system.

H1d. The presence of “must have” features in an employee self-service portal will have a higher positive effect on the Intention to Use of that system than the presence of other features in the employee self-service portal.

Also the effects of each level of the hierarchy with the different self-service feature categories on User Satisfaction were studied. The presence of these features in an employee self-service portal will have a positive effect on the User Satisfaction of that system (*H2a, H2b, & H2c*). Employees could do their tasks more efficient and easier without direct involvement of a Service Provider. Furthermore, employees are less dependent on other people when they can request or produce a service on their own. However, the presence of some features in an employee self-service portal might have a higher positive effect on the User Satisfaction of that system than other features in the employee self-service portal. Employees would expect that “must have” features in an employee self-service portal are standard available and therefore the presence of these features will have a lower positive effect on User Satisfaction than other features in employee self-service portal. Consequently, the “could have” features in an employee portal are an extra functionality for employees and since it is not standard, it would have a higher positive effect on User Satisfaction of that system than other features in an employee self-service portal (*H2d*). The following hypotheses were drafted:

H2a. The presence of “must have” features in an employee self-service portal will have a positive effect on the User Satisfaction of that system.

H2b. The presence of “should have” features in an employee self-service portal will have a positive effect on the User Satisfaction of that system.

H2c. The presence of “could have” features in an employee self-service portal will have a positive effect on the User Satisfaction of that system.

H2d. The presence of “could have” features in an employee self-service portal will have a higher positive effect on the User Satisfaction of that system than the presence of other features in the employee self-service portal.

Then, the impact of User Satisfaction on Intention to Use was studied. Users who report to be satisfied, will have the intention to use the employee self-service portal (*H3*). This led to the following hypothesis:

H3. The User Satisfaction of an employee self-service portal will have a positive effect on the Intention to Use of that system.

Furthermore, users who use employee self-service portals more frequently are more satisfied (*H4*). Employees can produce services on their own and they do not have to directly contact Service Providers by email, phone or in person. Therefore, the following hypothesis was tested as well:

H4. The Use of an employee self-service portal will have a positive effect on the User Satisfaction of that system.

At last, the relationship between Use and Cost Reduction was tested. Cost Reduction is one of the main drivers for organizations to implement employee self-service portals, because the use of self-service features could lead to cost reductions. Therefore, Use will have a positive effect on Cost Reduction (*H5*):

H5. The Use of an employee self-service portal will have a positive effect on the Cost Reduction by that system.

These hypotheses are included in the conceptual model, which can be found in Figure 6 on page 30. These hypotheses were tested in this research.

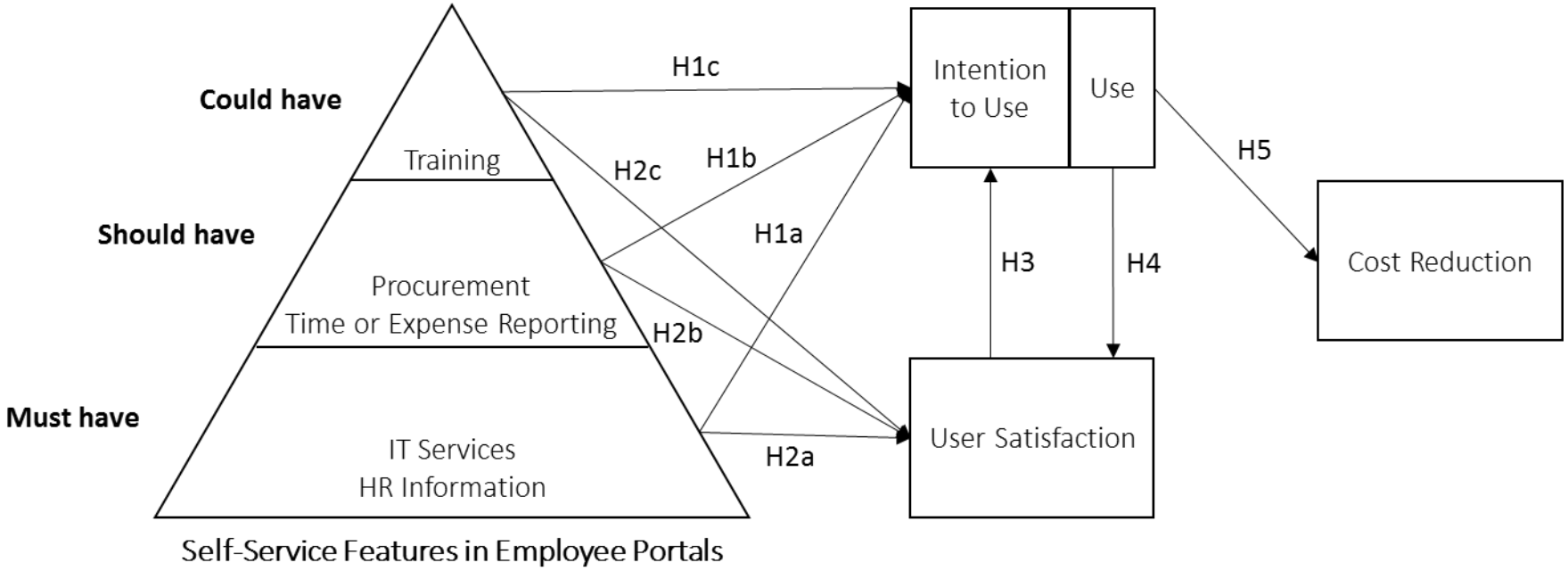

Figure 6: Conceptual model of this research

4 METHODOLOGY

In this chapter, the methodology of this research is described. First, the working method is explained, this includes the step-by-step description of the execution of this research. Furthermore, information about the participants for the interviews and questionnaire is outlined. In this section, short descriptions of the case study organizations are also given. Thereafter, the instruments for this research are explained. The interview questions and questions in the questionnaire are linked to the conceptual model.

4.1 Working method

The step-by-step description of the execution of this research is described in this section. First, a literature study has been conducted to look for relevant theory about employee self-service portals. Then, the case study method (Yin, 2009) has been used to collect and analyze data for this research. This method consists of three stages:

1. Define and design
2. Prepare, collect and analyze
3. Analyze and conclude

The process of this research can be found in Figure 7.

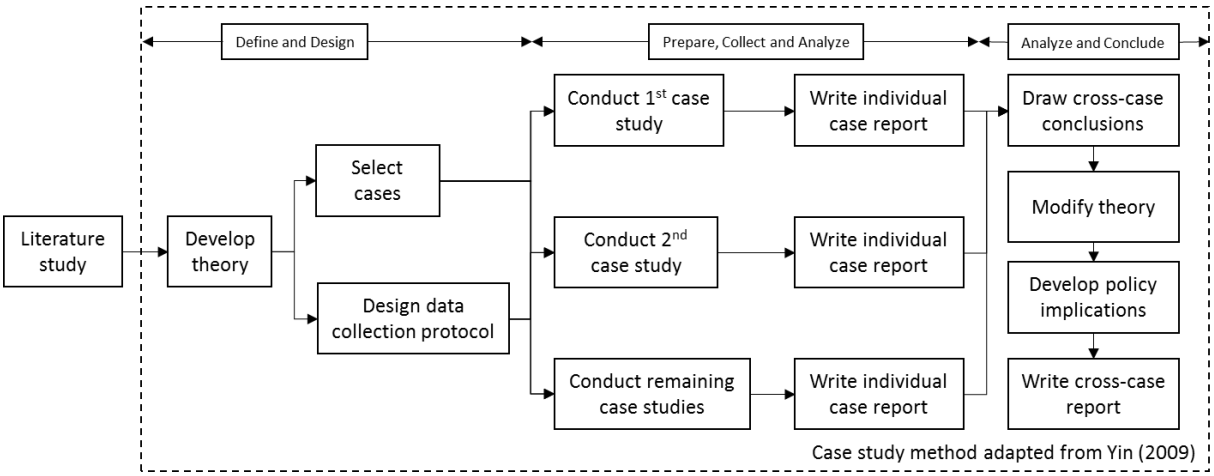

Figure 7: Process of this research

The literature study and each stage of the case study method are explained in the next sections.

4.1.1 Literature study

A literature study has been conducted to look for information which was relevant for this research. The topics for the theoretical foundation of this research can be found in Figure 8.

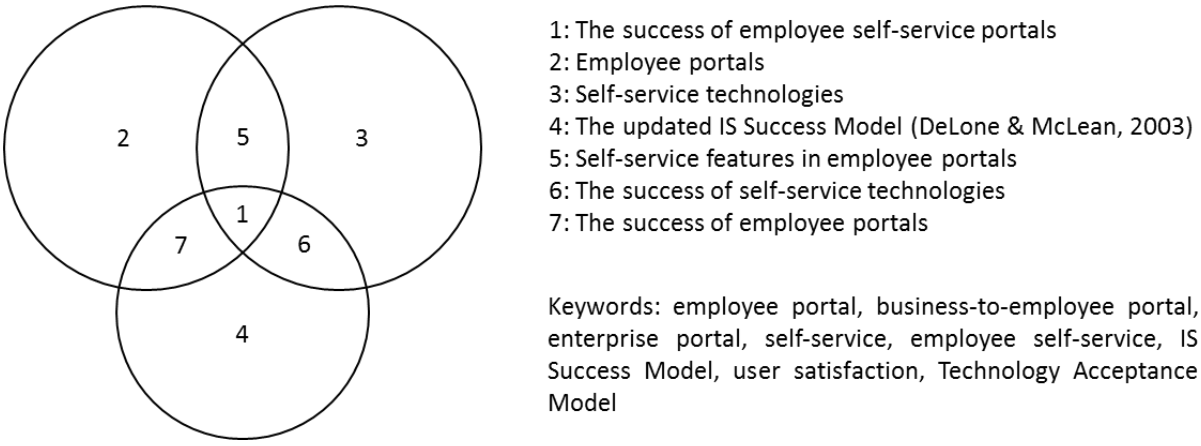

Figure 8: Topics for the theoretical foundation of this research

The main topic of this research was the success of employee self-service portals (1). The right set of self-service features in employee portals results in cost reductions and improved employee satisfaction. Three terms were used to find the relevant information for the theoretical foundation: employee portals (2), self-service technologies (3) and the updated IS Success Model (4). The information about employee portals was used to get insights in the evolution of employee portals over the past decades and how employee portals nowadays are used in organizations. Self-service technologies are not only used in employee portals, but are also used for customers outside the organization and this information was relevant for this research as well (e.g. cost reduction is one of the main reasons to implement self-service technologies). Then, the updated IS Success Model by DeLone & McLean (2003) supported in identifying the constructs which were relevant to determine the success of employee self-service portals (e.g. use and user satisfaction). Thereafter, the topics which were on the intersection of the previous topics have been identified: self-service features in employee portals (5), the success of self-service technologies (6) and the success of employee portals (7). Daniel & Ward (2005) described several self-service features in employee portals. The success of self-service technologies depends on the acceptance of this technology (e.g. Technology Acceptance Model 2) and the use of self-service features. At last, the success of employee portals was also studied by multiple researchers (Urbach et al., 2010a; Al-Debei et al., 2013). These seven topics were used for the theoretical foundation of this research.

Literature was found via Google Scholar with the use of several keywords. These keywords can also be found in Figure 8 on page 32. Then, backward citation and forward citation have been used to find more relevant literature. So, the list with references of each article was also used to find articles which were published earlier and could be relevant for this research (backward citation). Furthermore, newer articles which cited the articles which already have been used, were exploited if these newer articles included relevant information about the topic (forward citation). Based on the theory, the conceptual model was developed.

4.1.2 Define and design

In collaboration with the client organization, the theory or conceptual model has been developed. The conceptual model includes possible self-service feature categories for employee portals and relevant dimensions to measure the success of these features (user satisfaction, use and cost reduction). As described before, the developing of the conceptual model was based on the theoretical foundation. Then the cases were selected, the selection of the participants is explained in 4.2 Participants. Also the data collection protocol has been designed. A questionnaire was prepared which was then sent to end-users. This questionnaire included questions about the intention to use of self-service features and user satisfaction. Furthermore, an interview guide has been designed which was used to interview decision-makers of employee self-service to identify the relationship between use and cost reduction. More information about the interview guide and the questionnaire related to the conceptual model can be found in 4.3 Instruments.

4.1.3 Prepare, collect and analyze

After the define and design stage, contacts with different organizations were established and if possible the case studies were conducted at these organizations. An employee of Accenture who was doing a project at the case study organization was contacted to get access to a decision-maker of the case study organization. Then, a meeting was scheduled with the decision-maker for the interview and also the questionnaire was discussed. Based on which self-service feature categories were available within the organization, the questionnaire was adjusted so only the relevant questions were shown to the respondents. Also the names of the different information systems or portals were added to each self-service feature category so no misunderstanding could arise about the link between the self-service feature categories and the different systems at the case study organization. The questions were the same in all case studies so only the names of the systems were added. Finally, the interview was held

with the decision-maker and the questionnaire was sent to the end-users within the organization. For each of the case studies, an individual result report has been written and these results can be found in 5 Results.

Quantitative analysis has been used to analyze the data of the questionnaire. Cronbach's Alpha was used to test the reliability of each set of questions which measured the same construct. Cronbach's Alpha is a measure of internal consistency. If the value of Cronbach's Alpha was lower than 0,7 then questions were removed if these questions were not measuring the same construct as intended (Field, 2009). Scores were assigned to the different constructs so that it was possible to compare the values for Intention to Use and User Satisfaction for each self-service feature category. Then, descriptive statistics such as mean, median and modus were analyzed. Furthermore, different tests (e.g. t-test) have been run to compare the values between the different variables. More information about the data analysis can be found in 5 Results. The scores of each construct in the questionnaire were analyzed to test hypotheses H1, H2, H3 and H4.

The interviews were analyzed using qualitative analysis. First, summaries of the interviews were written and these can be found in Appendix D: Interview summaries. Based on the theory and interviews, different categories were drafted to structure the data of the interview. Open coding was used to assign relevant words and phrases which describe the same topic to labels. These labels helped to get an understanding of the text in the interviews. Labels were only created when the text could not be placed in the existing labels.

4.1.4 Analyze and conclude

After the case studies, cross-case analysis results were analyzed by comparing the results of the cases. Since every case study organization and the available self-service portals at these organizations were different, it was not possible to combine the data. Thereafter, conclusions were drawn.

4.2 Participants

Multiple case studies have been conducted at different organizations to collect data about employee self-service portals. The selection of these organizations was based on the following requirements:

- Employee self-service portal is available to employees;
- Access to a decision-maker for an interview;
- Approval from the case study organization to send the questionnaire to end-users of the employee self-service portal.

Two types of roles in the organizations were needed for this research. A questionnaire was sent to end-users of employee self-service portals to collect data about the influence of different self-service feature categories on Intention to Use and User Satisfaction of these self-service features. Furthermore, a decision-maker within the organization has been selected for the interview to study the influence of Use of self-service features on Cost Reduction. This decision-maker should have been involved in the decision-making process of developing and/or implementing self-service features in the employee portal.

Three organizations were selected where data have been collected for this research. A short description of each organization is given below.

Case A: The first organization was a company in the beverages industry with around 12.000 employees worldwide. One interview has been held with two decision-makers who were managing the employee self-service portal for especially IT services. The questionnaire was sent to 49 IT managers worldwide. These employees could also forward the URL of the questionnaire to fellow employees and therefore it is not exactly known how many employees received the questionnaire. All participants were aware which self-service features were available to them.

Case B: A global IT consulting company was the second case study organization. An interview has been held with the technology support lead who is responsible for the self-service portal for IT services, including procurement of devices and equipment for IT. Since this organization is also developing and implementing self-service portals for their clients, the self-service portals within this organization were already very advanced. Then, the questionnaire was sent to 137 end-users who work in a department in the Netherlands.

Case C: The third organization was a university in the Netherlands. An interview has been held with the manager who is responsible for the Human Resources (HR) department within the university. He was also involved in the development of the self-service portal for HR. The questionnaire has been sent to 106 employees of the university. This has been a random selection of employee who worked at the university as either academic staff or support/management staff.

The number of participants and other descriptive information about the case study organizations can be found in Table 2. Also the response rate has been calculated by dividing the number of completed responses by the number of end-users who received the questionnaire.

Table 2: Descriptive information about the participants

		Interview	Questionnaire		
	Industry	**# Decision-makers**	**# End-users**	**# Responses**	**Response rate**
Case A	Beverages	2	49[1]	22	44,9%
Case B	IT Consulting	1	137	32	23,4%
Case C	University	1	106	47	44,3%

[1] Questionnaire may have been forwarded to fellow employees by primary respondents. Therefore, the number of end-users who received the questionnaire and the response rate may be different.

4.3 Instruments

In this section, the different instruments, which have been used for this research, are described. A questionnaire has been sent to end-users of employee self-service portals to collect data about the Intention to Use and User Satisfaction of each self-service feature category. Furthermore, interviews have been held with decision-makers to get information about the relationship between Use and Cost Reduction. The different questions of the questionnaire and the interview guide are linked to one or more hypotheses of the conceptual model.

