Enhancing Knowledge Sharing Among Educational Consultants in Project-Based

Organizations: Exploring Boundary Conditions for effective knowledge sharing tools with an

Educational Design Research Approach

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Summary

In today's dynamic business environment, harnessing human capital through effective knowledge sharing is pivotal for organizational success. Recognizing a gap in research specific to project-based organizations, a Dutch educational project-based organization aims to enhance knowledge sharing among its educational consultants. The study addresses unique challenges where knowledge is decentralized within projects and individuals, hindering effective knowledge sharing. This research focuses on identifying critical boundary conditions essential for designing a successful knowledge sharing tool tailored to project-based requirements, thereby enhancing knowledge sharing practices. Using a comprehensive approach including literature inquiry, document analysis, and semi-structured interviews, this study adopts an educational design approach to analyze and explore factors influencing knowledge sharing. The emphasis is on understanding organizational culture, trust, communication, information systems, reward systems, and motivation as crucial factors.

The investigation into boundary conditions for developing a knowledge sharing tool within the Dutch project-based organization has yielded significant insights. Findings confirm the theoretical frameworks of previous studies, particularly highlighting the importance of organizational culture, trust, communication, information systems, reward systems, and motivation. The prevalence and challenges of tacit knowledge in organizations align with established research. Existing tools such as roundtable meetings, Microsoft Teams, project reports, and WhatsApp groups vary in effectiveness and do not fully meet management's goals for knowledge sharing standards. The study underscores the critical need for organizational commitment to knowledge sharing practices. It reveals that face-to-face communication enhances trust and effectiveness in knowledge sharing. Educational consultants highlight the importance of proactive behavior, professional development, teamwork, a culture of sharing mistakes, and insights into project opportunities and limitations. Challenges include perceived time constraints, optional participation in knowledge sharing, incomplete project reports, and insufficient interdependence among colleagues. To bridge the gap between theoretical standards and practical solutions, employee involvement is crucial in tool development.

Junior consultants benefit from clear guidance and integration of existing tools into daily workflows, while mediors require support for proactive engagement and leadership development. Seniors play a pivotal role in fostering a knowledge sharing culture through leadership and optimizing existing tools. Aligning these efforts with long-term goals such as promoting a learning culture and enhancing communication is essential for sustained improvement and project success.

1. Introduction

In this chapter, the introduction of this master thesis will be given which includes the context and background of the study, the research questions, and the scientific and practical relevance of this master thesis.

1.1 Initial Orientation

In the fast-paced landscape of modern business, organizations face formidable challenges and rapid technological changes. To stay competitive, utilizing their human capital's full potential is crucial, including the knowledge, skills, experiences and abilities of all the processes related to the employee's work dynamics (Unger et al., 2011). Optimizing one's human capital ensures more efficient problem-solving and elevates employee satisfaction, leading to increased organizational performance (Bontis et al., 2002). The reason why human capital is of such high importance in the first place is the idea that the rapid change and development in technology, regulations and society, resulted in knowledge resources or organizational knowledge emerging as a main source of competitive advantage (Gomes and Dahab, 2010, Hsu, 2007, Loebbecke et al., 2016), which is handled by employees. The management of those resources and organizational-based knowledge is known as knowledge management and was and still is one of the trending topics in organizational literature (Aranda & Fernandez, 2002). A significant part of knowledge management is how knowledge is disseminated or how knowledge is shared among employees, for example through interaction, interpersonal communication as well as through technology like information systems (Hsu, 2007, Al-alawi et al., 2007).

The knowledge that is being shared becomes an intellectual asset of the organization and is identified as a critical factor for organizational success (Collins & Clark, 2003). In addition, an organization that focuses on managing their knowledge efficiently benefits through higher problem-

solving efficiency, higher innovative work behaviour, higher organizational performance and lower turnover rates, higher job satisfaction and life satisfaction for the employee (Zhu, 2016; Noor et al., 2005, Johannessen & Olsen, 2003).

1.2   Organizational Context

1.2.1   The Dutch project-based organization

A project-based organization that is interested in research about knowledge sharing and its benefits is a young Dutch project-based organization that is trying to establish itself in the educational sector. The organization focuses on providing software products, training, consulting and interim management for different educational institutions. Furthermore, the project-based organization have a particular interest in optimizing and facilitating how to share the knowledge that is created inside the organization. The management has already recognized the importance of knowledge sharing, and monthly roundtable meetings were implemented to create an environment to share knowledge. These knowledge sharing practices should be included in the work routine of employees and management, the management has created documents that explain what is expected and how to document the knowledge gained in projects. However, the implementation process of these strategies has not been a success to this date and a part of the issue can lie in the approach on how knowledge sharing needs to be managed in project-based organizations.

1.2.2   Project-based organizations and knowledge sharing

Project-based organizations which are increasingly prevalent in different industries are presenting unique challenges for knowledge sharing due to the fragmentation and lack of uniformity of organizational structures, processes, practices and technology (Almeida & Soares, 2014). A project-based organization can be defined as organizations that usually offers to do projects in another institution or organization to deliver or produce products or services for internal or external customers and is highly focused on prioritizing the efficient allocation of resources to solve the problem requested by the customer (Pemsel & Mueller, 2012; Hobday, 2000).

Project-based organization's approach to knowledge sharing differs significantly from traditional organizations, which often have more standardized knowledge to share through not having the diversity of many different projects. This includes focusing on supporting organizational-wide

technological progress, controlling routine tasks, managing cross-project resources and driving organizational learning (Hobday, 2000). However, this process is more demanding due to the complexity and dispersion of knowledge across projects and employees, thus also hindering and preventing organizational development and knowledge sharing processes (Jiao et al., 2020; Zhao et al., 2015). Ajmal & Koskinen (2008) mentioned how a project-based organization is not only focused on performing well, but its success also depends on transferring the lessons learned and knowledge gained in the projects.

After completing the project, employees transition to new projects, without sharing the knowledge of prior projects leading to a loss of knowledge sharing. This inhibits the development of the project-based organization and thus its knowledge sharing progress (Zhao et al., 2015). The reasons for this are wide-ranging but mostly include not reflecting on one's past mistakes and using the next project as a "rebound" to improve on one's shortcomings, limited time-frame of a project, misinterpretation of how the solution of one project relates to another and no effective incentives or mechanisms for knowledge sharing (Cooper et al, 2016; Xu et al, 2018; Hargadon & Sutton, 1997, Zhou et al., 2022)

Additionally, the knowledge complexity and degree of specialized knowledge involved and needed in a project is increasing, which expands the challenges of knowledge sharing. Furthermore, it shows the necessity for a comprehensive and functioning mechanism that includes the project-based organization and the project teams or individuals to share project knowledge better (Zhou et al., 2022)

1.3   Problem Statement

The project-based organization realizes that the current knowledge sharing processes lack in producing effective results. The roundtable meetings lack interaction and the preparation of the employees is minimal. The documents that are supposed to record the relevant knowledge of projects, are rarely complete and read and underutilized by co-workers despite organization-wide access. The management is concerned about the current success of knowledge sharing inside their organization, the challenge to capture knowledge from diverse projects by educational consultants is vital for reuse by another educational consultant who starts a project in a similar organization. Zhao et al (2015)

noticed how the knowledge these projects in project-based organizations generated is susceptible to loss if not shared in the organization.

Additionally, the unique nature of a project generates specific knowledge that is context-dependent, which might influence the reappearance of that knowledge and hence the sharing of such knowledge. In this case, the educational sector and its different levels of education are very complex in terms of approaches and knowledge needed to solve the client's problems. Thus, if an educational consultant is being requested to advise on the planning process of lower education, the focus and knowledge being created shift from a deep dive into the software and technologies of higher education to an adapted more personal and direct approach for lower educational institutions.

Furthermore, a project-based organization is not only supposed to be focused on performing well, but its success also depends on transferring the lessons learned and knowledge gained in the projects (Ajmal & Koskinen, 2008). Since the employees work mostly remotely and are not often at the office, hence the attention in this research will be on knowledge sharing supported by technology also called knowledge management systems. The knowledge management systems, which encompass technology facilitating knowledge management are comprised of different concepts such as knowledge creation, storage and retrieval, sharing and application (Alavi & Leidner, 2001; Ahmad & Karim, 2019). We solely focus on the knowledge sharing aspect, other parts will be explained later in the study to understand the context of knowledge sharing.

Sensibly, without a suitable knowledge management system or in other words knowledge sharing tools, the organization does not have an appropriate foundation for knowledge management and the knowledge for educational consultants at the organization is at risk of being lost or not efficiently used, and the project-based organization cant benefit from the advantages of an organization where knowledge is well managed. The necessity for efficient and comprehensive knowledge sharing in project-based organizations is evident, just as a mechanism to prevent the loss of knowledge in projects. To be able to analyse how to design an effective knowledge sharing tool, the boundary conditions to create the tool need to be identified. This means that there will not be a design of a knowledge sharing tool taking place but the prior analysis to ensure the later success of a knowledge sharing tool in the Dutch-project-based organization. This includes the analysis of critical

success factors for knowledge sharing tools which in this research will represent the boundary conditions since the identification of these factors explains the main boundary conditions for this study.

Therefore, the focus of this research is to identify and analyse boundary conditions for designing a successful knowledge sharing tool, for educational consultants in the Dutch project-based organization.

2   Theoretical framework

In the Theoretical framework, the topics of the initial orientation will be analysed more in-depth. The focus will lie on the boundary conditions and important concepts to develop a successful knowledge sharing tool for a project-based organization. First, the concepts of knowledge and knowledge management, knowledge sharing and its benefits and barriers, knowledge sharing in a project-based organization and factors for successful knowledge sharing in a project-based organization, will be explained.

2.1   Knowledge and Knowledge Management

In today´s dynamic and competitive world, knowledge has been recognized as the essence of a company and as a critical component for the survival of organisations as well as the basis for innovation and economic success (Asrar-ul-Haq & Anwar, 2016; Nonaka & Takeuchi, 1995, Scholl, 2004). Recognized as contextual, relevant and applicable information, knowledge serves as a catalyst for organizational progress (Abdullah., et al. 2005) Therefore, firms rely greatly on knowledge as a resource and a vital success factor for organizations (Nag & Gioia, 2012). In addition, from the importance of knowledge, it can be inferred that the significance of how knowledge is managed and applied is just as important as the knowledge itself.

The proliferation of knowledge within organizations has supported the rise of the concept of knowledge management, which is one of the more trending topics in organizational literature (Aranda & Fernandez, 2002). In this study, knowledge management can be defined as the management of the creation, storage and retrieval, transference or sharing, as well as application of knowledge (Alavi & Leidner, 2001). The reason for knowledge management being of such high importance for many firms is the relation to several positive outcomes. Firstly, effective knowledge management is linked to

indirect improvements in productivity and effective problem-solving capabilities, facilitating a competitive advantage (Rahimli, 2012; Witherspoon et al., 2013; Perik, 2014). Secondly, it contributes to the durability of an organization, enabling more adequate and swift adaptations, as more challenging situations for the company arise (Perik, 2014). Thirdly, most research has been on how knowledge management resources have improved the overall organizational performance (Lim & Ahmed, 2000, Andreeva & Kianto, 2012; Andrej et al., 2023). Fourthly, the durability of an organization, if knowledge is well managed, is higher and more difficult situations for the company can be managed more adequately and adapted quicker (Mckinlay, 2002).

Ultimately, the purpose of knowledge management is to influence its different parts with its knowledge management systems, facilitating knowledge creation, sharing and application through (Ahmad & Karim, 2019). This study directs its focus on the knowledge sharing aspect between the employees and its successful outcome, recognizing it as the cornerstone for successful knowledge management and the basis upon which knowledge management systems can thrive (Asrar-ul-Haq & Anwar, 2016).