4.3.1 Questionnaire for users

A questionnaire was sent to end-users to collect data about the effects of the availability of different self-service feature categories on Intention to Use and User Satisfaction. The questionnaire can be found in Appendix B: Questionnaire. A questionnaire was chosen, because it was efficient to reach a significant amount of people in a short time. Also the unambiguous way of answers on the questions was an advantage, because data can be quantified and can be analyzed with statistical procedures. Employees of the case study organizations received an URL via email to access the questionnaire on the internet, so other people could not access the questionnaire. The respondents were asked to complete the questionnaire within two weeks. The questionnaire was in English, because it was sent to employees who worked in international organizations. After one week, a reminder has been sent to the respondents.

For most questions a Likert scale was used to measure for example User Satisfaction or the likelihood that the respondent would use a self-service feature. Quantitative data can be obtained from questions with a Likert scale. A five-point scale have been used for all Likert scale questions. Examples of Likert scale answers are based on the level of importance, agreement, frequency and likelihood. The answer options, which were used in the questionnaire for this research can be found in Appendix B: Questionnaire.

First, a welcome screen was shown to the respondents with a short explanation about the topic and the questionnaire. Each hypothesis with its constructs was tested by one or more questions. The following constructs of the conceptual model were measured in this questionnaire: the self-service feature categories, Intention to Use and User Satisfaction.

Self-service feature categories

Examples of self-service features were shown to the respondents and they had to answer how important these features are to them. It did not matter whether the respondents were using the examples of features in employee self-service portals or not. Furthermore, the last question in the questionnaire consisted of the five self-service feature categories. The respondents had to rank the different categories from one to five based on their importance. The answers on both questions helped to get insights how important different self-service features are to users.

The next questions were based on which self-service feature categories were available within the case study organization. After the interview with the decision-maker, the questionnaire was customized so that the right questions were shown to the respondents. If the self-service feature category was available within the organization, then the respondent got questions about Intention to Use and User Satisfaction for this self-service category. Otherwise, only questions about Intention to Use were shown. Respondents got the same questions about Intention to use and User Satisfaction for each of the five self-service feature categories. This process can be found in Figure 9.

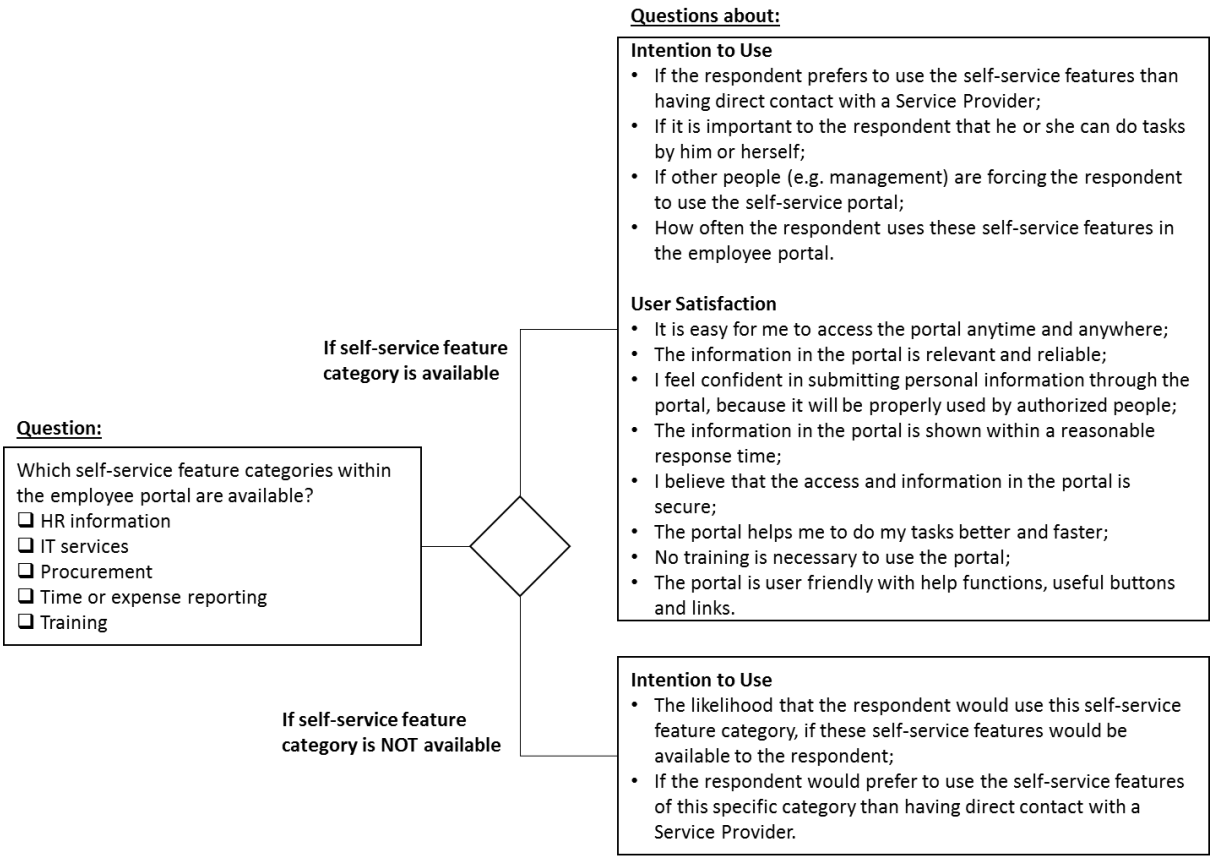

Figure 9: Questionnaire decision tree

Intention to Use

Questions were asked to the respondent about the Intention to Use for each of the five self-service feature categories. However, the number and type of questions depended on whether the self-service feature category was available to the respondent or not. The type of questions about Intention to Use can also be found in Figure 9 on page 38. These questions tested the relationship between each self-service feature category and the construct Intention to Use. Therefore, it also tested the relationship between each level of the hierarchy with the self-service feature categories and Intention to Use. So, the hypotheses H1a, H1b, H1c and H1d were tested with these questions. Furthermore, the influence of User Satisfaction on Intention to Use was tested (H3). The answers on the question which tested the effect of User Satisfaction on Intention to Use were used for this hypothesis.

User Satisfaction

If the self-service feature category was available to the respondents, then they got questions about the User Satisfaction of these self-service feature categories. User Satisfaction can be measured with the use of several items (Tojib et al., 2008). These items were included in the questionnaire of this research and can be found in Table 3.

Table 3: Items to measure User Satisfaction adapted from Tojib et al. (2008)

Item	Question in the questionnaire
Convenience of access	It is easy for me to access the portal anytime and anywhere.
Information content	The information in the portal is relevant and reliable.
Confidentiality	I feel confident in submitting personal information through the portal, because it will be properly used by authorized people.
Timeliness	The information in the portal is shown within a reasonable response time.
Security	I believe that the access and information in the portal is secure.
Efficiency	The portal helps me to do my tasks better and faster.
Ease of Use	No training is necessary to use the portal.
Layout	The portal is user friendly with help functions, useful buttons and links.

Also the overall satisfaction was measured in this questionnaire. These questions were used to test the influence of each self-service feature category on User Satisfaction and also hypotheses H2a, H2b, H2c and H2d were tested.

The answers on the questions for all available self-feature categories about the effect of Use on User Satisfaction were used to test the relationship between these two constructs (H4). At the end of the questionnaire, respondents had the opportunity to write any additional comments, questions or suggestions for this research. This last question allowed respondents to identify issues which were not captured in the closed questions.

So, hypotheses 1, 2, 3 and 4 were tested by using the questionnaire. The original questionnaire can be found in Appendix B: Questionnaire and the list of all questions in the questionnaire can be found in Appendix E: List of questions.

4.3.2 Interviews with decision-makers

Decision-makers have been interviewed to test the relationship between Use and Cost Reduction. Decision-makers are employees of the organization who were involved in the decision process about developing and/or implementing self-service features in the employee portal. The interviews were semi-structured so it was possible to elaborate on questions. The interviews lasted about fifteen minutes. The interviewee had the opportunity to choose whether the questions were in Dutch or in English, because it is more convenient to answer questions in your native language. The interview guide (in Dutch and English) can be found in Appendix C: Interview guides.

Different open questions have been asked to the interviewees to test the relationship between Use and Cost Reduction. First, the interviewee was asked what his or her role is related to the employee self-service portal. Then, questions were asked about which self-service feature categories were available in the portal and how was identified which self-service features should be implemented. After these introduction questions, questions were asked to get more information about the relationship between the Use of self-service features and Cost Reduction. The interviewee was asked why the self-service features have been implemented, so what were the intended benefits. Then, this interviewee was asked if these intended benefits have been achieved. At last, the interviewee was asked how these intended benefits have been achieved. These open questions about the intended benefits of implementing self-service features should have given more insights in the relationship of the Use of self-service features and Cost Reduction (H5). A summary of each interview can be found in Appendix D: Interview summaries.

5 RESULTS

In this chapter, the results are presented. First, an explanation is given about the data analysis techniques which have been used. Thereafter, the results of the questionnaire and interview for each case are described. At last, the results of the case studies are compared and analyzed in the cross-case analysis. In the cross-case analysis section, the results of the case studies in relation to the hypotheses are also explained in more detail. An overview of which hypotheses are supported in which cases and overall can be found in Table 4.

Table 4: Overview of which hypotheses are supported in this research

		Case A	**Case B**	**Case C**	**Overall**
H1a	"must have" features ⟶ Intention to Use	Yes	Yes	Yes	Yes
H1b	"should have" features ⟶ Intention to Use	Yes	Yes	Yes	Yes
H1c	"could have" features ⟶ Intention to Use	Yes	Yes	Yes	Yes
H1d	"must have" features (+) ⟶ Intention to Use	No	No	No	No
H2a	"must have" features ⟶ User Satisfaction	No	Yes	Yes[2]	Yes
H2d	"should have" features ⟶ User Satisfaction	Yes[3]	Yes	N/A[4]	Yes
H2c	"could have" features ⟶ User Satisfaction	N/A	Yes	N/A	Yes
H2d	"could have" features (+) ⟶ User Satisfaction	N/A	No	N/A	No
H3	User Satisfaction ⟶ Intention to Use	Yes	Yes	Yes	Yes
H4	Use ⟶ User Satisfaction	Yes	Yes	Yes	Yes
H5	Use ⟶ Cost reduction	No	No	No	No

[2] This hypothesis is partially supported, because "IT services" was not part of the analysis.
[3] This hypothesis is partially supported, because "Procurement" was not part of the analysis.
[4] N/A = No information available

5.1 Data analysis

Different techniques have been used to analyze the data of this research. The questionnaire consisted of quantitative data and therefore, I used IBM SPSS Statistics version 23 to analyze this data. The SPSS can be found in Appendix F: SPSS syntax. The interviews consisted of qualitative data and I used the open coding process to structure the information in the interviews. Descriptions of the data analysis techniques can be found below.

Cases used

All completed questionnaires were used for the data analysis. Also, incomplete responses were used for the analysis, but only when all questions about a specific construct were answered. Furthermore, answers on questions about user satisfaction were not included in the analysis when respondents answered that they had never used the self-service feature category.

Cronbach's Alpha

Cronbach's Alpha is a measure of internal consistency. This measure tested the reliability of a set of questions which intended to assess the same construct. Values for Cronbach's Alpha above 0,7 are considered acceptable. When the value is lower than 0,7 then questions could be removed so that the value of Cronbach's Alpha may be improved (Field, 2009). The values for Cronbach's Alpha after removing any questions can be found in Table 5.

Table 5: Values for Cronbach's Alpha (after removing questions)

	Self-service features				Intention to Use				User Satisfaction			
	Overall	Case A	Case B	Case C	Overall	Case A	Case B	Case C	Overall	Case A	Case B	Case C
HR information	0,715	0,779	0,722	0,645[5]	0,575	0,707	0,645[6]	0,373[7]	0,850	0,788	0,859	0,902
IT services	0,759	0,782[8]	0,685[9]	0,810	0,525	0,361[10]	0,514[11]	0,699	0,869	0,919	0,818	N/A
Procurement	0,820	0,826	0,738	0,896	0,806	0,829	0,842	0,747	0,939	N/A	0,939	N/A
Time or expense reporting	0,746	0,764	0,830	0,644	0,846	0,906	0,784	0,848	0,920	0,950	0,890	N/A
Training	0,918	0,987	0,964	0,802	0,720	0,543	0,780	0,837	0,951	N/A	0,951	N/A

[5] Question Q1.14 was removed (Self-service features, Case C, HR information).
[6] Question Q2.12 was removed (Intention to Use, Case B, HR information).
[7] Removing any questions did not result in an improved value for Cronbach's Alpha (Intention to Use, Case C, HR information).
[8] Question Q1.5 was removed (Self-service features, Case A, IT services).
[9] Question Q1.5 was removed (Self-service features, Case B, IT services).
[10] Removing any questions did not result in an improved value for Cronbach's Alpha (Intention to Use, Case A, IT services).
[11] Question Q3.15 was removed (Intention to Use, Case B, IT services).

Computing variables

For each of the construct variables, scores have been calculated by taking the mean value of the answers of the questions which measured the same construct. Thus, each self-service feature category got a score for Intention to Use and User Satisfaction. Furthermore, the levels of the hierarchy in the conceptual model consisted of one or two self-service feature categories. New variables were computed for the scores of the "must have" and the "should have" levels of the hierarchy.

Descriptive statistics

The descriptive statistics of the constructs can be found in Appendix G: SPSS output. The mean value has mostly been used in the analysis. For more than 90% of the tests, it was found that the mean value was greater than the value "3", the intermediate value[12].

Normality test

The Shapiro-Wilk test has been used to test for normality of the data, because the sample size was small. If the result of the Shapiro-Wilk test was not significant (p-value > 0,05) then the data of this variable was assumed to be normally distributed.

One sample t-test / The Wilcoxon signed-rank test (non-parametric test)

When it was assumed that the data was normally distributed then a one sample t-test was used. The one sample t-test has more statistical power than non-parametric tests (Field, 2009). The scores for each construct and answers on the questions had values between one and five. So, the mean value had to be compared to the value "3", because a value higher than "3" meant a positive effect on the construct. The value "3" is called the intermediate value.

The Wilcoxon signed-rank test was used when the data did not follow a normal distribution and this test analyzed if the median was significantly different from the intermediate value.

Analysis of variance (ANOVA)

One-way ANOVA was used to test if there were statistically significant differences between the mean values of three or more independent groups. When the p-value was greater than 0,05 then there were no significantly differences between the mean values of the groups.

Open coding

Based on information in the interviews, labels have been created to structure the data in the interviews. Words and sentences in the interviews were assigned to these labels. Thereafter, information under the same labels was compared between the different interviews.

[12] (number of mean values which are significant higher than "3") / (mean values for all constructs) * 100%

5.2 Case A

5.2.1 Self-service features

In case A, the self-service features for HR information, IT services and, time or expense reporting were available to the employees. The first question consisted of different self-service features and the respondent had to answer how important (if available) these features were to him or her (1 = not at all important, …, 5 = extremely important). Furthermore, the last question consisted of the five self-service feature categories which had to be ranked (1 = most important, …, 5 = least important). The mean values can be found in Table 6.

Table 6: Importance and ranking of self-service features (Case A)

	HR information	IT services	Procurement	Time or expense reporting	Training
Importance (1-5)	3,18	3,97	3,40	3,08	3,31
Ranking (5-1)	3,05	1,27	3,91	3,41	3,36

The mean values have been used to identify which self-service feature categories were important to the respondents of Case A. As demonstrated in the table, the respondents indicated that self-service features for IT services were the most important self-service features which should be available in the employee portal.

5.2.2 Intention to Use

The effect of each self-service feature category on Intention to Use of the self-service portal was studied. A score has been calculated for the Intention to Use of each self-service feature category. The score was the average of the answers on the Intention to Use questions about that specific self-service feature category. The mean values for Intention to Use of each self-service feature category can be found in Table 7.

Table 7: Mean values for Intention to Use of each self-service feature category (Case A)

	HR information	IT services	Procurement	Time or expense reporting	Training
Intention to Use (mean)	3,65	4,18	3,89	3,64	4,34

The mean values were all higher than “3”, indicating that every self-service feature category had a positive effect on Intention to Use. However, this should statistically be tested. Before a one sample t-test could be used, the data had to be tested for normality. According to the

Shapiro-Wilk test, only the data of IT services followed a normal distribution (p-value = 0,461[13]). The self-service feature category IT services had a positive effect on Intention to Use, because the one sample t-test was significant (p-value = 0,000). The non-parametric test was used for the other self-service feature categories. The p-values of these categories were all lower than 0,05. Thus, the categories HR information, procurement, time or expense report, and training had also a positive effect on Intention to Use. An overview of the effects of the self-service feature categories on Intention to Use can be found in Table 8.