2.2   Knowledge Management Processes and Knowledge Management Systems

 Knowledge management processes as mentioned earlier have been the focus of Alavi & Leidner (2001) who built upon the research of Nonaka & Takeuchi (1995) on knowledge creation, but went further and focused on more processes than just the creation and included more processes, one of which is also knowledge sharing. The processes are the following: Storage and retrieval refer to the utilization of the company memory and the IT systems, enabling employees to store and access knowledge efficiently. The application of knowledge is using the knowledge management processes to get a competitive advantage and apply the learned knowledge. Sharing, on the other hand, is related to the transfer and dissemination of knowledge between employees and stands as a critical aspect of knowledge management (Al Emran et al., 2018; Renzl & Birgit, 2008).

Historically, knowledge management focused on the development of technologies and systems that can be built to manage knowledge efficiently, which are called knowledge management systems. However, nowadays the focus is on employees and their specific actions to use those tools and

creating and fostering an environment for knowledge management (Natek & Zwilling, 2016; Al-Alawi et al., 2007). Thus, the employee's knowledge sharing skills and capabilities are of great importance for using most of these knowledge management systems and in turn essential for knowledge management. Moreover, the significance of knowledge sharing extends beyond only one positive outcome, including various facets of knowledge management, including knowledge creation and knowledge application (Hendricks, 1999; Hu et al., 2009; Joseph, 2006). In addition, organizations should utilize their knowledge-based resources to capitalize on their internal knowledge Thus, it is only sensible for organizations to invest time and resources into investigating how knowledge sharing, especially about knowledge management systems, can be facilitated.

2.3   Knowledge sharing: Navigating definitions

Knowledge sharing can be defined as the transfer or exchange of knowledge among individuals, groups or organizations to stimulate new ideas, ways of working and higher competence and performance (Charband & Navimpour, 2018; Appel-Meulenbroek et al., 2018). There are many different terms related to knowledge sharing that are used interchangeably in research like knowledge exchange and knowledge transfer. However, Zheng (2017) mentioned in his review of knowledge sharing that knowledge exchange is interchangeable with knowledge sharing but knowledge transfer has a clearer difference. Knowledge transfer involves knowledge acquisition and knowledge sharing, it describes the movement of knowledge between all kinds of units, departments and organizations. The definition that will be used in this research paper refers to knowledge sharing as a predominantly individual, proactive and voluntary behaviour between at least two parties where one receives knowledge by using knowledge and the other gives knowledge by using knowledge and is influenced by the environment in which way knowledge is shared procedures, codes of conduct, openness and habit (Zheng, 2017).

2.1   Modes and approaches to Knowledge sharing

When it comes to sharing knowledge, and the way it is shared there are two types: face-to-face interactions (e.g. roundtable meetings, networking, informal or formal discussions) and communication that is supported by technology (e.g. Microsoft Teams, emails, forums, telephone etc.) (Cummings, 2004). Project-based organizations have mostly knowledge sharing procedures that are

supported by technology due to employees having different projects in different places, hence it is only sensible to aim at project-based organizations. However, it does need to be mentioned that face-to-face knowledge sharing has been seen as more successful for knowledge in some cases because social cues like body language, feelings towards the conversation, and eye contact cannot be replicated easily and is a pitfall of technology-based communication (Panahi et al., 2013).

But in many companies, this is not possible which is why the online knowledge sharing approach is more suitable and applicable to the context. Online knowledge sharing relates to the dissemination of experience and organization knowledge to foster business development with communication over computer-mediated systems between employees (Oyemomi *et al.*, 2016; Charband & Navimpour, 2016). The companies that use those include project-based organizations that work mostly remotely for which online knowledge sharing has become extremely interesting because of the high likelihood that employees are working at the location of the client's project itself.

2.2 Benefits of Knowledge Sharing

Knowledge sharing is seen as an important resource for individuals and teams in an organization and an activity that brings a competitive advantage and benefits to all kinds of organizations (Haas & Hansen, 2007, Nonaka and Takeuchi, 1995). One of those benefits was mentioned in a review by Wang and Noe (2010) on knowledge sharing and its future, it was noticed that knowledge sharing is related to lower production costs, faster completion of new development projects, team performance, firm innovation capabilities, and firm performance inducing sales growth and revenue from new products and services. Other research confirms the belief that knowledge sharing assists organizations in accomplishing their best practices and additionally reduces both the learning curve and the work required of people to grasp new domains of knowledge (Hansen, 2002; Mcdermott and O´dell, 2001). In a review of knowledge sharing Ahmad and Karim (2019), they have researched the key effects of the individual for knowledge sharing. Knowledge sharing is positively associated with individual task accomplishment efficiency and problem-solving efficiency, Innovative work behaviour, creativity and Identified capability for assimilating information. Additionally, positive psychological effects are found concerning job satisfaction, life satisfaction and a lower turnover rate (Zhu, 2016; Jian & Hu, 2016; Reychav & Weisberg, 2009).

Moreover, researchers revealed a correlation between engagement in knowledge sharing behaviours and the enhancement of interpersonal skills, fostering a positive impact on organizational dynamics, learning, innovation, and business process efficiency—each linked to organizational effectiveness and performance (Collins & Smith, 2006; Wang & Wang, 2012; Saenz et al., 2012; Noor et al., 2005).

Due to the high complexity of the topic of knowledge sharing and its many influences related to individual, organizational and contextual factors much of the research has focused on the benefits of knowledge sharing in an organization but there are also a variety of problems that organizations have to enhance higher levels of knowledge sharing.

2.3   Limitations and Barriers to Knowledge Sharing

Limitations that exist in organizations with knowledge sharing are predominantly related to crossing individual, team and organizational levels when sharing knowledge, the problem of sharing tacit knowledge (which is a big contributor to the knowledge that is possessed in organizations), and the influence relationships and culture has on the willingness to share knowledge.

Organizations have issues with knowledge sharing internally which include the search costs for knowledge as well as the barriers to sharing knowledge that operate on the individual, group and organizational level in terms of boundary crossing (Almeida & Soares, 2014). One of those barriers is creating and using knowledge from one section of a company and expecting it to improve the performance of another part of the organization (i.e., boundary crossing). Consequently, more knowledge sharing is not necessarily a higher guarantee of improved performance (Haas & Hansen, 2007). Most individuals and organizations do not have the awareness that problems of one project can relate to another and it becomes a barrier because the willingness to engage in knowledge sharing is low in a company. Amayah (2013) found that the reason has to do with a lack of a supportive organizational climate, degree of empathy, lenience of judgment and trust in one another as well as the degree of courage to speak up plays an important role in crossing boundaries and exchanging information

Another barrier is the nature of the knowledge which is mostly tacit knowledge which is practical knowledge that is learned informally in the profession you work in and is highly personal,

unique and hard to formalize (Dhanaraj, 2004; Nonaka & Takeuchi, 1995). This is the knowledge that needs to be shared the most but takes the most skills to share and needs a higher capacity for absorbing knowledge receivers (Szulanski, 1996).

In addition, the relationship in terms of trust between the knowledge provider and receiver is important. Less trust in the interaction means less knowledge is shared, absorbed and applied and leads to difficulties in knowledge sharing and other important parts of the firm that indirectly influence knowledge sharing like organizational culture (Almeida & Soares, 2014).

2.4 Supporting factors for higher levels of knowledge sharing in organizations

Several studies have found a connection between organizational culture and knowledge sharing (Draghici and Draghici, 2008; Al-Alawi, 2007). The organisational culture influences the attitudes, beliefs, and work structures that promote or inhibit learning and knowledge sharing (Xu et. al 2018; Wiewiora et al., 2013). Individuals will be unwilling to engage in such actions if the organisational culture is not conducive to knowledge sharing.

Other factors that support the engagement and participation in knowledge sharing behaviours are high self-efficacy from employees, so feeling confident carrying out those behaviours. Perceived instrumentality, so seeing the usefulness of knowledge sharing for one's future goals and projects and organizational commitment towards knowledge sharing means employees and management are committed to knowledge sharing behaviours and structures (Kalman, 1999). Moreover, Trust is essential for knowledge to be shared because it creates a safe space for social interaction and employees seem to be more inclined to share knowledge if the source of information is reliable and trustworthy (Ardichvilli et al., 2003). As a consequence, a more open connection is built for individuals (Garavan et al., 2007), which leads to better social interaction between colleagues. The facilitation of this is found to be very significant for the occurrence of knowledge sharing inside an organization (Inkpen and Tsang, 2005; Nahapiet and Ghoshal, 1998). This incorporates the mutual benefit that both see in the interaction and a reciprocal relation where the knowledge sharing process is seen as fair and equal by both parties (Chiu et al.,2006).

Lastly, the communication systems that are used for knowledge sharing are of huge importance since it is the catalyst in the social interaction between colleagues. Zheng (2017) found the

significant impact of Information systems on knowledge sharing but mentioned that is not the significant part. The types of how knowledge shared nowadays are in person but also often online where different strategies and communication systems are necessary.

3   The Current Research: An Educational Design Research

The amount of research done specifically on knowledge sharing in project-based organizations with a focus on how knowledge sharing can be enhanced and boundary conditions on effective knowledge sharing tools are limited. Many research approaches focus on knowledge sharing and some on project-based organizations and working remotely (Al-Alawi et al., 2017). However, the knowledge sharing literature focus is on identifying supporting and inhibiting factors of knowledge sharing in various contexts but not necessarily on designing an effective knowledge sharing tool for a project-based organization; hence in this study I use a design-based approach and focus on identifying the boundary conditions for the development of a specific knowledge sharing tool, which is often not the core of earlier studies (Ahmad & Karim, 2019). By deciding to use an educational design approach to this research and investigating the significant factors for designing a knowledge sharing tool in a small-scale organization, most of the end-users will be directly involved in the process. Thus, making it beneficial for engagement and organizational support for the project-based organization. Additionally, since it is an expanding company, the new members will directly be introduced to the continuous learning mindset and be able to use the knowledge of other members to understand how to work as an educational consultant.

3.1   Educational Design Research Approach

The current study is based on McKenney and Reeve's (2012) generic EDR model. EDR is a type of research that focuses on the iterative development and creation of answers to real-world, complex educational problems and combines those answers with a theoretical foundation to keep improving the intervention that is going to be implemented (Mckenney & Reeves, 2012). The model below (Figure 1) was based on the foundation of other theoretical backgrounds of EDR and has three main components. First, the three iterative core phases: are analysis/exploration; design/construction; and evaluation/reflection. Second, the centre of attention is the combination of theory and practice to

mature the intervention and gain a theoretical understanding of the problem. Lastly, it is to plan how the implementation and spread will take place which involves which parts and how much of the intervention will be implemented.
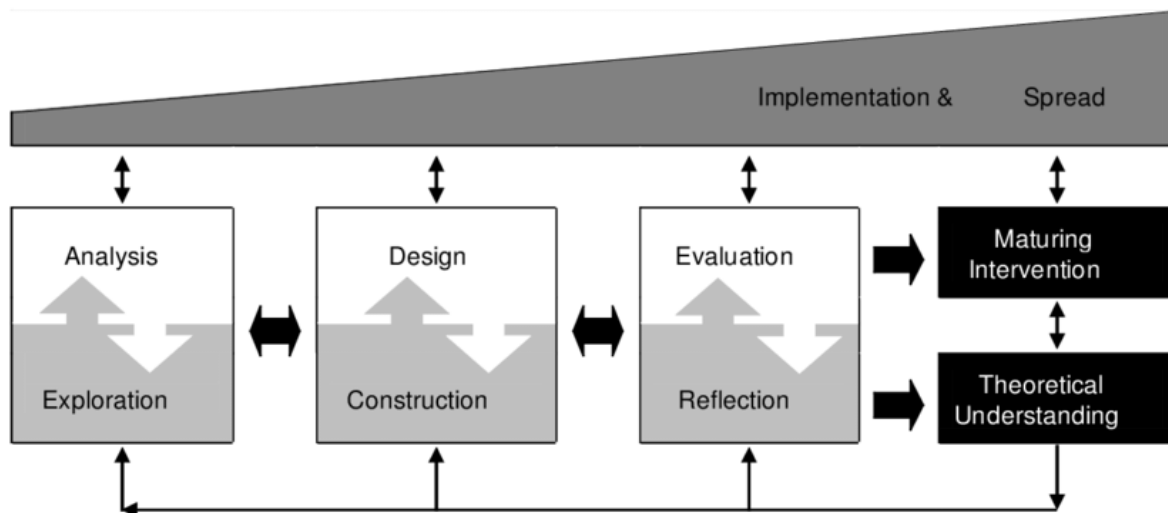
Figure 1. Generic Model for Conducting EDR by Mckenney and Reeves (2012)