Table 8: Overview of the effects of self-service feature categories on Intention to Use (Case A)

	Effect on Intention to Use
HR information	+
IT services	+
Procurement	+
Time or expense reporting	+
Training	+

Since every self-service feature category had a positive effect on Intention to Use, it can be concluded that also the levels of the hierarchy had a positive effect on Intention to Use.

Table 9: Overview of the effects of the levels of the hierarchy on Intention to Use (Case A)

	Effect on Intention to Use
Must have (HR information & IT services)	+
Should have (Procurement & Time or expense reporting)	+
Could have (Training)	+

The size of the effect of each level of the hierarchy on Intention to Use had to be identified. First, new variables have been computed, because a level of the hierarchy consisted of one or two self-service feature categories. The mean values of the levels of the hierarchy can be found in Table 10.

Table 10: Mean values for Intention to Use of the levels of the hierarchy (Case A)

	Must have	**Should have**	**Could have**
Intention to Use (mean)	3,90	3,76	4,34

The mean value of the “could have” features was already higher than the other two levels so it can be concluded that the “must have” self-service features did not have a higher positive effect on Intention to Use than the “should have” and “could have” features.

[13] The SPSS output tables of all tests can be found in Appendix G: SPSS output.

5.2.3 User Satisfaction

The effects of the self-service feature categories on User Satisfaction were only studied if these self-service features were available at the case study organization. The self-service features for HR information, IT services and, time or expense reporting were available in the self-service portal at case organization A. However, if respondents never used the self-service feature category then the data about user satisfaction of these self-service features was excluded from analysis[14]. The mean values for User Satisfaction of the available self-service feature categories can be found in Table 11.

Table 11: Mean values for User Satisfaction of each self-service feature category (Case A)

	HR information	IT services	Procurement	Time or expense reporting	Training
User Satisfaction (mean)	3,63	2,92	N/A	4,09	N/A

The tests of normality for the User Satisfaction score of the self-service feature categories were not significant (p-values > 0,05). Thus, one sample t-tests were used to study if the mean values were not equal to value "3". The one sample t-tests showed significant results for HR information and, time or expense reporting (p-values = 0,000). Thus, the mean values of these self-service feature categories are significant not equal to the intermediate value. However, the p-value of IT services was 0,707. The self-service features for HR information and, time or expense report have a positive effect on User Satisfaction. However, the mean value of IT services did not significantly differ from the intermediate value and therefore the self-service feature category IT services had a neutral effect on User Satisfaction. An overview of the effects of the different self-service feature categories on User Satisfaction can be found in Table 12 on page 47. The information of the effects of procurement and training on User Satisfaction were not available at case organization A, as these features were not offered in the portal.

[14] if the answer on question Qx.15 = 1 = never (for x = 2, 3, 4, 5, 6) then the answers on questions Qx.1 until Qx.9 were not used in the analysis. See Appendix E: List of questions for more information about the question numbers.

Table 12: Overview of the effects of self-service feature categories on User Satisfaction (Case A)

	Effect on User Satisfaction
HR information	+
IT services	0
Procurement	N/A
Time or expense reporting	+
Training	N/A

The hypotheses of this research are about the different levels of the hierarchy. Therefore, the data about the effects of HR information and IT services ("must have") on User Satisfaction were combined into one variable. As can be seen in Table 13, the mean value of the "must have" features was 3,23.

Table 13: Mean values for User Satisfaction of the levels of the hierarchy (Case A)

	Must have	Should have	Could have
User Satisfaction (mean)	3,23	4,09[15]	N/A

The Shapiro-Wilk test was not significant for the "must have" level (p-value = 0,467). The mean value of the effect of the "must have" features on User Satisfaction did not significantly differ from the intermediate value (one sample t-test, p-value = 0,161). An overview of the effects of the levels of the hierarchy on User Satisfaction can be found in Table 14.

Table 14: Overview of the effects of the levels of the hierarchy on User Satisfaction (Case A)

	Effect on User Satisfaction
Must have (HR information & IT services)	0
Should have (Procurement & Time or expense reporting)	+[16]
Could have (Training)	N/A

Based on the results, it can be concluded that the "must have" self-service features did not have a significant effect on User Satisfaction at case organization A. The self-service feature category time or expense reporting had a positive effect on User Satisfaction. However, no information was available about the effect of procurement on User Satisfaction so the effect of "should have" features on User Satisfaction was only partially tested. Furthermore, there was no information available at case organization A about the effect of the self-service features for training on User Satisfaction.

[15] The mean value of the "should have" features only included time or expense reporting.
[16] No information available about procurement so the effect of the "should have" features on User Satisfaction was only partially tested.

5.2.4 (Intention to) Use ⟷ User Satisfaction

The relationship between (Intention to) Use and User Satisfaction has also been studied. This was not about specific self-feature categories and therefore, the answers on questions Qx.13 and Qx.14 (where x = 2, 3, 4, 5, 6) were combined into two new variables: Satisfied_Use (Qx.13) and Use_Satisfied (Qx.14). As can be seen in Table 15, the mean values were higher than "3" but it had to be tested if these values were significantly not equal to "3".

Table 15: Mean values of User Satisfaction-Intention to Use and Use-User Satisfaction (Case A)

	Mean
User Satisfaction ⟶ Intention to Use	3,31
Use ⟶ User Satisfaction	3,60

Both variables did not follow the normal distribution (p-values = 0,000). Therefore, the alternative non-parametric test was used. The Wilcoxon signed-rank test showed that the median of both variables is not significant equal to "3" (p-value < 0,05). Therefore, it can be concluded that User Satisfaction had a positive effect on the Intention to Use at case organization A and Use had a positive effect on User Satisfaction. An overview of the effects can be found in Table 16.

Table 16: Overview of the relationships between (Intention to) Use and User Satisfaction (Case A)

	Effect
User Satisfaction ⟶ Intention to Use	+
Use ⟶ User Satisfaction	+

5.2.5 Intended benefits

The summary of the interview at case organization A can be found in Appendix D: Interview summaries. Based on the knowledge about employee self-service portals and the interview, several labels have been created for the coding process. Each label can consist of multiple terms which were described in the interview. The labels and terms of the interview of case A can be found in Table 17 on page 49.

Table 17: The information in the interview linked to the labels (Case A)

Intended benefits	Actions	Shortcomings
Improve operational processes	Processes were more standardized	End-users do not exactly know where they can find the services they need
	New employee self-service portal is owned by the company itself	More and more functions have been added to the system
	Not dependent any longer on only one supplier	Other systems have been developed and implemented
	Find all information in one place	End-users do not know which system they have to use for which task or service
		Negative perception of employees towards the employee self-service portal
		The system is outdated

The updated IS Success Model by DeLone and McLean (2003) described the construct Benefits in their model. Therefore, the first label 'Intended benefits' has been used for this research. The interviewee of case A explained that improve operations processes was the main reason to implement self-service systems. The next label is 'Actions', which consists of terms how the organization achieved the intended benefits. For example, processes were more standardized, the new employee self-service portal is owned by the company itself and all information can now be found in one place. Also possible 'shortcomings' of the other self-service portal were described in the interview, which led to the last label of this interview. More and more functions have been added to the system and also other systems were developed, then end-users do not exactly know where they can find the services they need. Furthermore, the system was outdated. Because of the shortcomings of the self-service portal, employees can decide to avoid the use of this system.

5.3 Case B

5.3.1 Self-service features

The IT consulting company had self-service features for HR information, IT services, procurement, time or expense reporting, and training. The mean values of how the respondents indicated the importance of different self-service features and how the respondents ranked the five self-service feature categories can be found in Table 18.

Table 18: Importance and ranking of self-service features (Case B)

	HR information	IT services	Procurement	Time or expense reporting	Training
Importance (1-5)	3,83	3,84	3,23	4,40	4,07
Ranking (5-1)	3,16	2,63	4,59	1,59	3,03

Time or expense reporting had the highest mean value for importance and the lowest mean value for ranking. Thus, the respondents indicated that these self-service features are the most important and should be included in an employee portal. Furthermore, procurement had the lowest mean value for importance and highest mean value for ranking. The respondents indicated that the self-service features for procurement were the least important.

5.3.2 Intention to Use

Thereafter, the effect of each self-service feature category on Intention to Use was studied. Each self-service feature category got assigned a score for Intention to Use. The mean values of the effects of the self-service features categories on Intention to Use can be found in Table 19.

Table 19: Mean values for Intention to Use of each self-service feature category (Case B)

	HR information	IT services	Procurement	Time or expense reporting	Training
Intention to Use (mean)	3,41	3,72	2,80	4,24	3,50

The Shapiro-Wilk test showed p-values higher than 0,05 for IT services and training. The one sample t-test showed significant results for IT services and training which demonstrated that the mean values of these variables were significant not equal to value “3”. Then, the Wilcoxon

signed-rank test showed significant results for HR information and, time or expense reporting. The p-value for procurement was not significant (p-value = 0,061). In short, since the mean values for HR information, IT services, time or expense reporting, and training were greater than the intermediate value and the test results were significant (p-value < 0,05) then it can be concluded that these self-service feature categories had a positive effect on Intention to Use. The mean value of procurement did not significantly differ from the value "3" and therefore, this self-service feature category had a neutral effect on Intention to Use. The effects of the self-service feature categories on Intention to Use can be found in Table 20.

Table 20: Overview of the effects of self-service feature categories on Intention to Use (Case B)

	Effect on Intention to Use
HR information	+
IT services	+
Procurement	0
Time or expense reporting	+
Training	+

The effects of HR information, IT services and training were positive on Intention to Use and therefore, it can be concluded that the effects of the "must have" level and the "could have" level also had a positive effect on Intention to Use. The mean value of the "should have" level was 3,51. The Shapiro-Wilk test showed a significant result (p-value = 0,000). The non-parametric test was used to test if the median value of this variable was not significantly equal to "3". The median was significantly not equal to the intermediate value, because the non-parametric test showed a significant result (p-value = 0,000). The mean value of the "should have" level was greater than "3" and this indicated that all levels of the hierarchy have a positive effect on Intention to Use at case organization B. An overview of the effects of the levels of the hierarchy on Intention to Use can be found in Table 21.

Table 21: Overview of the effects of the levels of the hierarchy on Intention to Use (Case B)

	Effect on Intention to Use
Must have (HR information & IT services)	+
Should have (Procurement & Time or expense reporting)	+
Could have (Training)	+

One-way ANOVA was used to test if there were differences between the mean values for Intention to Use of these three levels. The ANOVA test was not significant (p-value = 0,998) and this indicated that there were no significantly differences between the mean values of the levels of the hierarchy. The mean values of all levels of the hierarchy for Intention to Use can be found in Table 22.

Table 22: Mean values for Intention to Use of the levels of the hierarchy (Case B)

	Must have	Should have	Could have
Intention to Use (mean)	3,51	3,51	3,500

5.3.3 User Satisfaction

The effects of the available self-service feature categories on User Satisfaction have also been studied. The mean values for User Satisfaction of the self-service feature categories can be found in Table 23.

Table 23: Mean values for User Satisfaction of each self-service feature category (Case B)

	HR information	IT services	Procurement	Time or expense reporting	Training
User Satisfaction (mean)	3,85	3,88	3,72	3,81	3,67

The mean values for User Satisfaction are all greater than the intermediate value. The normality test showed no significant results for any of the self-service feature categories. All self-service feature categories had a positive effect on User Satisfaction, because the results of the one sample t-test were significant for all self-service feature categories (p-value < 0,05). An overview of the effects of the self-service feature categories on User Satisfaction can be found in Table 24.

Table 24: Overview of the effects of self-service feature categories on User Satisfaction (Case B)

	Effect on User Satisfaction
HR information	+
IT services	+
Procurement	+
Time or expense reporting	+
Training	+

Since all self-service feature categories had a positive effect on User Satisfaction, it can be concluded that the levels of the hierarchy also had a positive effect on User Satisfaction. An overview of these effects can be found in Table 25.

Table 25: Overview of the effects of the levels of the hierarchy on User Satisfaction (Case B)

	Effect on User Satisfaction
Must have (HR information & IT services)	+
Should have (Procurement & Time or expense reporting)	+
Could have (Training)	+

As can be seen in Table 26, the mean value of the "must have" features for User Satisfaction was higher than the mean value of the "could have". Therefore, the "could have" features did not have a higher positive effect on User Satisfaction than the other levels of the hierarchy with the self-service feature categories.

Table 26: Mean values for User Satisfaction of the levels of the hierarchy (Case B)

	Must have	**Should have**	**Could have**
User Satisfaction (mean)	3,85	3,75	3,67

5.3.4 (Intention to) Use ⟷ User Satisfaction

The relationship between (Intention to) Use and User Satisfaction was also studied for this research at case organization B. The answers on Qx.13 and Qx.14 (x = 2, 3, 4, 5, 6) were combined for all self-service feature categories. The mean values of these questions can be found in Table 27.

Table 27: Mean values of User Satisfaction-Intention to Use and Use-User Satisfaction (Case B)

	Mean
User Satisfaction ⟶ Intention to Use	3,44
Use ⟶ User Satisfaction	3,52

The mean values for both effects were greater than the intermediate value. The test for normality showed significant results for the Shapiro-Wilk test (p-values = 0,000). Therefore, the Wilcoxon signed-rank test was used to test if the median values were significantly different from "3". The non-parametric tests were significant (p-values = 0,000). The mean values were greater than "3" and the non-parametric test was significant for both effects. Thus, User Satisfaction had a positive effect on Intention to Use and Use had a positive effect on User Satisfaction. An overview of these effects can be found in Table 28 on page 54.

Table 28: Overview of the relationships between (Intention to) Use and User Satisfaction (Case B)

	Effect
User Satisfaction ⟶ Intention to Use	+
Use ⟶ User Satisfaction	+

5.3.5 Intended benefits

The technology support lead has been interviewed about the self-service portal at case organization B. A summary of this interview can be found in Appendix D: Interview summaries. Labels were created to structure the information in the interview. Also labels, which already were created for case A, were used. Then, important terms and phrases of the interview have been linked to the labels. The information of the interview linked to the labels can be found in Table 29.

Table 29: The information in the interview linked to the labels (Case B)

Intended benefits	Actions	Results	Priorities
Reduce the amount of tickets to the service desk	Employees can solve relative simple problems via self-service, but they can still contact the service desk for more complex problems	Fast growing organization but the amount of tickets has not increased over the past years	Employees can now do their work without interruptions because they do not have to contact a service desk
Help the employees to do their work easier and faster		Number of employees who are working for the IT consulting company has increased significantly, but the number of employees working at the service desk has remained the same	
		After the introduction of self-service, the percentage of tickets when employees had to contact the service desk has decreased	
		Sixty percent of the interaction with technology support is via self-service	

The labels ‘Intended benefits’ and ‘Actions’ were also used for this interview. The IT consulting company had as intended benefits to reduce the amount of tickets to the service desk and to help the employees so they can do their work easier and faster. These benefits were mainly achieved by making it possible that employees can solve relative simple problems via self-service. Furthermore, ‘Results’ of implementing self-service were extensively explained by the interviewee. The organization is growing but the amount of tickets has not increased, number of service employees has remained the same, number of service desk tickets has decreased and sixty percent of the interaction is now via self-service. At last she described the ‘Priorities’ of implementing self-service for the organization. Employees should be able to do their work without interruptions because employees do not have to contact the service desk.

5.4 Case C

5.4.1 Self-service features

The self-service features for HR information were available at case organization C. First, the respondents were asked how important different self-service features were to them (if available). The last question consisted of the five self-service feature categories and the respondent had to rank these categories. The mean values of the importance and ranking for each self-service feature category can be found in Table 30.

Table 30: Importance and ranking of self-service features (Case C)

	HR information	IT services	Procurement	Time or expense reporting	Training
Importance (1-5)	3,67	3,38	2,49	2,79	3,15
Ranking (5-1)	1,79	2,96	3,38	3,43	3,45

The mean values of the importance and ranking of the different self-service feature categories showed that the respondents indicated that self-service features for HR information were the most important self-service features which should be included in employee portals. Furthermore, the respondents indicated that the self-service features for IT services were second most important.

5.4.2 Intention to Use

Then, the effects of each self-service feature category on Intention to Use were tested. A score was computed for each self-service feature category based on the answers on the questions about Intention to Use. The mean values can be found in Table 31.

Table 31: Mean values for Intention to Use of each self-service feature category (Case C)

	HR information	IT services	Procurement	Time or expense reporting	Training
Intention to Use (mean)	3,60	3,57	3,37	3,72	3,46

The mean values of all self-service feature categories for Intention to Use were greater than the intermediate value. The normality test did not show a significant result for HR information (p-value = 0,222). The one sample t-test showed a significant result (p-value = 0,000), thus HR information had a positive effect on Intention to Use. Thereafter, the non-parametric test was

used for the other self-service feature categories. The results of this test were also significant (p-values < 0,05) and this demonstrated that IT services, procurement, time or expense reporting, and training also had a positive effect on Intention to Use. An overview of the effects of the self-service feature categories on Intention to Use can be found in Table 32.