3.2   Structure of EDR for this Study

The adapted structure of EDR for this study specifically will be explained in the following. In the analysis & exploration phase, a literature inquiry is carried out to create a theoretical understanding and foundation for the important concepts of knowledge sharing, a project-based organization, the different tools and interventions and lastly the critical success factors for knowledge sharing. Secondly, a field-based investigation takes place to get a clear perspective of how issues are in practice, this contains the analysis of useful documents, and interviews as well as exploring the opportunities inside the company through professional meetings and networking with colleagues to receive further insights. The phase generates practical and theoretical products which are comprised of a problem statement, long-range goals, partial design requirements and initial design propositions which will be discussed in the methods section. This is the phase on which the study specifically will focus and there will only be recommendations for the other two phases.

In the Design/construction phase, solutions to the problem are being explored which means they are further researched, discussed, mapped out and a product with components is developed and revised. This phase will not be carried out but mentioned in the recommendations.

In the Evaluation/Implementation phase, the intervention is being evaluated by different testing methods, checklists and external appraisal to ensure a proper evaluation process. The reflection process takes place by thorough investigation of the previous steps and decisions that were made. This phase will not be carried out and also be shortly mentioned in the recommendations for this study.

3.3 The Analysis and Exploration phase

Chapter 1 describes the first step in the Design-based research process, which is the analysis and exploration phase. The theoretical framework defined the most important concepts of knowledge sharing in teams, the analysis and exploration phase aims at creating a more concise understanding of the problem and why Individuals in the project-based organization currently have problems with effective knowledge sharing. Analysis & Exploration starts with a literature Inquiry and continues with a document analysis and a needs and problem analysis which will be guided by sub-questions. Then the findings are synthesized to, based on these generate the deliverables for this phase: A refined Problem statement; a long-range goal, partial design requirements and an initial design proposition for the project-based organization's knowledge sharing tool.

3.3.1 Research questions of the Analysis and Exploration phase

The goal of this educational design-based research is to investigate the boundary conditions to design an evidence-based knowledge sharing tool for educational consultants to adequately share knowledge during and after an assignment at project-based organizations. A literature inquiry, document analysis and semi-structured interviews to uncover needs and problems will be based upon the framework of Al-alawi et al. (2007) and are going to be used to uncover to what extent the critical success factors that facilitate or regulate the process of knowledge sharing are considered in practice. This will lead to an idea of which areas there is support needed to create a knowledge sharing tool for a project-based organization and reveal what boundary conditions must be present for a successful knowledge sharing tool.

Research questions :

Question 1: What are the boundary conditions and knowledge sharing tools for effective knowledge sharing for a project-based organization in research?

Question 2: What boundary conditions and knowledge sharing tools for effective knowledge sharing are presently utilized within the Dutch project-based organization?

3.3.2 Methods

To answer the research question and the sub-questions of the analysis and exploration phase three methods are chosen. First the literature Inquiry, which is used to establish a theoretical and scientific basis of the boundary conditions and information about successful knowledge sharing tools specifically for sharing tacit knowledge in a project-based organization, to build the foundation for the subsequent methods.

A document analysis is conducted with relevant documents of project-based organisation to gain more practical information about the first question and the boundary conditions for effective knowledge sharing. Additionally, it will give a first overview of the second question and the knowledge sharing tools and the knowledge that has been shared in the documentation of the organization.

To zoom in on the second question and gain more information about the first question, a needs- and problem analysis is conducted using semi-structured interviews about the critical success factors for knowledge sharing in a team and organization. The respondents will include educational consultants, the management and colleagues who work on the operational side of the company, which relates to working with educational software to support universities. The results will include an overview from different stakeholders about which boundary conditions are prerequisites for effective knowledge sharing.

3.4 Literature Inquiry

The primary objective of the literature inquiry is to use the information of the theoretical framework to zoom in on the combined concepts that are relevant to this study.

This method will be guided by the first sub-question:

What are the boundary conditions and knowledge sharing tools for effective knowledge sharing for a project-based organization in research?

3.4.1   Boundary conditions for knowledge sharing in a project-based organization

Organizational structure and culture

The norms of organizational structures are difficult levels and layers that information needs to flow through because of the responsibility of employers and the procedures that are in place. Research showed that if the informational flow has fewer barriers between departments, knowledge sharing is supported (Syed-Ikhsan & Rowland, 2004). Additionally, it was found, if the organizational culture promotes trust which has many positive knowledge sharing effects, that it balances the negative effect of perceived costs of knowledge sharing (Kankanhalli, Tan, & Wei, 2005). The organizational structures of a project-based organization should focus on creating a sharing culture. A shared culture is a part of organizational culture in which knowledge is made available and supported by the management and utilized efficiently to achieve the organization's values and mission (Draghici and Draghici, 2008). Management support has also been found to have a significant positive influence on employees' perceptions of a knowledge sharing culture and willingness to share knowledge (Connelly and Kelloway, 2003; Lin, 2007).

Additionally, it could foster and facilitate shared attitudes in, a collaborative worker environment of individuals between project information and thus foster knowledge sharing effectiveness (Xu et. al 2018; Wiewiora et al., 2013). It was found that an organization with competitive nature has a negative effect on knowledge sharing and an organization with cooperative culture has a positive effect and is a necessary condition for knowledge sharing (Wang & Noe, 2004). Research also suggested that innovation culture is the most important factor in facilitating knowledge sharing, which is related to more employee interaction to encourage more sharing of experiences, ideas and other tacit knowledge (Li et al., 2016). Also, Incentives have been shown to build a supportive culture for knowledge sharing in an organization (Hansen et al., 1999, Liebowitz 2003). Lastly, organizational cultures that promote innovation have found that the usage of knowledge management systems promoted, more individual knowledge sharing and a higher capability of knowledge exchange in the organization (Liao et al., 2006; Willem and Scarborough, 2006).