Table 32: Overview of the effects of self-service feature categories on Intention to Use (Case C)

	Effect on User Satisfaction
HR information	+
IT services	+
Procurement	+
Time or expense reporting	+
Training	+

Since the effects of each self-service feature category on Intention to Use were all positive, the levels of the hierarchy also had a positive effect on Intention to Use. An overview of these effects can be found in Table 33.

Table 33: Overview of the effects of the levels of the hierarchy on Intention to Use (Case C)

	Effect on Intention to Use
Must have (HR information & IT services)	+
Should have (Procurement & Time or expense reporting)	+
Could have (Training)	+

One-way ANOVA was used to test if there were differences between the mean values for Intention to Use of the three levels of the hierarchy. The mean values of the levels of the hierarchy for Intention to Use can be found in Table 34. The ANOVA test was not significant (p-value = 0,715) and this indicated that there were no significantly differences between the mean values of the levels of the hierarchy for Intention to Use.

Table 34: Mean values for Intention to Use of the levels of the hierarchy (Case C)

	Must have	**Should have**	**Could have**
Intention to Use (mean)	3,59	3,55	3,46

5.4.3 User Satisfaction

Only the self-service features for HR information were available at case organization C. Therefore, the effect of only this self-service feature category on User Satisfaction was tested. An overview with the mean value for User Satisfaction can be found in Table 35 on page 58.

Table 35: Mean values for User Satisfaction of each self-service feature category (Case C)

	HR information	IT services	Procurement	Time or expense reporting	Training
User Satisfaction (mean)	3,96	N/A	N/A	N/A	N/A

The mean value of HR information for User Satisfaction was 3,96. The result of the test for normality was significant (p-value = 0,000). The result of the non-parametric test was also significant (p-value = 0,000). Therefore, HR information had a positive effect on User Satisfaction. An overview of the effects can be found in Table 36.

Table 36: Overview of the effects of self-service feature categories on User Satisfaction (Case C)

	Effect on User Satisfaction
HR information	+
IT services	N/A
Procurement	N/A
Time or expense reporting	N/A
Training	N/A

Only information about the effect of HR information on User Satisfaction was available at case organization C. Therefore, the level of the hierarchy with the "must have" features only consisted of the information about HR information. The mean value of the "must have" level can be found in Table 37. An overview of the effects of the levels of the hierarchy on User Satisfaction can be found in Table 38.

Table 37: Mean values for User Satisfaction of the levels of the hierarchy (Case C)

	Must have	Should have	Could have
User Satisfaction (mean)	3,96[17]	N/A	N/A

Table 38: Overview of the effects of the levels of the hierarchy on User Satisfaction (Case C)

	Effect on User Satisfaction
Must have (HR information & IT services)	+[18]
Should have (Procurement & Time or expense reporting)	N/A
Could have (Training)	N/A

[17] The mean value of the "must have" features only included HR information.
[18] No information available about IT services so the effect of the "must have" features on User Satisfaction was only partially tested.

5.4.4 (Intention to) Use ⟷ User Satisfaction

The relationships between (Intention to) Use and User Satisfaction have also been tested for case organization C. The mean values of both relationships can be found in Table 39.

Table 39: Mean values of User Satisfaction-Intention to Use and Use-User Satisfaction (Case C)

	Mean
User Satisfaction ⟶ Intention to Use	3,85
Use ⟶ User Satisfaction	3,72

The mean values of both relationships were greater than the intermediate value and this indicated that the effects were both positive. The results of the tests for normality were significant (p-values = 0,000) and therefore the non-parametric test has been used. The results of the Wilcoxon signed-rank test were also significant so the median was significantly not equal to the intermediate variable (p-values = 0,000). Thus, User Satisfaction had a positive effect on Intention to Use and Use had a positive effect on User Satisfaction. An overview of both effects can be found in Table 40.

Table 40: Overview of the relationships between (Intention to) Use and User Satisfaction (Case C)

	Effect
User Satisfaction ⟶ Intention to Use	+
Use ⟶ User Satisfaction	+

5.4.5 Intended benefits

An HR manager was interviewed to test the relationship between Use and Cost reduction. The labels which have been used in the other two interview could also be used for this interview. The information in the interview is linked to these labels and a structured overview can be found in Table 41 on page 60.

Table 41: The information in the interview linked to the labels (Case C)

Intended benefits	Actions	Results	Shortcomings
Improve the data quality	This self-service portal was completely customized for the university	Possible for managers to approve requests anywhere	It was not possible to show data real-time
Make information visible to the employees of the university	Digitalization of current processes	Managers have more tasks since they have to approve requests of their employees in the portal and in the past, their secretaries could do these tasks	The custom solution costed a lot of time and money
		More information is now visible to the employees and the end-users	
		Less paper forms are used	
		The processes are more efficient now	

The 'Intended benefits' were to improve the data quality and make information visible to the employees via the self-service portal. Several 'Actions' were done to achieve these benefits. The self-service portal was completely customized for the university and it was not a standard solution. Furthermore, current processes were digitalized. The next label was 'Results'. Since the implementation of the self-service portal, it is possible for managers to approve requests anywhere via the self-service portal, so they do not have to be physically at the university. However, now the managers have more tasks because they have to approve the requests themselves and in the past it was possible that their secretaries could do these tasks. Positive results are that more information is now visible to employees and less paper forms are used. The processes are also more efficient. There are a few 'Shortcomings' of the self-service portal. It is not possible to show data real-time and the custom solution costed a lot of time and money.

5.5 Cross-case analysis

5.5.1 Self-service features

The respondents of the case study organizations indicated different kinds of self-service features as most important for their organizations. The respondents of case A demonstrated that self-service features for IT services were the most important. Self-service features for time or expense reporting were indicated as most important by the respondents of case organization B. At the same time, the features of procurement were indicated as least important. The respondents of case organization C showed that HR information and IT services were the most important self-service features for the employees of the university.

5.5.2 Intention to Use

All cases showed mean values of the levels of the hierarchy for Intention to Use which were significant higher than the intermediate value. An overview of the mean values for Intention to Use in relation to the intermediate value can be found in Figure 10.

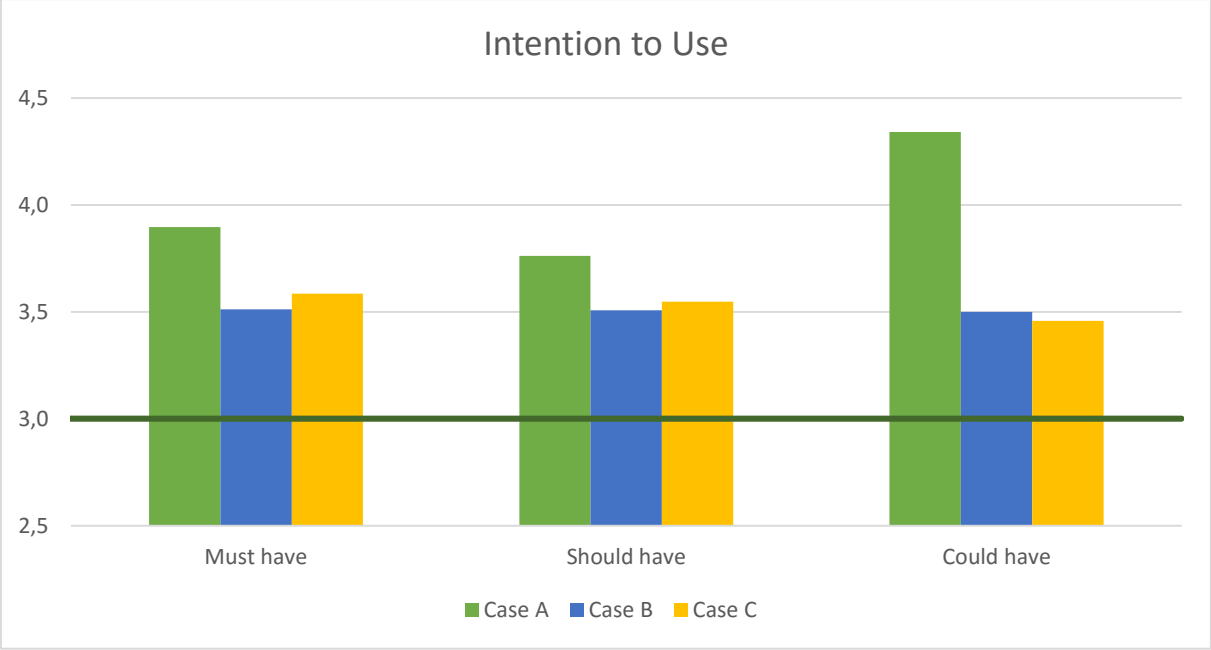

Figure 10: The mean values for Intention to Use compared to the intermediate value

The following hypotheses about Intention to Use were drafted for this research:

> **H1a.** The presence of "must have" features in an employee self-service portal will have a positive effect on the Intention to Use of that system.
>
> **H1b.** The presence of "should have" features in an employee self-service portal will have a positive effect on the Intention to Use of that system.

H1c. The presence of "could have" features in an employee self-service portal will have a positive effect on the Intention to Use of that system.

H1d. The presence of "must have" features in an employee self-service portal will have a higher positive effect on the Intention to Use of that system than the presence of other features in the employee self-service portal.

The mean values of all levels of the hierarchy were significant higher than the intermediate value for all cases. Consequently, every level of the hierarchy had a positive effect on Intention to Use. An overview of the effects of the levels of the hierarchy on Intention to Use for case A, case B, case C and overall can be found in Table 42.

Table 42: Overview of the effects of the levels of the hierarchy on Intention to Use

	Case A	Case B	Case C	Overall
Must have (HR information & IT services)	+	+	+	+
Should have (Procurement & Time or expense reporting)	+	+	+	+
Could have (Training)	+	+	+	+

Overall, the presence of "must have" features, "should have" features and "could have" features in an employee self-service portal had a positive effect on the Intention to Use of that system. Thus, hypothesis H1a, H1b and H1c are supported in this research.

Then, it was studied if the presence of "must have" features in an employee self-service portal had a higher positive effect on Intention to Use of that system than the other features in employee self-service portal. The results showed that for all cases the mean value of the "must have" level of the hierarchy for Intention to Use was not significant higher than the mean value of the other levels of the hierarchy. Therefore, H1d is not supported in this research.

It can be concluded that every level of the hierarchy with self-service features had a positive effect on Intention to Use. However, some self-service features had a higher mean value for Intention to Use than other self-service features. The self-service feature categories were ranked based on the mean value for Intention to Use for the three case studies. The ranking of the different self-service feature categories for each case organization can be found in Table 43 on page 63.

Table 43: Ranking of self-service feature categories based on the mean value for Intention to Use

	Case A	Case B	Case C
1	Training	Time or expense reporting	Time or expense reporting
2	IT services	IT services	HR information
3	Procurement	Training	IT services
4	HR information	HR information	Training
5	Time or expense reporting	Procurement	Procurement

Based on the three case studies, the average rank has been calculated for each self-service feature category:

HR information	= (4 + 4 + 2) / 3	= 3,33	**(4)**
IT services	= (2 + 2 + 3) / 3	= 2,33	**(1, 2)**
Procurement	= (3 + 5 + 5) / 3	= 4,33	**(5)**
Time or expense reporting	= (5 + 1 + 1) / 3	= 2,33	**(1, 2)**
Training	= (1 + 3 + 4) / 3	= 2,67	**(3)**

Overall, it can be concluded that self-service features for IT services and, time or expense reporting have the highest average rank. These self-service feature categories have the highest positive effect on Intention to Use. Thus, if an organization would like that their employees will use the employee self-service portal then the organization should offer self-service features for IT services and, time or expense reporting.

5.5.3 User Satisfaction

Information about User Satisfaction was only available when these self-service feature categories were offered by the case study organizations. Therefore, information about “should have” and “could have” features for User Satisfaction was not available at all case studies. When the mean value of the self-service feature category for User Satisfaction was significant higher than the intermediate value (“3”) then the self-service feature category had a positive effect on User Satisfaction. An overview of the mean values of the available self-service feature categories for User Satisfaction in relation to the intermediate value can be found in Figure 11 on page 64.

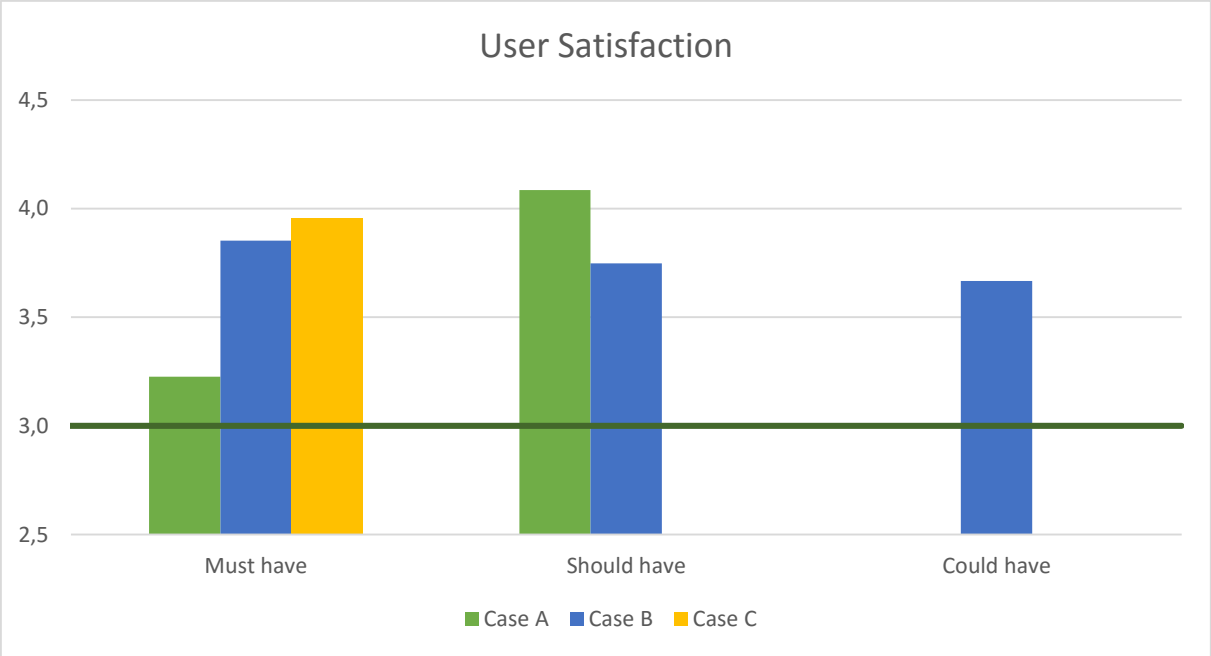

Figure 11: The mean values for User Satisfaction compared to the intermediate value

The following hypotheses about User Satisfaction were drafted for this research:

> **H2a.** The presence of "must have" features in an employee self-service portal will have a positive effect on the User Satisfaction of that system.
>
> **H2b.** The presence of "should have" features in an employee self-service portal will have a positive effect on the User Satisfaction of that system.
>
> **H2c.** The presence of "could have" features in an employee self-service portal will have a positive effect on the User Satisfaction of that system.
>
> **H2d.** The presence of "could have" features in an employee self-service portal will have a higher positive effect on the User Satisfaction of that system than the presence of other features in the employee self-service portal.

The mean values of the "should have" and "could" have features for User Satisfaction were significant higher than the intermediate value. Furthermore, the mean values of the "must have" features for case B and C were significant higher than "3". However, the mean value of the "must have" features for case A was not significant higher than the intermediate value. An overview of the effects of the levels of the hierarchy on Intention to Use for case A, case B, case C and overall can be found in Table 44 on page 65.

Table 44: Overview of the effects of the levels of the hierarchy on User Satisfaction

	Case A	Case B	Case C	Overall
Must have (HR information & IT services)	0	+	+[19]	+
Should have (Procurement & Time or expense reporting)	+[20]	+	N/A[21]	+
Could have (Training)	N/A	+	N/A	+

Overall, the presence of "must have" features, "should have" features and "could have" features in an employee self-service portal had a positive effect on the User Satisfaction of that system. Thus, hypothesis H2a, H2b and H2c are supported in this research.

Then, it was studied if the presence of "could have" features in an employee self-service portal had a higher positive effect on User Satisfaction of that system than the other features in employee self-service portal. The "could have" features were only available at case organization B. The result of this case showed that the mean value of the "could have" level of the hierarchy for User Satisfaction was not significant higher than the mean value of the other levels of the hierarchy. Therefore, H2d is not supported in this research.

It can be concluded that every level of the hierarchy had a positive effect on User Satisfaction. However, some self-service features had a higher mean value for User Satisfaction than other self-service features. The self-service feature categories were ranked based on the mean value for User Satisfaction for the three case studies. The ranking of the different self-service feature categories for each case organization can be found in Table 45.

Table 45: Ranking of self-service feature categories based on the mean value for User Satisfaction

	Case A	Case B	Case C
1	Time or expense reporting	IT services	HR information
2	HR information	HR information	N/A
3	IT services	Time or expense reporting	N/A
4	N/A	Procurement	N/A
5	N/A	Training	N/A

[19] No information available about IT services so the effect of the "must have" features on User Satisfaction was only partially tested at case C.
[20] No information available about procurement so the effect of the "should have" features on User Satisfaction was only partially tested at case A.
[21] No information available

Based on the three case studies, the average rank has been calculated for each self-service feature category:

HR information	= (2 + 2 + 1) / 3	= 1,67	**(1)**
IT services	= (3 + 1) / 2	= 2	**(2, 3)**
Procurement	= 4 / 1	= 4	**(4)**
Time or expense reporting	= (1 + 3) / 2	= 2	**(2, 3)**
Training	= 5 / 1	= 5	**(5)**

Overall, it can be concluded that self-service features for HR information have the highest average rank and therefore, the highest positive influence on User Satisfaction. if an organization would like to improve the user satisfaction of employees then the organization should offer self-service features for HR information. Self-service features for IT services and, time or expense reporting also have a high positive effect on User Satisfaction.

5.5.4 (Intention to) Use ⟷ User Satisfaction

The relationship between the (Intention to) Use of employee self-service portals and User Satisfaction has also been studied. An overview of the effects at case A, case B, case C and overall can be found in Table 46.

Table 46: Overview of the effects of (Intention to) Use and User Satisfaction

	Case A	Case B	Case C	Overall
User Satisfaction ⟶ Intention to Use	+	+	+	+
Use ⟶ User Satisfaction	+	+	+	+

The following hypotheses were drafted about the relationship between (Intention to) Use and User Satisfaction:

> **H3.** The User Satisfaction of an employee self-service portal will have a positive effect on the Intention to Use of that system.
>
> **H4.** The Use of an employee self-service portal will have a positive effect on the User Satisfaction of that system.

All cases showed that the User Satisfaction of an employee self-service portal had a positive effect on the Intention to Use of that system. Also the Use of an employee self-service portal had a positive effect on the User Satisfaction. Thus, hypotheses H3 and H4 are both supported in this research.

5.5.5 Intended benefits

The relationship between Use and Cost reduction was studied by conducting interviews with decision-makers. The interviewees of the three case study organizations were all involved in the development of the self-service portals. An overview of the information in the interviews can be found in Table 47 on page 68. The intended benefits and how these benefits have been achieved ('Actions'), were discussed in the interviews. According to the literature, cost reduction is one of the main reasons for organization to implement self-service portals (Scherer, Wünderlich, & Von Wangenheim, 2015). The following hypothesis was drafted about this intended benefit and how this can be achieved:

> **H5.** The Use of an employee self-service portal will have a positive effect on the Cost Reduction by that system.

Different intended benefits have been mentioned by the interviewees. However, none of the interviewees talked explicitly about cost reduction. The case study organizations wanted to improve their business processes by using self-service portals. Improvement of business processes could lead to cost reductions but cost reduction was not explicitly mentioned as an intended benefit. The organizations also did not have a base line so they could not measure if the self-service portals resulted in cost reductions. Consequently, the use of self-service portals in relation to possible cost reductions was also not measured. Improvement of business processes was mostly achieved by standardizing and digitalizing current processes. Thus, hypotheses H5 is not supported in this research.

Table 47: Overview of the information in the interviews about the intended benefits

	Case A	Case B	Case C
Intended benefits	- Improve operational processes	- Reduce the amount of tickets to the service desk - Help the employees to do their work easier and faster	- Improve the data quality - Make information visible to the employees of the university
Actions	- Processes were more standardized - New employee self-service portal is owned by the company itself - Not dependent any longer on only one supplier - Find all information in one place	- Employees can solve relative simple problems via self-service, but they can still contact the service desk for more complex problems	- This self-service portal was completely customized for the university - Digitalization of current processes
Shortcomings	- End-users do not exactly know where they can find the services they need - More and more functions have been added to the system - Other systems have been developed and implemented - End-users do not know which system they have to use for which task or service - Negative perception of employees towards the employee self-service portal - The system is outdated		- It was not possible to show data real-time - The custom solution costed a lot of time and money
Results		- Fast growing organization but the amount of tickets has not increased over the past years - Number of employees who are working for the IT consulting company has increased significantly, but the number of employees working at the service desk has remained the same - After the introduction of self-service, the percentage of tickets when employees had to contact the service desk has decreased - Sixty percent of the interaction with technology support is via self-service	- Possible for managers to approve requests anywhere - Managers have more tasks since they have to approve requests of their employees in the portal and in the past, their secretaries could do these tasks - More information is now visible to the employees and the end-users - Less paper forms are used - The processes are more efficient now
Priorities		- Employees can now do their work without interruptions because they do not have to contact a service desk	

6 DISCUSSION

The research question of this study was about which key features should be included in employee self-service portals. The conceptual model consisted of the hierarchy which included the five self-service feature categories, and the constructs (Intention to) Use, User Satisfaction and Cost Reduction. In this section, the results of the effects of the constructs are discussed.

First, the self-service features are discussed. The respondents of the case study organizations indicated different self-service feature categories as most important to them. The respondents of case organization A were IT managers and they demonstrated that features for IT services were the most important in employee self-service portals. Self-service features for time or expense reporting were indicated as most important by the respondents of the IT consulting company. Furthermore, the respondents of the university indicated the self-service portal for HR information as most important. At case C, the questionnaire was distributed by the HR manager. Thus, the function of the respondents and the industry of the organizations may have affected the outcome about the importance of different self-service features.

Then, the effects of the levels of the hierarchy with self-service features on Intention to Use have been studied. The levels of the hierarchy showed all positive effects on Intention to Use for case A, B and C, indicating that employees were willing to use the self-service portals. Organizations can only benefit from self-service when this technology is extensively utilized (Saeed & Abdinnour, 2013). However, the mean value of some self-service feature categories was greater than the mean value of other self-service feature categories, demonstrating that employees are more willing to use self-service portals for IT services and, time or expense reporting. Thus, if employees have to do certain administrative tasks every time period (e.g. report time or expenses) then the employees would like to use the self-service portal. Furthermore, employees are daily using their laptops and other IT services for their primary tasks. The employees are also more willing to use the self-service portal for IT services if this portal is available to them.

The self-service feature categories were not all available at the case study organizations. Therefore, the User Satisfaction of the self-service feature categories have not been studied extensively. Nowadays, organizations are implementing self-service portals, but the maturity

of organizations regarding self-service portals may be different. Case organization B has already been using self-service portals for about twenty years. On the other hand, the self-service portal for HR information at the university was the first self-service portal available at this organization and this portal has recently been implemented. The employees of case organization B were very satisfied with the available self-service portals; all mean values for User Satisfaction were significant higher than the intermediate value. Therefore, the maturity of an organization regarding self-service portals has an influence on the user satisfaction. Overall, the self-service features for HR information, IT services and, time or expense reporting showed high rankings for User Satisfaction. These self-service feature categories are relevant for every organization and employee. Employees are satisfied when they can use the self-service portals for HR information, IT services and, time or expense reporting so that employees can look into their information and also adjust information which is relevant for them. Then, the employees do not have to contact a Service Provider.

Furthermore, the relationships between (Intention to) Use and User Satisfaction have been studied. The positive effects of these constructs are supported in this research and also have been supported in other researches (Petter & McLean, 2009). The results of the average ranking of the self-service feature categories showed that IT services and, time or expense reporting were both in the top of the rankings for Intention to Use and User Satisfaction. Therefore, the relationship between (Intention to) Use and User Satisfaction has also been identified.

As mentioned before, organizations can only benefit from self-service portals when these portals are extensively utilized (Saeed & Abdinnour, 2013). Furthermore, cost reduction is one of the main reasons for organization to implement self-service portals (Hansen & Deimler, 2001). The relationship between Use and Cost reduction has been studied in this research. The interviewees of the case study organizations did not explicitly mention that cost reduction was one of the main reasons for them to implement self-service portals. Organizations would like to improve current business processes. Improvement of these business processes was mostly achieved by standardizing and digitalizing current processes. Furthermore, organizations do not have a base line about costs, showing that organizations cannot measure if the use of self-service portals really resulted in cost reductions.

7 CONCLUSIONS

This chapter includes the conclusions and recommendations of this research. Furthermore, the limitations of this research are described and directions for further research are identified.

7.1 Conclusions

Multiple case studies have been conducted and therefore, the results can be generalized. In this research, it was studied which key features should be included in employee self-service portals. When organizations would like that their employees are willing to use self-service portals then self-service features for HR information, IT services and, time or expense reporting should be offered by the organization. Furthermore, when organizations would like to emphasize the user satisfaction then self-service portals for IT services, and time or expense reporting should be implemented. The positive effects of User Satisfaction on Intention to Use and Use on User Satisfaction have also been proven in this research. The case studies showed that cost reduction is not one of the main reasons for the organizations to implement self-service portals. The decision-makers of the organizations mentioned improvement of business processes as main reason to implement self-service portals. These organizations also did not measure cost reductions caused by the use of self-service. Therefore, the relationship between Use and Cost reduction has not been supported in this research.

7.2 Recommendations

Self-service features have a positive effect on the use and user satisfaction of these systems. Therefore, organizations are advised to implement self-service portals. Based on budget and goals of the organizations, different self-service features should be implemented. When the organization would like that employees are willing to use the self-service portals then it is recommended that self-service portals for IT services and, time or expense reporting are offered by the organization. If there is budget left, then the organization can also implement self-service portals for training, HR information and procurement (in that order). It is also important to involve users in the decision-making process, because they are supposed to use the self-service portals. When organizations indicate that user satisfaction is an important reason to implement self-service portals then it is recommended that self-service features for HR information, IT services, and time or expense reporting are implemented. If there is budget left, then self-service features for procurement and training should also be implemented.

Furthermore, the industry of the organization should also be taken in account when new self-service portals are implemented.

7.3 Limitations and further research

Nowadays, organizations are implementing self-service portals and therefore, the topic is very interesting for them. However, it is difficult to get organizations involved in this research, because organizations are not really willing to send the questionnaire to end-users. The period of time for this thesis was too short to convince organizations of the relevance of what end-users think about self-service portals. In this research, only one case study organization offered self-service features for training and therefore, the effect of training on user satisfaction was only studied at one organization. Thus, more research is needed about this topic at more organizations. Also the differences and similarities within and between different industries have to be studied more extensively.

Furthermore, the effect of the use of self-service portals on cost reduction can also be studied. Therefore, insights about costs are needed, before and after the implementation of self-service portals. Then, it could also be studied which self-service features would have a higher positive effect on cost reduction than other self-service features.

At last, the respondents were not asked about demographic characteristics (e.g. age, gender, education). For example, age could have an effect on the use of self-service portals. It may be that younger employees are more willing to use self-service portals and that older employees would prefer to contact the Service Provider. Therefore, more research about demographic characteristics in relation to self-service portals is needed.

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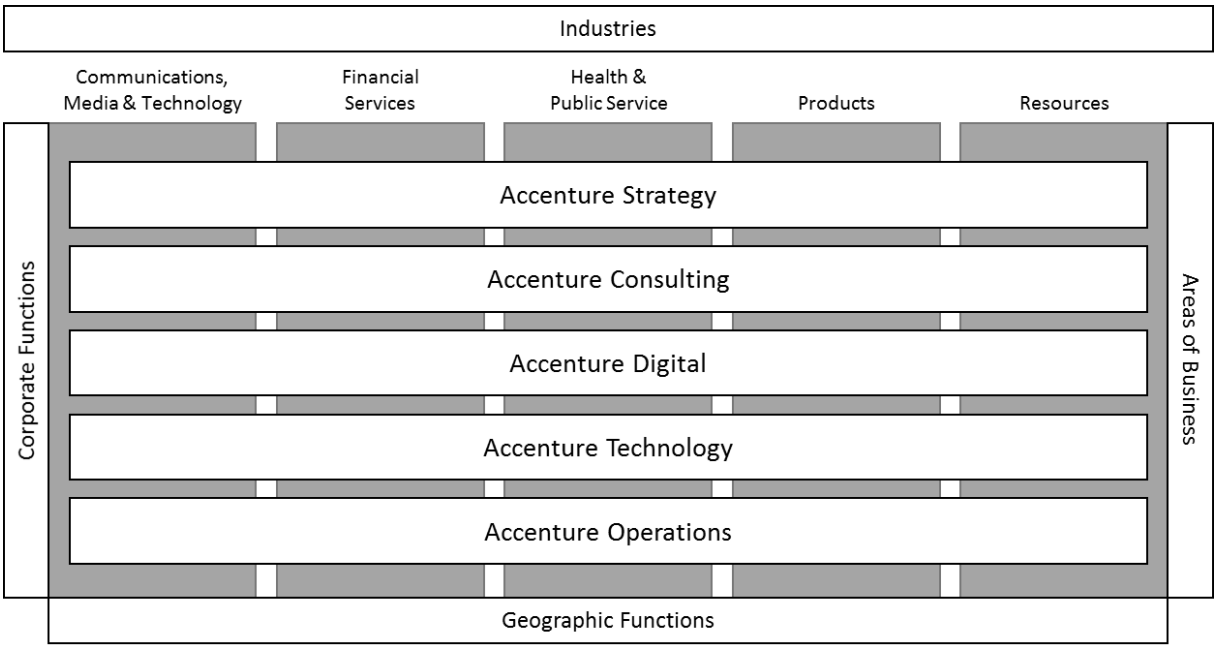
APPENDICES

Appendix A: Organizational structure of Accenture



Appendix B: Questionnaire

In this appendix, the questions are linked to the different hypotheses of the conceptual model. The corresponding hypotheses can be found on the left of the question. This was not shown in the original questionnaire. Based on whether a self-service feature category was available to the respondent or not, the next questions were determined. For each self-service feature category (HR information, IT services, procurement, time or expense reporting, and training), the possible questions were the same. Therefore, only the questions of one self-service feature category (HR information) are shown in this appendix.

Welcome to the survey about Employee Self-Service Portals

Thank you for taking part in this survey about self-service features in employee portals. Almost every organization uses a portal where all kinds of different information can be found or shared with other employees within the organization. These employee portals could also contain self-service features. The main characteristic of self-service technologies is that users perform the services by themselves and there is no direct involvement of a Service Provider. This can potentially cut costs and improve employee satisfaction.

This survey should only take about five minutes to complete. All answers will be treated confidentially and used anonymously. Please click ">>" to begin.

(If available) How important to you are the following self-service features?

		Not at all important	Slightly important	Moderately important	Very important	Extremely important
Procurement	Order office goods	○	○	○	○	○
	Order a laptop	○	○	○	○	○
	Order a service person	○	○	○	○	○
	Check order status	○	○	○	○	○
IT services	Create an email group	○	○	○	○	○
	Request access to an application	○	○	○	○	○
	Install a printer	○	○	○	○	○
	Do a password reset	○	○	○	○	○
Training	Do an online training	○	○	○	○	○
	E-learning	○	○	○	○	○
HR information	Adjust personal information by myself	○	○	○	○	○
	View payment details and other benefits	○	○	○	○	○
	Apply for leave	○	○	○	○	○
	View internal job vacancies	○	○	○	○	○
Time or expense reporting	Report time	○	○	○	○	○
	Report expenses	○	○	○	○	○

<< >>

HR information

How much do you agree or disagree with the following statements about self-service features for **HR information**?

		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
	It is easy for me to access the portal anytime and anywhere.	○	○	○	○	○
	The information in the portal is relevant and reliable.	○	○	○	○	○
	I feel confident in submitting personal information through the portal, because it will be properly used by authorized people.	○	○	○	○	○
	The information in the portal is shown within a reasonable response time.	○	○	○	○	○
	I believe that the access and information in the portal is secure.	○	○	○	○	○
H2a, H2b, H2c & H2d		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
	The portal helps me to do my tasks better and faster.	○	○	○	○	○
	No training is necessary to use the portal.	○	○	○	○	○
	The portal is user friendly with help functions, useful buttons and links.	○	○	○	○	○
	Overall, I am very satisfied with the portal.	○	○	○	○	○
	I would prefer to use the portal than having direct contact with a Service Provider.	○	○	○	○	○
H1a, H1b, H1c & H1d		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
	It is important for me that I can use the portal to do tasks by myself.	○	○	○	○	○
	Other people (e.g. management) are forcing me to use the portal.	○	○	○	○	○
H3	I am using the portal because I am satisfied with this self-service feature.	○	○	○	○	○
H4	I am more satisfied because I can use this self-service feature.	○	○	○	○	○

H1a, H1b, H1c & H1d

How often do you use features for HR information in the employee self-service portal?

Never	Less than once a month	Monthly	Weekly	Daily
○	○	○	○	○

<< >>

HR information

H1a, H1b, H1c & H1d

If self-service features for HR information would be available to you, what is the likelihood that you would use it?