Interpersonal Trust

Trust is the most critical factor in terms of the variables connected to the relationship dimension between colleagues since it is the foundation of any interpersonal relationship (Sun et al., 2019). Interpersonal trust can be defined as an individual's or a group's expectation of the likelihood that an action of other individuals or groups is reliable (Politis, 2003).

Researchers have also focused on trust as an antecedent of knowledge sharing and even as a mediator (Butler, 1999; Lin, 2007). Wu et al. (2007) mentioned that affect- and condition-based trust can have a positive influence on knowledge sharing and the existence of trust is needed to respond freely and share knowledge in a team setting (Gruenfeld et al.,1996). Trust was also identified in a book by Minbaeva (2007) as a relevant factor for knowledge sharing. Lastly, the more trust there is between employees in the organization, the more familiarity with each other's knowledge needs is facilitated, thus fostering the sharing of knowledge.

Information systems

The concept of information systems can be defined as a collection of people, data, and procedures that support day-to-day operations, solving issues and decision-making inside of a firm (Whitten et al., 2001). This study mainly focuses on the support of procedures that are mainly information communication technologies (ICT) how they are used and the influence they have. As touched upon earlier there are several opportunities nowadays with different types of technologies to increase the amount of knowledge that is shared and should be supported by the management. On the other hand, there is a debate about ICT tools as supporting structures of tacit knowledge sharing with reports of ineffectiveness and effectiveness (Abadi et al., 2009; Razmerita et al., 2014). Alavi & Leidner (2001) mentioned how IT services supported knowledge sharing by making it possible to share information outside of the norm and have multiple channels of communication available to the employee. Zheng (2017) mentioned in a review on knowledge sharing how ICT technologies can make knowledge sharing more efficient but it not being the most important part of the knowledge sharing process. The reasons for that are the effectiveness that is connected to only oral exchange of information in ICT tools (Zhou et al., 2022) and, the ICT tools and their variety and thus their direct impact on tacit knowledge sharing can be limited and more research is necessary to report significant evidence (Del Giudice & Della Peruta, 2016).

Tools to share tacit knowledge online

Because of the importance of tacit knowledge and its many challenges for a project-based organization and organizations in general a variety of ICT tools have been researched to support the sharing of tacit knowledge in organizations with a focus on online knowledge sharing.

The most effective tools that are used to share tacit knowledge come from a literature review by Marwick (2001) and Chatti et al. (2007). Since online knowledge sharing is mostly IT-assisted and fitting to the context of a project-based organization and tacit knowledge the focus lies on socialization so sharing tacit to tacit knowledge which is related most importantly to social media online team meetings, an online community of practices, and externalization making tacit knowledge explicit, essentially blogs, wikis, discussion forums and collaborative systems.

Firstly Blogs, is a tool that facilitates discussions, documentation of thoughts through storytelling and the individual decision in which format to upload the knowledge (Video presentations, images, text etc.). It has the advantage of tacit knowledge that it promotes socialization with colleagues and immediate feedback to react to a post of someone. Reamy (2002) had a similar understanding and proposed that storytelling is the best way to share tacit knowledge.

Secondly, wikis or encyclopaedias are of advantage because they act like a knowledge bank in which you give knowledge in terms of externalization of your knowledge and internalize knowledge in terms of receiving knowledge for the know-how of projects and a higher amount of tacit knowledge sharing is possible. After all, more information is available. Additionally, it becomes obvious which colleague did not put anything into the knowledge repository (Bush and Tiwana, 2005), which coerces employees into wanting to keep face and continue to use the knowledge repository and use the opportunity to share their knowledge.

Third, discussion forums and collaborative systems are good for sharing knowledge about technical know-how, good for the onboarding process and question and answer section, as well as the ability to comment, rate and develop meaningful discussions of tacit knowledge.

Social media has also been supported in literature because of sharing informal knowledge and innovative ideas across the organization (Jarrahi & Sawyer, 2013) but with many disadvantages when

it comes to security, trust, allowance of the employer to use them during work and difficult to convey issues with a high degree tacitness (Panahi et al., 2013).

It needs to be mentioned that all these tools which are related to Web 2.0 tools are effective when it comes to knowledge that has a low or medium amount of tacitness (Chennameni & Teng, 2011), for example, a simple procedural question about what to do in a project. But when it comes to higher levels of tacitness like intuitions and experiences which are very specific and personal needs a higher richness of communication like online team meetings or face-to-face conversations.

The online team meetings are the variant that the project-based organization has already been using in its monthly online roundtable meetings and the effectiveness is also connected to socialization and the oral dissemination of knowledge as an effective tool for tacit knowledge sharing (Charband & Navimpour, 2018; Cevik et al, 2016).

Online communities of practices which are voluntary based, foster the interaction and socialization between employees and support discussions, the inspiration behind these communities is to share and provide personalized tacit knowledge to their colleagues and more frequent contact which in turn promotes interpersonal trust (Venkitachalam & Busch, 2012).

Communication between colleagues

Communication is defined as human interaction through oral communication and the use of nonverbal behaviour while performing conversations (Al-Alawi et al., 2007).

Communication is critical in facilitating knowledge sharing in project-based organizations since it is among the most efficient methods of transferring information throughout the organization. The most important framework is by Cummings and Teng (2003) who discussed the knowledge sender, receiver and their relationship. The knowledge receiver for example needs to have the capacity, skills and willingness to absorb the knowledge that is being sent. Grant (1996) and Lang et al. (2014) agree with those statements and believe that the willingness to absorb knowledge is essential to receive the expected effect of knowledge sharing and the higher the complexity of the knowledge the more capabilities are needed to absorb the knowledge. Thus, the same holds about the knowledge giver as well who needs to have the ability to explain the knowledge in such a way that it is comprehensible for the knowledge receiver. Through networking in the organization and the awareness of the relationship

between the knowledge receiver and giver, communication encourages and promotes knowledge sharing (Smith and Rupp, 2002).