Extremely unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Extremely likely
○	○	○	○	○

I would prefer to use self-service features for HR information than having direct contact (via email, phone or in person) with a Service Provider.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
○	○	○	○	○

<< >>

Self-service features

Please rank the following self-service feature categories in order of importance where 1 is most important and 5 is least important to you.

- [ ] Time or expense reporting
- [ ] Procurement
- [ ] Training
- [ ] HR information
- [ ] IT services

If you have any other comments, questions or suggestions, please add them below.

<< >>

The possible five-point scale answer options in the questionnaire

1	2	3	4	5
Not at all important	Slightly important	Moderately important	Very important	Extremely important
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Never	Less than once a month	Monthly	Weekly	Daily
Extremely unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Extremely likely

Appendix C: Interview guides

English version

Good morning/afternoon, my name is Patrick Verlaan and for my master thesis I am doing research on employee self-service portals. I study which self-service features should be included in employee portals and how these features can result in cost reductions and improved employee satisfaction. This interview is used to identify why self-service features have been implemented and if the use of these features have resulted in cost reductions. I would like to record this interview so that I can easily transcribe the interview. Do you agree with that?

Introduction

1. What is your role in the organization related to the employee self-service portal?

Self-service features

2. Which of the following self-service feature categories are available within the employee portal?
    a. HR information
    b. IT services
    c. Procurement
    d. Time or expense reporting
    e. Training
3. How is identified which self-service features should be implemented in the employee portal?

Intended benefits (e.g. cost reduction, improve employee satisfaction)

4. Why have these self-service features been implemented, so what were the intended benefits?
5. Have these intended benefits also been achieved?
6. How do you think that these intended benefits have been achieved?

This was the last question of this interview. Do you have any additional comments about employee self-service portals which you would like to share?

Thank you for your time.

Dutch version

Goedemorgen/middag, Mijn naam is Patrick Verlaan en voor mijn master thesis doe ik onderzoek naar employee self-service portals. Ik bestudeer welke self-service features beschikbaar zouden moeten zijn in employee portals en hoe deze features kunnen resulteren in kostenbesparingen en een verbeterde medewerkerstevredenheid. Dit interview zal gebruikt worden om te bepalen waarom self-service features zijn geïmplementeerd en of het gebruik van deze features heeft geresulteerd in kostenbesparingen. Graag zou ik dit interview willen opnemen, zodat ik het achteraf eenvoudig kan uitwerken. Gaat u daarmee akkoord?

Introductie

1. Wat is uw functie binnen de organisatie met betrekking tot de employee self-service portal?

Self-service features

2. Welke self-service features zijn beschikbaar binnen de employee portal?
    a. HR information
    b. IT services
    c. Procurement
    d. Time or expense reporting
    e. Training
3. Hoe is bepaald welke self-service features geïmplementeerd moeten worden in de employee portal?

Beoogde doelen (e.g. kostenbesparing, verbeterde medewerkerstevredenheid)

4. Waarom zijn deze self-service features geïmplementeerd, dus wat waren de beoogde doelen?
5. Zijn deze beoogde doelen ook behaald?
6. Hoe denkt u dat deze beoogde doelen behaald zijn?

Dit was de laatste vraag van het interview. Hebt u zelf nog aanvullingen over self-service features die u graag zou willen delen?

Bedankt voor u tijd.

Appendix D: Interview summaries

Case A

Two employees of a global company, which is active in the beverages industry, have been interviewed. These employees are IT managers and also have the role of decision-makers, because they are involved in a project where the company is implementing a new employee self-service portal. These IT managers are also managing current employee self-service portal.

At the moment, the employee portal within this company includes self-service features for IT services and procurement. The procurement component mainly includes hardware for IT, e.g. laptops. This system was implemented about ten years ago. The service provider identified which self-service features had to be implemented within the employee portal, because the service provider delivered the system. The end-users could request services via the system directly from the service provider, the supplier. This employee self-service portal and the included services within the portal were owned by the service provider. The system was also maintained by the service provider. The company is now implementing a new employee self-service portal, but this portal is not available yet to the end-users. Therefore, the old employee self-service portal (where end-users could directly request a service from one service provider) is discussed here.

Ten years ago, this employee self-service portal was implemented. End-users could directly contact the supplier (service provider) for services which were available within this system. This system was implemented, because the company wanted to improve operational processes (more efficient). About ten years ago when the system was implemented, these intended benefits have been achieved because end-users could directly request services from the service provider (supplier) via a portal. Processes were more standardized than before and the system could be used by end-users to send standardized service requests to the supplier. Nowadays, the system is outdated and the end-users do not exactly know where they can find the services they need. Over the past years, more and more functions have been added to the system, also other systems have been developed and implemented, and now the end-users do not know which system they have to use for which task or service. This resulted in a negative perception of employees towards the employee self-service portal and now this system does not support in realizing cost reductions.

Therefore, the company is now implementing a new employee self-service portal which is owned by the company itself. Then, the company is not dependent any longer on only one supplier. Ten years ago, the employee self-service portal had its advantages and it has resulted in improved business processes and cost reductions but now the system is outdated. The company needs a new system which allow employees to find all information in one place. Then employees will use the system more frequently and this would result in improved operational processes and cost reductions.

Case B

Within a global IT consulting company, I had an interview with a technology support lead who is responsible for the service desk, local support and self-service support for IT services. The technology support department represents employees of this consulting company for optimal support of IT services. Furthermore, local support can be different for each location in the world.

Within the consulting company, self-service features are available for HR information, IT services, procurement, time or expense reporting, and training. However, this technology support lead is responsible for self-service support for IT services and a part of procurement. The technology support desk knows a lot about their 'customers' (e.g. type of device). Based on what they know and based on why employees contact the service desk, the service desk is developing and implementing self-service features for the IT services portal. About fifteen years, the first self-service features have already been developed and implemented for the IT services portal. Nowadays, more and more information is personalized and users receive push messages which are relevant for them (e.g. about their device, mailbox usage and when their password expires).

The self-service features have been implemented to reduce the amount of tickets to the service desk. The IT consulting company is a fast growing organization but the amount of tickets has not increased over the past years, because of the use of self-service. The number of employees who are working for the IT consulting company has increased significantly, but the number of employees working at the service desk has remained the same. After the introduction of self-service, the percentage of tickets when employees had to contact the service desk has decreased. Nowadays, sixty percent of the interaction with technology

support is via self-service. Self-service would also help the employees to do their work easier and faster when they do not have to contact the service desk for every issue they have. In a consulting company it is important that employees can now do their work without interruptions because they do not have to contact a service desk. Employees can solve relative simple problems via self-service, but they can still contact the service desk for more complex problems. Employees have many possibilities to contact the service desk, for example via chat, email, phone or even via a platform where they can ask their question to colleagues. It also works faster and easier for employees when they can solve their own issues. The employees do not have to contact the service desk when they can use the self-service for their issues.

Case C

The manager HR support and e-HRM has been interviewed about the employee self-service portal at a university in the Netherlands. He was involved during the development and implementation of the self-service portal for HR processes.

At that moment, the university only had a self-service portal for HR information. This self-service portal was completely customized for the university and was not a standard solution. Thereafter, the customer solution was linked to the standard ERP system where the information about employees was stored. It was not possible to show data real-time and therefore, the database was updated every night. The custom solution costed a lot of time and money, but at that time there was no standard solution which fulfilled all requirements of the university. At the time of the interview, the university was planning to implement self-service portals for IT services and procurement but these self-service portals were not available yet to the employees. The different self-service features for HR information have been implemented based on information which was already available at the managers of Human Resources. Possible improvements for current processes had been identified. Most of these improvements consisted of digitalization of current processes instead of using paper forms. So, the processes of using paper forms were digitalized into online forms which were accessible via the internet. Also HR information was not visible to everyone, but the use of the self-service portal helped to show the relevant information to the employees.

The self-service portal for HR information was implemented to improve the data quality and to make information visible to the employees of the university. It should also be easier for employees to find and change personal information than using paper forms. Furthermore,

different information has to be visible to employees and managers. The self-service portal should make processes more efficient and it should be possible for managers to approve requests anywhere. Employees of the university travel a lot and can be anywhere on the world, so then it is not possible to use the paper forms. Paper forms can also get lost, because different managers have to approve the requests (e.g. request for leave of absence). In the past, information was not visible to employees (e.g. salary scale) and managers (overview of employees). The portal gives employees and managers the opportunity to see this information. It is not known how the employees and managers think about the new self-service portal for HR information. Managers have more tasks since they have to approve requests of their employees in the portal and in the past, their secretaries could do these tasks. More information is now visible to the employees and the end-users, and less paper forms are used. The processes are more efficient now, because these processes are digitalized. Management had knowledge about the processes and therefore they knew which processes had to be digitalized and which information should be visible in the self-service portal.

Appendix E: List of questions

	Importance of self-service features
Q1.1	Order office goods
Q1.2	Order a laptop
Q1.3	Order a service person
Q1.4	Check order status
Q1.5	Create an email group
Q1.6	Request access to an application
Q1.7	Install a printer
Q1.8	Do a password reset
Q1.9	Do an online training
Q1.10	E-learning
Q1.11	Adjust personal information by myself
Q1.12	View payment details and other benefits
Q1.13	Apply for leave
Q1.14	View internal job vacancies
Q1.15	Report time
Q1.16	Report expenses
	HR information
Q2.1	It is easy for me to access the portal anytime and anywhere.
Q2.2	The information in the portal is relevant and reliable.
Q2.3	I feel confident in submitting personal information ... by authorized people.
Q2.4	The information in the portal is shown within a reasonable response time.
Q2.5	I believe that the access and information in the portal is secure.
Q2.6	The portal helps me to do my tasks better and faster.
Q2.7	No training is necessary to use the portal.
Q2.8	The portal is user friendly with help functions, useful buttons and links.
Q2.9	Overall, I am very satisfied with the portal.
Q2.10	I would prefer to use the portal than having direct contact … a Service Provider.
Q2.11	It is important for me that I can use the portal to do tasks by myself.
Q2.12	Other people (e.g. management) are requiring me to use the portal.
Q2.13	I am using the portal because I am satisfied with this self-service feature.
Q2.14	I am more satisfied because I can use this self-service feature.
Q2.15	How often do you use features for HR information ... self-service portal?
Q2.16	If self-service features for HR information would be available to ... would use it?
Q2.17	I would prefer to use self-service features for HR ... a Service Provider.
	IT services
Q3.1	It is easy for me to access the portal anytime and anywhere.
Q3.2	The information in the portal is relevant and reliable.
Q3.3	I feel confident in submitting personal information ... by authorized people.
Q3.4	The information in the portal is shown within a reasonable response time.
Q3.5	I believe that the access and information in the portal is secure.

Q3.6	The portal helps me to do my tasks better and faster.
Q3.7	No training is necessary to use the portal.
Q3.8	The portal is user friendly with help functions, useful buttons and links.
Q3.9	Overall, I am very satisfied with the portal.
Q3.10	I would prefer to use the portal than having direct contact … a Service Provider.
Q3.11	It is important for me that I can use the portal to do tasks by myself.
Q3.12	Other people (e.g. management) are requiring me to use the portal.
Q3.13	I am using the portal because I am satisfied with this self-service feature.
Q3.14	I am more satisfied because I can use this self-service feature.
Q3.15	How often do you use features for IT services in the … self-service portal
Q3.16	If self-service features for IT services would be available to you,... would use it?
Q3.17	I would prefer to use self-service features for IT services ... a Service Provider.
	Procurement
Q4.1	It is easy for me to access the portal anytime and anywhere.
Q4.2	The information in the portal is relevant and reliable.
Q4.3	I feel confident in submitting personal information ... by authorized people.
Q4.4	The information in the portal is shown within a reasonable response time.
Q4.5	I believe that the access and information in the portal is secure.
Q4.6	The portal helps me to do my tasks better and faster.
Q4.7	No training is necessary to use the portal.
Q4.8	The portal is user friendly with help functions, useful buttons and links.
Q4.9	Overall, I am very satisfied with the portal.
Q4.10	I would prefer to use the portal than having direct contact … a Service Provider.
Q4.11	It is important for me that I can use the portal to do tasks by myself.
Q4.12	Other people (e.g. management) are requiring me to use the portal.
Q4.13	I am using the portal because I am satisfied with this self-service feature.
Q4.14	I am more satisfied because I can use this self-service feature.
Q4.15	How often do you use features for procurement in the … self-service portal?
Q4.16	If self-service features for procurement would be available to ... would use it?
Q4.17	I would prefer to use self-service features for ... a Service Provider.
	Time or expense reporting
Q5.1	It is easy for me to access the portal anytime and anywhere.
Q5.2	The information in the portal is relevant and reliable.
Q5.3	I feel confident in submitting personal information ... by authorized people.
Q5.4	The information in the portal is shown within a reasonable response time.
Q5.5	I believe that the access and information in the portal is secure.
Q5.6	The portal helps me to do my tasks better and faster.
Q5.7	No training is necessary to use the portal.
Q5.8	The portal is user friendly with help functions, useful buttons and links.
Q5.9	Overall, I am very satisfied with the portal.
Q5.10	I would prefer to use the portal than having direct contact … a Service Provider.
Q5.11	It is important for me that I can use the portal to do tasks by myself.

Q5.12	Other people (e.g. management) are requiring me to use the portal.
Q5.13	I am using the portal because I am satisfied with this self-service feature.
Q5.14	I am more satisfied because I can use this self-service feature.
Q5.15	How often do you use features for time or expense ... self-service portal?
Q5.16	If self-service features for time or expense reporting would be ... would use it?
Q5.17	I would prefer to use self-service features for time or ... a Service Provider.
	Training
Q6.1	It is easy for me to access the portal anytime and anywhere.
Q6.2	The information in the portal is relevant and reliable.
Q6.3	I feel confident in submitting personal information ... by authorized people.
Q6.4	The information in the portal is shown within a reasonable response time.
Q6.5	I believe that the access and information in the portal is secure.
Q6.6	The portal helps me to do my tasks better and faster.
Q6.7	No training is necessary to use the portal.
Q6.8	The portal is user friendly with help functions, useful buttons and links.
Q6.9	Overall, I am very satisfied with the portal.
Q6.10	I would prefer to use the portal than having direct contact … a Service Provider.
Q6.11	It is important for me that I can use the portal to do tasks by myself.
Q6.12	Other people (e.g. management) are requiring me to use the portal.
Q6.13	I am using the portal because I am satisfied with this self-service feature.
Q6.14	I am more satisfied because I can use this self-service feature.
Q6.15	How often do you use features for training in the employee self-service portal?
Q6.16	If self-service features for training would be available to you,... would use it?
Q6.17	I would prefer to use self-service features for training than ... a Service Provider.
	Ranking of self-service feature categories
Q7.1	HR information
Q7.2	IT services
Q7.3	Procurement
Q7.4	Time or expense reporting
Q7.5	Training
Q8	If you have any other comments, questions or suggestions,… add them below.

Appendix F: SPSS syntax

Cronbach's Alpha

RELIABILITY /VARIABLES=Q1.1 Q1.2 Q1.3 Q1.4 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case A Case B Case C
RELIABILITY /VARIABLES=Q1.5 Q1.6 Q1.7 Q1.8 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case A Case B Case C
RELIABILITY /VARIABLES=Q1.9 Q1.10 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case A Case B Case C
RELIABILITY /VARIABLES=Q1.11 Q1.12 Q1.13 Q1.14 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case A Case B Case C
RELIABILITY /VARIABLES=Q1.15 Q1.16 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case A Case B Case C
RELIABILITY /VARIABLES=Q2.1 Q2.2 Q2.3 Q2.4 Q2.5 Q2.6 Q2.7 Q2.8 Q2.9 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case A Case B Case C
RELIABILITY /VARIABLES=Q2.10 Q2.11 Q2.12 Q2.15 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case A Case B Case C
RELIABILITY /VARIABLES=Q3.1 Q3.2 Q3.3 Q3.4 Q3.5 Q3.6 Q3.7 Q3.8 Q3.9 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE	Case A Case B
RELIABILITY /VARIABLES=Q3.10 Q3.11 Q3.12 Q3.15 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case A Case B

RELIABILITY /VARIABLES=Q3.16 Q3.17 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case C
RELIABILITY /VARIABLES=Q4.1 Q4.2 Q4.3 Q4.4 Q4.5 Q4.6 Q4.7 Q4.8 Q4.9 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case B
RELIABILITY /VARIABLES=Q4.10 Q4.11 Q4.12 Q4.15 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case B
RELIABILITY /VARIABLES=Q4.16 Q4.17 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case A Case C
RELIABILITY /VARIABLES=Q5.1 Q5.2 Q5.3 Q5.4 Q5.5 Q5.6 Q5.7 Q5.8 Q5.9 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case A Case B
RELIABILITY /VARIABLES=Q5.10 Q5.11 Q5.12 Q5.15 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case A Case B
RELIABILITY /VARIABLES=Q5.16 Q5.17 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case C
RELIABILITY /VARIABLES=Q6.1 Q6.2 Q6.3 Q6.4 Q6.5 Q6.6 Q6.7 Q6.8 Q6.9 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case B
RELIABILITY /VARIABLES=Q6.10 Q6.11 Q6.12 Q6.15 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case B

RELIABILITY /VARIABLES=Q6.16 Q6.17 /SCALE('ALL VARIABLES') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.	Case A Case C

Computing variables

COMPUTE Score_Procurement=MEAN(Q1.1,Q1.2,Q1.3,Q1.4). EXECUTE.	Case A Case B Case C
COMPUTE Score_ITservices=MEAN(Q1.6,Q1.7,Q1.8). EXECUTE.	Case A Case B
COMPUTE Score_ITservices=MEAN(Q1.5,Q1.6,Q1.7,Q1.8). EXECUTE.	Case C
COMPUTE Score_Training=MEAN(Q1.9,Q1.10). EXECUTE.	Case A Case B Case C
COMPUTE Score_HRinformation=MEAN(Q1.11,Q1.12,Q1.13,Q1.14). EXECUTE.	Case A Case B
COMPUTE Score_HRinformation=MEAN(Q1.11,Q1.12,Q1.13). EXECUTE.	Case C
COMPUTE Score_TimeorExpenseReporting=MEAN(Q1.15,Q1.16). EXECUTE.	Case A Case B Case C
COMPUTE Score_HRinformation_US=MEAN(Q2.1,Q2.2,Q2.3,Q2.4,Q2.5,Q2.6,Q2.7,Q2.8,Q2.9). EXECUTE.	Case A Case B Case C
COMPUTE Score_HRinformation_ITU=MEAN(Q2.10,Q2.11,Q2.12,Q2.15). EXECUTE.	Case A Case C
COMPUTE Score_HRinformation_ITU=MEAN(Q2.10,Q2.11,Q2.15). EXECUTE.	Case B
COMPUTE Score_ITservices_US=MEAN(Q3.1,Q3.2,Q3.3,Q3.4,Q3.5,Q3.6,Q3.7,Q3.8,Q3.9). EXECUTE.	Case A Case B
COMPUTE Score_ITservices_ITU=MEAN(Q3.10,Q3.11,Q3.12,Q3.15). EXECUTE.	Case A
COMPUTE Score_ITservices_ITU=MEAN(Q3.10,Q3.11,Q3.12). EXECUTE.	Case B
COMPUTE Score_ITservices_ITU=MEAN(Q3.16,Q3.17). EXECUTE.	Case C
COMPUTE Score_Procurement_US=MEAN(Q4.1,Q4.2,Q4.3,Q4.4,Q4.5,Q4.6,Q4.7,Q4.8,Q4.9). EXECUTE.	Case B
COMPUTE Score_Procurement_ITU=MEAN(Q4.10,Q4.11,Q4.12,Q4.15). EXECUTE.	Case B
COMPUTE Score_Procurement_ITU=MEAN(Q4.16, Q4.17). EXECUTE.	Case A Case C
COMPUTE Score_TimeorExpenseReporting_US=MEAN(Q5.1,Q5.2,Q5.3,Q5.4,Q5.5,Q5.6,Q5.7,Q5.8,Q5.9). EXECUTE.	Case A Case B
COMPUTE Score_TimeorExpenseReporting_ITU=MEAN(Q5.10,Q5.11,Q5.12,Q5.15). EXECUTE.	Case A Case B
COMPUTE Score_TimeorExpenseReporting_ITU=MEAN(Q5.16,Q5.17). EXECUTE.	Case C
COMPUTE Score_Training_US=MEAN(Q6.1,Q6.2,Q6.3,Q6.4,Q6.5,Q6.6,Q6.7,Q6.8,Q6.9). EXECUTE.	Case B
COMPUTE Score_Training_ITU=MEAN(Q6.10,Q6.11,Q6.12,Q6.15). EXECUTE.	Case B

COMPUTE Score_Training_ITU=MEAN(Q6.16, Q6.17). EXECUTE.	Case A Case C
COMPUTE Score_HRandIT_ITU=MEAN(Score_HRinformation_ITU,Score_ITservices_ITU). EXECUTE.	Case A Case B Case C
COMPUTE Score_ProcandTimeExpense_ITU=MEAN(Score_Procurement_ITU,Score_TimeorExpenseReporting_ITU). EXECUTE.	Case A Case B Case C
COMPUTE Score_HRandIT_US=MEAN(Score_HRinformation_US,Score_ITservices_US). EXECUTE.	Case A Case B
COMPUTE Score_ProcandTimeExpense_US=MEAN(Score_Procurement_US,Score_TimeorExpenseReporting_US). EXECUTE.	Case B

Descriptive statistics

FREQUENCIES VARIABLES= Score_HRinformation Score_ITservices Score_Procurement Score_TimeorExpenseReporting Score_Training /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE /ORDER=ANALYSIS.	Case A Case B Case C
FREQUENCIES VARIABLES=Q7.1 Q7.2 Q7.3 Q7.4 Q7.5 /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE /ORDER=ANALYSIS.	Case A Case B Case C
FREQUENCIES VARIABLES=Score_HRinformation_ITU Score_ITservices_ITU Score_Procurement_ITU Score_TimeorExpenseReporting_ITU Score_Training_ITU /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE /HISTOGRAM /ORDER=ANALYSIS.	Case A Case B Case C
FREQUENCIES VARIABLES=Score_HRandIT_ITU Score_ProcandTimeExpense_ITU Score_Training_ITU /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE /HISTOGRAM /ORDER=ANALYSIS.	Case A Case B Case C
FREQUENCIES VARIABLES=Score_HRinformation_US Score_ITservices_US Score_TimeorExpenseReporting_US /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE /HISTOGRAM /ORDER=ANALYSIS.	Case A
FREQUENCIES VARIABLES=Score_HRinformation_US Score_ITservices_US Score_Procurement_US Score_TimeorExpenseReporting_US Score_Training_US /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE /HISTOGRAM /ORDER=ANALYSIS.	Case B
FREQUENCIES VARIABLES=Score_HRinformation_US /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE /HISTOGRAM /ORDER=ANALYSIS.	Case C
FREQUENCIES VARIABLES=Score_HRandIT_US Score_ProcandTimeExpense_US Score_Training_US /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE /ORDER=ANALYSIS.	Case B
FREQUENCIES VARIABLES=Satisfied_Use Use_Satisfied /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE /ORDER=ANALYSIS.	Case A Case B Case C

Test of normality

EXAMINE VARIABLES=Score_HRinformation_ITU Score_ITservices_ITU Score_Procurement_ITU Score_TimeorExpenseReporting_ITU Score_Training_ITU /PLOT BOXPLOT STEMLEAF NPPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL.	Case A Case B Case C
EXAMINE VARIABLES=Score_HRandIT_ITU Score_ProcandTimeExpense_ITU Score_Training_ITU /PLOT BOXPLOT STEMLEAF NPPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL.	Case B
EXAMINE VARIABLES=Score_HRinformation_US Score_ITservices_US Score_TimeorExpenseReporting_US /PLOT BOXPLOT STEMLEAF NPPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL.	Case A
EXAMINE VARIABLES=Score_HRinformation_US Score_ITservices_US Score_Procurement_US Score_TimeorExpenseReporting_US Score_Training_US /PLOT BOXPLOT STEMLEAF NPPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL.	Case B
EXAMINE VARIABLES=Score_HRinformation_US /PLOT BOXPLOT STEMLEAF NPPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL.	Case C
EXAMINE VARIABLES=Score_HRandIT_US /PLOT BOXPLOT STEMLEAF NPPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL.	Case A
EXAMINE VARIABLES=Satisfied_Use Use_Satisfied /PLOT BOXPLOT STEMLEAF NPPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL.	Case A Case B Case C

One sample t-test

T-TEST /TESTVAL=3 /MISSING=ANALYSIS /VARIABLES=Score_ITservices_ITU /CRITERIA=CI(.95).	Case A
T-TEST /TESTVAL=3 /MISSING=ANALYSIS /VARIABLES=Score_ITservices_ITU Score_Training_ITU /CRITERIA=CI(.95).	Case B
T-TEST /TESTVAL=3 /MISSING=ANALYSIS /VARIABLES=Score_HRinformation_ITU /CRITERIA=CI(.95).	Case C
T-TEST /TESTVAL=3 /MISSING=ANALYSIS /VARIABLES=Score_HRinformation_US Score_ITservices_US Score_TimeorExpenseReporting_US /CRITERIA=CI(.95).	Case A
T-TEST /TESTVAL=3 /MISSING=ANALYSIS /VARIABLES=Score_HRinformation_US Score_ITservices_US Score_Procurement_US Score_TimeorExpenseReporting_US Score_Training_US /CRITERIA=CI(.95).	Case B
T-TEST /TESTVAL=3 /MISSING=ANALYSIS /VARIABLES=Score_HRandIT_US /CRITERIA=CI(.95).	Case A

Wilcoxon signed-rank test

NPTESTS /ONESAMPLE TEST (Score_HRinformation_ITU Score_Procurement_ITU Score_TimeorExpenseReporting_ITU Score_Training_ITU) WILCOXON(TESTVALUE=3) /MISSING SCOPE=ANALYSIS USERMISSING=EXCLUDE /CRITERIA ALPHA=0.05 CILEVEL=95.	Case A
NPTESTS /ONESAMPLE TEST (Score_HRinformation_ITU Score_Procurement_ITU Score_TimeorExpenseReporting_ITU) WILCOXON(TESTVALUE=3) /MISSING SCOPE=ANALYSIS USERMISSING=EXCLUDE /CRITERIA ALPHA=0.05 CILEVEL=95.	Case B
NPTESTS /ONESAMPLE TEST (Score_ITservices_ITU Score_Procurement_ITU Score_TimeorExpenseReporting_ITU Score_Training_ITU) WILCOXON(TESTVALUE=3) /MISSING SCOPE=ANALYSIS USERMISSING=EXCLUDE /CRITERIA ALPHA=0.05 CILEVEL=95.	Case C
NPTESTS /ONESAMPLE TEST (Score_ProcandTimeExpense_ITU) WILCOXON(TESTVALUE=3) /MISSING SCOPE=ANALYSIS USERMISSING=EXCLUDE /CRITERIA ALPHA=0.05 CILEVEL=95.	Case B
NPTESTS /ONESAMPLE TEST (Score_HRinformation_US) WILCOXON(TESTVALUE=3) /MISSING SCOPE=ANALYSIS USERMISSING=EXCLUDE /CRITERIA ALPHA=0.05 CILEVEL=95.	Case C
NPTESTS /ONESAMPLE TEST (Satisfied_Use Use_Satisfied) WILCOXON(TESTVALUE=3) /MISSING SCOPE=ANALYSIS USERMISSING=EXCLUDE /CRITERIA ALPHA=0.05 CILEVEL=95.	Case A Case B Case C

Appendix G: SPSS output

Case A

Cronbach's Alpha

Reliability Statistics

Cronbach's Alpha	N of Items
,826	4

Q1.1 Q1.2 Q1.3 Q1.4

Reliability Statistics

Cronbach's Alpha	N of Items
,674	4

Q1.5 Q1.6 Q1.7 Q1.8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1.5	11,92	5,471	,230	,782
Q1.6	11,50	4,870	,745	,456
Q1.7	12,63	4,418	,522	,562
Q1.8	11,33	5,623	,470	,608

Reliability Statistics

Cronbach's Alpha	N of Items
,987	2

Q1.9 Q1.10

Reliability Statistics

Cronbach's Alpha	N of Items
,779	4

Q1.11 Q1.12 Q.13 Q.14

Reliability Statistics

Cronbach's Alpha	N of Items
,764	2

Q1.15 Q1.16

Reliability Statistics

Cronbach's Alpha	N of Items
,788	9

Q2.1 to Q2.9

Reliability Statistics

Cronbach's Alpha	N of Items
,707	4

Q2.10 Q2.11 Q2.12 Q2.15

Reliability Statistics

Cronbach's Alpha	N of Items
,919	9

Q3.1 to Q3.9

Reliability Statistics

Cronbach's Alpha	N of Items
,361	4

Q3.10 Q3.11 Q3.12 Q3.15

Reliability Statistics

Cronbach's Alpha	N of Items
,829	2

Q4.16 Q4.17

Reliability Statistics

Cronbach's Alpha	N of Items
,950	9

Q5.1 to Q5.9

Reliability Statistics

Cronbach's Alpha	N of Items
,906	4

Q5.10 Q5.11 Q5.12 Q5.15

Reliability Statistics

Cronbach's Alpha	N of Items
,543	2

Q6.16 Q6.17

Descriptive statistics

Statistics

		Score_HRinformation	Score_ITservices	Score_Procurement	Score_TimeorExpenseReporting	Score_Training
N	Valid	24	24	24	24	24
	Missing	0	0	0	0	0
Mean		3,1771	3,9722	3,3958	3,0833	3,3125
Median		3,1250	4,0000	3,2500	3,0000	3,7500
Mode		2,25[a]	4,00[a]	3,00[a]	3,00	4,00
Std. Deviation		,92806	,77967	1,05273	1,17646	,90665
Variance		,861	,608	1,108	1,384	,822
Range		3,25	3,00	3,75	4,00	3,00
Minimum		1,75	2,00	1,25	1,00	2,00
Maximum		5,00	5,00	5,00	5,00	5,00

a. Multiple modes exist. The smallest value is shown

Statistics

		Q7.1	Q7.2	Q7.3	Q7.4	Q7.5
N	Valid	22	22	22	22	22
	Missing	2	2	2	2	2
Mean		3,045	1,273	3,909	3,409	3,364
Median		3,000	1,000	4,000	3,000	4,000
Mode		3,0	1,0	5,0	5,0	4,0
Std. Deviation		1,0455	,8827	1,1509	1,4027	1,0022
Variance		1,093	,779	1,325	1,968	1,004
Range		4,0	4,0	3,0	4,0	3,0
Minimum		1,0	1,0	2,0	1,0	2,0
Maximum		5,0	5,0	5,0	5,0	5,0

Statistics

		Score_HRinformation_ITU	Score_ITservices_ITU	Score_Procurement_ITU	Score_TimeorExpenseReporting_ITU	Score_Training_ITU
N	Valid	23	22	22	22	22
	Missing	1	2	2	2	2
Mean		3,6522	4,1818	3,8864	3,6364	4,3409
Median		3,7500	4,2500	4,0000	3,7500	4,5000
Mode		4,25	4,50	4,50	2,50	4,50
Std. Deviation		,68564	,49511	,85818	,79705	,49729
Variance		,470	,245	,736	,635	,247
Range		2,25	1,75	2,50	2,25	1,50
Minimum		2,50	3,25	2,50	2,50	3,50
Maximum		4,75	5,00	5,00	4,75	5,00

Statistics

		Score_HRandIT_ITU	Score_ProcandTimeExpense_ITU	Score_Training_ITU
N	Valid	23	22	22
	Missing	1	2	2
Mean		3,8967	3,7614	4,3409
Median		3,8750	3,6250	4,5000
Mode		3,25[a]	4,63	4,50
Std. Deviation		,49951	,63376	,49729
Variance		,250	,402	,247
Range		1,88	2,00	1,50
Minimum		3,00	2,75	3,50
Maximum		4,88	4,75	5,00

a. Multiple modes exist. The smallest value is shown

Statistics

		Score_HRinformation_US	Score_ITservices_US	Score_TimeorExpenseReporting_US
N	Valid	20	22	17
	Missing	4	2	7
Mean		3,6278	2,9192	4,0850
Median		3,6111	3,1111	4,0000
Mode		3,44[a]	3,11	3,67[a]
Std. Deviation		,62779	,99392	,58469
Variance		,394	,988	,342
Range		2,11	3,33	2,22
Minimum		2,44	1,22	2,78
Maximum		4,56	4,56	5,00

a. Multiple modes exist. The smallest value is shown

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Score_HRandIT_US	22	3,2273	,73301	,15628

Statistics

		Satisfied_Use	Use_Satisfied
N	Valid	67	67
	Missing	0	0
Mean		3,31	3,60
Median		3,00	4,00
Mode		3	4
Std. Deviation		1,144	1,115
Variance		1,309	1,244
Range		4	4
Minimum		1	1
Maximum		5	5

Intention to Use tests

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Score_HRinformation_ITU	,161	22	,142	,904	22	,036
Score_ITservices_ITU	,149	22	,200*	,959	22	,461
Score_Procurement_ITU	,217	22	,008	,892	22	,021
Score_TimeorExpenseReporting_ITU	,150	22	,200*	,906	22	,039
Score_Training_ITU	,216	22	,009	,882	22	,013

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Score_ITservices_ITU	11,196	21	,000	1,18182	,9623	1,4013