Reward system and Motivation

Employees need to be motivated to share knowledge efficiently since there is a consideration of one's action on what to gain that influences the willingness to share knowledge (Syed-Ikhsan and Rowland, 2004). Incentives like recognition and rewards have been associated with fostering knowledge sharing and forming a supportive culture and in turn knowledge sharing (Yao, Kam, &Chan, 2007; Hansen et al.,1999). The rewards that are positively associated with a contribution to knowledge management systems are promotions, bonuses and salary increases (Kankanhalli et al., 2005) which are all extrinsically motivated rewards. In addition, Kim and Lee (2006) found that a performance-based pay system contributes to knowledge sharing. On the other hand, research has shown that extrinsic motivations can have a negative effect on knowledge sharing attitudes and do not facilitate knowledge sharing among product development team members (Bock et al., 2005; Chang et al., 2007) like a project-based organization that develops products and services.

The management needs to know the importance of collaboration with its employees when designing a reward system and let them be based on group rather than individual performance (Goh, 2002). Intrinsic motivation was studied in terms of the self-determination theory and its three basic psychological needs, and it found that the perceived competence and sense of belonging in an organization had a positive effect on knowledge sharing (Yoon et al, 2012). If the basic psychological needs are fulfilled intrinsic motivation is elevated which in turn heightens the possibility of the willingness to share knowledge. Although there are various methods for sharing knowledge, certain factors are essential for the success of a knowledge sharing tool in a project-based organization. Based on the research of Al-Alawi et al. (2007), this study identifies organizational culture, trust, communication, information systems, reward systems, and motivation as critical success factors. Organizational culture, in particular, is highlighted as the most influential factor. These concepts, alongside the current knowledge sharing processes within the organization and the specific knowledge that needs to be shared, form the main focus of this study. By examining these factors and processes, this research aims to establish the boundary conditions necessary for developing an effective

knowledge sharing tool tailored to the unique needs of a project-based organization. The study will explore how these critical success factors relate to the design and implementation of knowledge sharing tools and provide insights into optimizing their utilization.

. The methods will focus on the document analysis and the semi-structured interviews of this study to inform ourselves to what extent the project-based organization is fulfilling the boundary conditions for a successful knowledge sharing tool for a project-based organization. Lastly, by analysing which constraints have not been met, the factors that need more focus will be identified, to create a successful knowledge sharing tool for a project-based organization.

3.5   Document Analysis

Document analysis will be conducted to gain practical insights and explicit knowledge that the project-based organization possesses in the documentation for the second sub-question:

What boundary conditions and knowledge sharing tools for effective knowledge sharing are presently utilized within the Dutch project-based organization?

3.5.1   Procedure

For determining the documents which should be included, an adapted version of the PRISMA Flow Diagram (2020) has been chosen. In Figure 2, the different steps of Identification, Screening, Eligibility and Inclusion are discussed.

First, it is important to **identify** the documents that are relevant to the knowledge sharing process for the individual, so in this study, the educational consultant is in a project-based organization. The management gave access to the Teams environment where all the relevant documents of the company are stored, this includes documents with general information about the company, the educational consultant guide with all relevant information for the onboarding process of a consultant, a project description template for educational consultant's, finished project descriptions, manuals for educational software's, logistical documents about planning, manuals about project-management and educational logistics. There were five documents which were identified as relevant: the guide for a new consultant which includes information about the task of the consultant(e.g. how to get a project; Onboarding information, what documents to read etc.), the general information of the

project-based organization, which can be relevant how the organizational structure is for knowledge to be shared, the project description template itself. Additionally, a finished project description by an educational consultant with interesting knowledge to share and a manual for project management that includes skills for the tasks of an educational consultant. These documents were identified as relevant by the advice of the management and educational consultants of the project-based organization and the relevancy of the sub-questions. Below the identified documents are furthermore screened based on the developed inclusion criteria for knowledge sharing for educational consultants.

The second step included the **screening** process which provides information on whether the data in the documents fits the inclusion criteria. The inclusion criteria for this document analysis are :

1. The document provides information about previous or current knowledge sharing tools, guidelines, manuals, instructions or processes

2. The document provides information on what is relevant knowledge for the project-based organization that should be shared

3. The document provides information about the tasks of an educational consultant

4. The document provides general information about the company and their organizational structure and culture which influences the knowledge processes

Based upon this inclusion criteria three documents were included which are namely: the guide for an educational consultant, the general information document about the company and their organizational structure and the project description template for educational consultants after a project is completed. The educational consultant guide document was included because it contains information about what knowledge is relevant to share as an educational consultant and the tasks that an educational consultant needs to fulfil. The general information document was included because it explains how the organizational structure could promote knowledge sharing and how much the values match with knowledge sharing processes. The project template was included because it is the document that shows how projects in the past were done and is a current knowledge sharing process on what relevant knowledge of projects is supposed to be shared. Two other documents were excluded because they did not meet the inclusion criteria and included irrelevant information to address the research questions.

The third step was to check the full-text **eligibility** of those three documents and after carefully examining the documents it could be concluded that the documents can give enough information to answer the first question of the Analysis and exploration phase.