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of Score_HRinformation_ITU equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,001	Reject the null hypothesis.
2	The median of Score_Procurement_ITU equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,001	Reject the null hypothesis.
3	The median of Score_TimeorExpenseReporting_ITU equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,003	Reject the null hypothesis.
4	The median of Score_Training_ITU equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

User Satisfaction tests

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Score_HRinformation_US	,142	16	,200*	,946	16	,431
Score_ITservices_US	,151	16	,200*	,950	16	,492
Score_TimeorExpenseReporting_US	,135	16	,200*	,944	16	,394

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Score_HRinformation_US	4,472	19	,000	,62778	,3340	,9216
Score_ITservices_US	-,381	21	,707	-,08081	-,5215	,3599
Score_TimeorExpenseReporting_US	7,651	16	,000	1,08497	,7843	1,3856

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Score_HRandIT_US	,114	22	,200*	,959	22	,467

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Score_HRandIT_US	1,454	21	,161	,22727	-,0977	,5523

(Intention to) Use ⟷ User Satisfaction tests

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Satisfied_Use	,188	67	,000	,903	67	,000
Use_Satisfied	,223	67	,000	,884	67	,000

a. Lilliefors Significance Correction

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of Satisfied_Use equals 3.	One-Sample Wilcoxon Signed Rank Test	,043	Reject the null hypothesis.
2	The median of Use_Satisfied equals 3.	One-Sample Wilcoxon Signed Rank Test	,000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

Case B

Cronbach's Alpha

Reliability Statistics

Cronbach's Alpha	N of Items
,738	4

Q1.1 Q1.2 Q1.3 Q1.4

Reliability Statistics

Cronbach's Alpha	N of Items
,619	4

Q1.5 Q1.6 Q1.7 Q1.8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1.5	11,529	6,774	,227	,685
Q1.6	10,569	5,970	,611	,414
Q1.7	11,235	5,704	,383	,570
Q1.8	10,196	6,641	,463	,515

Reliability Statistics

Cronbach's Alpha	N of Items
,964	2

Q1.9 Q1.10

Reliability Statistics

Cronbach's Alpha	N of Items
,722	4

Q1.11 Q1.12 Q.13 Q.14

Reliability Statistics

Cronbach's Alpha	N of Items
,830	2

Q1.15 Q1.16

Reliability Statistics

Cronbach's Alpha	N of Items
,859	9

Q2.1 to Q2.9

Reliability Statistics

Cronbach's Alpha	N of Items
,405	4

Q2.10 Q2.11 Q2.12 Q2.15

Reliability Statistics

Cronbach's Alpha	N of Items
,818	9

Q3.1 to Q3.9

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q2.10	9,750	3,029	,372	,130
Q2.11	9,205	3,655	,443	,094
Q2.12	10,227	5,715	-,097	,645
Q2.15	10,773	4,877	,310	,292

Reliability Statistics

Cronbach's Alpha	N of Items
,408	4

Q3.10 Q3.11 Q3.12 Q3.15

Reliability Statistics

Cronbach's Alpha	N of Items
,939	9

Q4.1 to Q4.9

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q3.10	10,395	3,489	,278	,276
Q3.11	9,763	3,699	,449	,130
Q3.12	10,526	3,878	,193	,377
Q3.15	11,158	4,947	,029	,514

Reliability Statistics

Cronbach's Alpha	N of Items
,842	4

Q4.10 Q4.11 Q4.12 Q4.15

Reliability Statistics

Cronbach's Alpha	N of Items
,890	9

Q5.1 to Q5.9

Reliability Statistics

Cronbach's Alpha	N of Items
,784	4

Q5.10 Q5.11 Q5.12 Q5.15

Reliability Statistics

Cronbach's Alpha	N of Items
,951	9

Q6.1 to Q6.9

Reliability Statistics

Cronbach's Alpha	N of Items
,780	4

Q6.10 Q6.11 Q6.12 Q6.15

Descriptive statistics

Statistics

		Score_HRinformation	Score_ITservices	Score_Procurement	Score_TimeorExpenseReporting	Score_Training
N	Valid	51	51	51	51	51
	Missing	0	0	0	0	0
Mean		3,8284	3,8431	3,2255	4,4020	4,0686
Median		3,7500	4,0000	3,2500	4,5000	4,0000
Mode		3,75[a]	4,00	3,75	5,00	5,00
Std. Deviation		,78659	,86757	,83704	,79385	,98499
Variance		,619	,753	,701	,630	,970
Range		3,25	3,33	4,00	4,00	3,50
Minimum		1,75	1,67	1,00	1,00	1,50
Maximum		5,00	5,00	5,00	5,00	5,00

a. Multiple modes exist. The smallest value is shown

Statistics

		Q7.1	Q7.2	Q7.3	Q7.4	Q7.5
N	Valid	32	32	32	32	32
	Missing	19	19	19	19	19
Mean		3,156	2,625	4,594	1,594	3,031
Median		3,000	2,000	5,000	1,000	3,000
Mode		4,0	2,0	5,0	1,0	2,0
Std. Deviation		,9197	1,0395	1,0429	1,1031	1,1212
Variance		,846	1,081	1,088	1,217	1,257
Range		3,0	4,0	4,0	4,0	4,0
Minimum		1,0	1,0	1,0	1,0	1,0
Maximum		4,0	5,0	5,0	5,0	5,0

Statistics

		Score_HRinformation_ITU	Score_ITservices_ITU	Score_Procurement_ITU	Score_TimeorExpenseReporting_ITU	Score_Training_ITU
N	Valid	44	38	33	32	32
	Missing	7	13	18	19	19
Mean		3,4091	3,7193	2,8030	4,2422	3,5000
Median		3,5000	4,0000	2,5000	4,5000	3,5000
Mode		4,00	4,00	2,50	4,75	3,50
Std. Deviation		,79684	,74142	,70644	,65218	,77251
Variance		,635	,550	,499	,425	,597
Range		3,33	3,00	3,50	3,25	3,50
Minimum		1,33	2,00	1,00	1,50	1,25
Maximum		4,67	5,00	4,50	4,75	4,75

Statistics

		Score_HRandIT_ITU	Score_ProcandTimeExpense_ITU	Score_Training_ITU
N	Valid	44	33	32
	Missing	7	18	19
Mean		3,5114	3,5076	3,5000
Median		3,5833	3,5000	3,5000
Mode		4,00	3,50	3,50
Std. Deviation		,73083	,56245	,77251
Variance		,534	,316	,597
Range		3,33	3,38	3,50
Minimum		1,33	1,25	1,25
Maximum		4,67	4,63	4,75

Statistics

		Score_HRinformation_US	Score_ITservices_US	Score_Procurement_US	Score_TimeorExpenseReporting_US	Score_Training_US
N	Valid	42	36	11	32	28
	Missing	9	15	40	19	23
Mean		3,8519	3,8827	3,7172	3,8056	3,6667
Median		3,8889	3,8889	4,0000	4,0000	3,9444
Mode		3,89	3,22	4,00	4,00	4,00
Std. Deviation		,65558	,56089	,86405	,77803	,93208
Variance		,430	,315	,747	,605	,869
Range		3,56	2,00	2,78	2,89	4,00
Minimum		1,44	2,89	2,22	2,11	1,00
Maximum		5,00	4,89	5,00	5,00	5,00

Statistics

		Score_HRandIT_US	Score_ProcandTimeExpense_US	Score_Training_US
N	Valid	42	33	28
	Missing	9	18	23
Mean		3,8519	3,7475	3,6667
Median		3,7778	4,0000	3,9444
Mode		3,22[a]	4,00	4,00
Std. Deviation		,50794	,75692	,93208
Variance		,258	,573	,869
Range		2,22	2,89	4,00
Minimum		2,72	2,11	1,00
Maximum		4,94	5,00	5,00

a. Multiple modes exist. The smallest value is shown

Statistics

		Satisfied_Use	Use_Satisfied
N	Valid	179	179
	Missing	0	0
Mean		3,44	3,52
Median		4,00	4,00
Mode		4	3
Std. Deviation		1,028	1,030
Variance		1,056	1,060
Range		4	4
Minimum		1	1
Maximum		5	5

Intention to Use tests

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Score_HRinformation_ITU	,165	32	,026	,908	32	,010
Score_ITservices_ITU	,213	32	,001	,940	32	,073
Score_Procurement_ITU	,345	32	,000	,777	32	,000
Score_TimeorExpenseReporting_ITU	,218	32	,000	,724	32	,000
Score_Training_ITU	,188	32	,006	,936	32	,058

a. Lilliefors Significance Correction

One-Sample Test

	Test Value = 3					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Score_ITservices_ITU	5,980	37	,000	,71930	,4756	,9630
Score_Training_ITU	3,661	31	,001	,50000	,2215	,7785

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of Score_HRinformation_ITU equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,002	Reject the null hypothesis.
2	The median of Score_Procurement_ITU equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,061	Retain the null hypothesis.
3	The median of Score_TimeorExpenseReporting_ITU equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Score_HRandIT_ITU	,140	32	,110	,951	32	,155
Score_ProcandTimeExpense_ITU	,184	32	,007	,817	32	,000
Score_Training_ITU	,188	32	,006	,936	32	,058

a. Lilliefors Significance Correction

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of Score_ProcandTimeExpense_ITU equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

ANOVA

Score

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,002	2	,001	,002	,998
Within Groups	51,590	106	,487		
Total	51,592	108			

User Satisfaction tests

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Score_HRinformation_US	,125	9	,200*	,936	9	,540
Score_ITservices_US	,187	9	,200*	,881	9	,160
Score_Procurement_US	,324	9	,007	,877	9	,146
Score_TimeorExpenseReporting_US	,210	9	,200*	,918	9	,374
Score_Training_US	,153	9	,200*	,934	9	,523

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Score_HRinformation_US	8,421	41	,000	,85185	,6476	1,0561
Score_ITservices_US	9,443	35	,000	,88272	,6929	1,0725
Score_Procurement_US	2,753	10	,020	,71717	,1367	1,2976
Score_TimeorExpenseReporting_US	5,857	31	,000	,80556	,5250	1,0861
Score_Training_US	3,785	27	,001	,66667	,3052	1,0281

(Intention to) Use ⟷ User Satisfaction tests

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Satisfied_Use	,222	179	,000	,890	179	,000
Use_Satisfied	,205	179	,000	,875	179	,000

a. Lilliefors Significance Correction

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of Satisfied_Use equals 3.	One-Sample Wilcoxon Signed Rank Test	,000	Reject the null hypothesis.
2	The median of Use_Satisfied equals 3.	One-Sample Wilcoxon Signed Rank Test	,000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

Case C

Cronbach's Alpha

Reliability Statistics

Cronbach's Alpha	N of Items
,896	4

Q1.1 Q1.2 Q1.3 Q1.4

Reliability Statistics

Cronbach's Alpha	N of Items
,810	4

Q1.5 Q1.6 Q1.7 Q1.8

Reliability Statistics

Cronbach's Alpha	N of Items
,802	2

Q1.9 Q1.10

Reliability Statistics

Cronbach's Alpha	N of Items
,484	4

Q1.11 Q1.12 Q.13 Q.14

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1.11	10,367	3,362	,484	,185
Q1.12	10,204	3,541	,470	,211
Q1.13	9,857	5,208	,212	,470
Q1.14	11,020	5,104	,035	,645

Reliability Statistics

Cronbach's Alpha	N of Items
,644	2

Q1.15 Q1.16

Reliability Statistics

Cronbach's Alpha	N of Items
,902	9

Q2.1 to Q2.9

Reliability Statistics

Cronbach's Alpha	N of Items
,373	4

Q2.10 Q2.11 Q2.12 Q2.15

Reliability Statistics

Cronbach's Alpha	N of Items
,699	2

Q3.16 Q3.17

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q2.10	10,702	3,040	,189	,324
Q2.11	10,255	2,803	,464	,027
Q2.12	11,000	3,000	,122	,427
Q2.15	11,191	4,115	,087	,402

Reliability Statistics

Cronbach's Alpha	N of Items
,747	2

Q4.16 Q4.17

Reliability Statistics

Cronbach's Alpha	N of Items
,848	2

Q5.16 Q5.17

Reliability Statistics

Cronbach's Alpha	N of Items
,837	2

Q6.16 Q6.17

Descriptive statistics

Statistics

		Score_HRinformation	Score_ITservices	Score_Procurement	Score_TimeorExpenseReporting	Score_Training
N	Valid	49	49	49	49	49
	Missing	0	0	0	0	0
Mean		3,6735	3,3827	2,4898	2,7857	3,1531
Median		3,6667	3,2500	2,5000	3,0000	3,0000
Mode		3,33	3,00	1,00	3,00	3,00
Std. Deviation		,75305	,87664	1,10980	1,05574	,92536
Variance		,567	,768	1,232	1,115	,856
Range		3,00	4,00	4,00	4,00	4,00
Minimum		2,00	1,00	1,00	1,00	1,00
Maximum		5,00	5,00	5,00	5,00	5,00

Statistics

		Q7.1	Q7.2	Q7.3	Q7.4	Q7.5
N	Valid	47	47	47	47	47
	Missing	2	2	2	2	2
Mean		1,787	2,957	3,383	3,426	3,447
Median		1,000	3,000	4,000	3,000	3,000
Mode		1,0	3,0	4,0	5,0	3,0
Std. Deviation		1,3978	1,0826	1,4379	1,2979	1,1384
Variance		1,954	1,172	2,068	1,685	1,296
Range		4,0	4,0	4,0	4,0	4,0
Minimum		1,0	1,0	1,0	1,0	1,0
Maximum		5,0	5,0	5,0	5,0	5,0

Statistics

		Score_HRinformation_ITU	Score_ITservices_ITU	Score_Procurement_ITU	Score_TimeorExpenseReporting_ITU	Score_Training_ITU
N	Valid	47	47	47	47	47
	Missing	2	2	2	2	2
Mean		3,5957	3,5745	3,3723	3,7234	3,4574
Median		3,5000	3,5000	3,0000	4,0000	3,5000
Mode		3,50	4,00	3,00	3,00	4,00
Std. Deviation		,54562	,92653	,96385	,99350	,93151
Variance		,298	,858	,929	,987	,868
Range		2,50	4,00	4,00	4,00	4,00
Minimum		2,25	1,00	1,00	1,00	1,00
Maximum		4,75	5,00	5,00	5,00	5,00

Statistics

		Score_HRandIT_ITU	Score_ProcandTimeExpense_ITU	Score_Training_ITU
N	Valid	47	47	47
	Missing	2	2	2
Mean		3,5851	3,5479	3,4574
Median		3,6250	3,5000	3,5000
Mode		3,75[a]	3,50	4,00
Std. Deviation		,60011	,76015	,93151
Variance		,360	,578	,868
Range		2,25	3,00	4,00
Minimum		2,38	2,00	1,00
Maximum		4,63	5,00	5,00

a. Multiple modes exist. The smallest value is shown

Statistics

		Score_HRinformation_US
N	Valid	47
	Missing	2
Mean		3,9574
Median		4,0000
Mode		4,00
Std. Deviation		,74195
Variance		,550
Range		3,33
Minimum		1,67
Maximum		5,00

Statistics

		Satisfied_Use	Use_Satisfied
N	Valid	47	47
	Missing	0	0
Mean		3,8511	3,7234
Median		4,0000	4,0000
Mode		4,00	4,00
Std. Deviation		1,02105	1,01515
Variance		1,043	1,031
Range		4,00	4,00
Minimum		1,00	1,00
Maximum		5,00	5,00

Intention to Use tests

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Score_HRinformation_ITU	,165	47	,002	,968	47	,222
Score_ITservices_ITU	,166	47	,002	,944	47	,025
Score_Procurement_ITU	,182	47	,000	,941	47	,020
Score_TimeorExpenseReporting_ITU	,171	47	,001	,904	47	,001
Score_Training_ITU	,188	47	,000	,935	47	,012

a. Lilliefors Significance Correction

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Score_HRinformation_ITU	7,485	46	,000	,59574	,4355	,7559

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of Score_ITservices_ITU equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,000	Reject the null hypothesis.
2	The median of Score_Procurement_ITU equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,011	Reject the null hypothesis.
3	The median of Score_TimeorExpenseReporting_ITU equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,000	Reject the null hypothesis.
4	The median of Score_Training_ITU equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,002	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

ANOVA

Score

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,405	2	,203	,337	,715
Within Groups	83,061	138	,602		
Total	83,466	140			

User Satisfaction tests

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Score_HRinformation_US	,166	47	,002	,877	47	,000

a. Lilliefors Significance Correction

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of Score_HRinformation_US equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

(Intention to) Use ⟷ User Satisfaction tests

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Satisfied_Use	,260	47	,000	,847	47	,000
Use_Satisfied	,246	47	,000	,882	47	,000

a. Lilliefors Significance Correction

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The median of Satisfied_Use equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,000	Reject the null hypothesis.
2	The median of Use_Satisfied equals 3,00.	One-Sample Wilcoxon Signed Rank Test	,000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.