The fourth step is to **include** the selected documents in the analysis

PRISMA 2020 flow diagram for the Document analysis
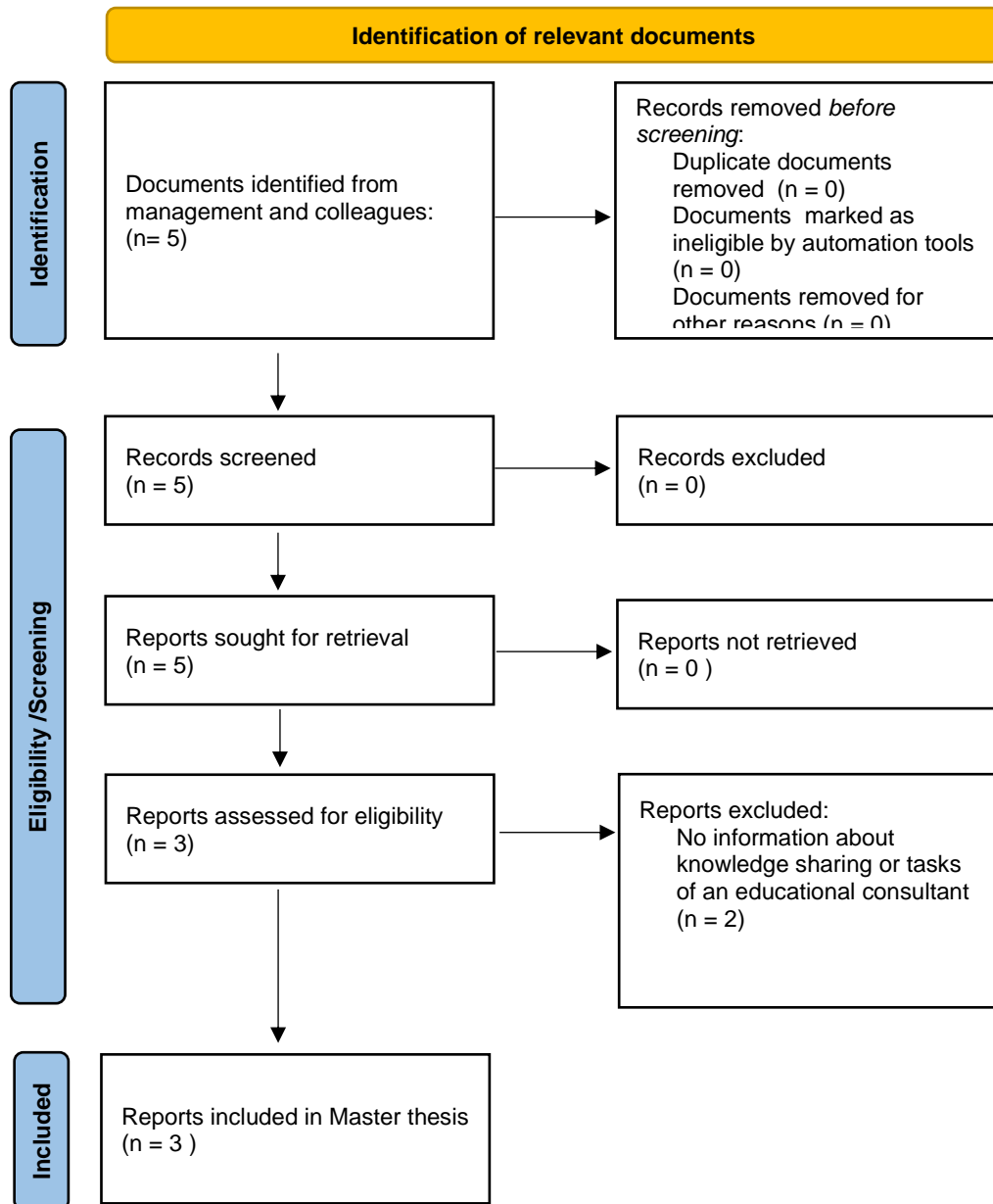
3.5.2   Data Analysis of the Document Analysis

To generate the qualitative data and get a more accurate idea of the documents a simple deductive qualitative analysis was used as a method for the document analysis. According to Bingham

& Witzowsky (2022), deductive data analysis involves a top-down approach, which in qualitative analysis means utilizing codes or concepts that are predetermined. One outcome of deductive analysis lies in its capacity to assist the researcher in categorizing data to ensure its alignment with the research questions (Binham & Witzowski, 2022). This capability will be leveraged in the present study since the goals of the document analysis correspond directly to the sub-questions of the analysis and exploration phase and thus with the research question. The goals are to gather more information about the knowledge sharing processes, the knowledge that should be shared for a project-based organization, the tasks of the consultants, and general information about what the project-based organization does and how their Organizational structure is. The data is analyzed and categorized into the corresponding codes according to the codebook (see. Appendix A), which is based on the inclusion criteria which have their foundation in propositions of the management and the theoretical framework on boundary conditions of an effective knowledge sharing tool. Below is the analysis of the 4 codes: Previous or current knowledge sharing tools and processes; Relevant knowledge for the project-based organization that should be shared; Tasks of an educational Consultant and General Information about the project-based organization and the organizational structure.

Previous or current knowledge sharing tools or processes

The document analysis revealed information on the previous and current processes of knowledge sharing in the project-based organization which were extracted from the documents "*The Project Template*" and "*The Educational Consultant Guide*". "*The Educational Consultant Guide* " showed that the existing method of sharing knowledge involves conducting a monthly 30-minute roundtable meeting with all educational consultants involved. During these meetings, the educational consultants are supposed to provide general updates on the progress of their projects, this is supposed to happen at a surface level, without delving into the specific causes of any issues encountered or providing a detailed account of the specific methods they have employed to address these issues. The idea is that if issues arise in the roundtable meetings, colleagues are supposed to be aware and notice that they could help another educational consultant because they have encountered a similar issue in the past. Consequently, the experienced educational consultant plans a meeting to share knowledge

with the particular educational consultant struggling with an issue. The consultants are expected to take notes on their projects and fill in their knowledge in *"The Project Template"* which is accessible via their own Microsoft Teams environment and subsequently refer to those notes during the roundtable meeting. However, these instructions are frequently disregarded. This can be seen by the data extracted from the template containing the finalized project descriptions and the relevant knowledge, which often includes tacit knowledge, is meant to be filled out in the "state of the project" or "details" sections. Unfortunately, these sections are rarely completed in full, if at all. The issues discussed in these sections typically relate to how the initial problem has evolved or changed over time and are part of the knowledge sharing procedures in the project-based organization and expected to be filled out according to the rules of "*The Educational Consultant Guide*".

Relevant knowledge for the project-based organization that should be shared

Within the educational consultancy sector, numerous projects exist, and employees possess knowledge relating to problem-solving approaches utilized in these projects. The project description is part of the document called "*The Project Template*" and is uploaded onto the Microsoft Teams environment. The knowledge that necessitates sharing encompasses logistical particulars of the project, such as the employer, start date, weekly workload in hours, and the nature of the work (operational, tactical, or strategic). Additionally, it entails the state of the project at specific milestones and specific details that might prove valuable to other employees in the consultancy sector. This entails specific issues that were encountered during a project. In past project descriptions, the issues that were named the most were: difficult communication with a contact person or the management, the initial problem or request from the client being different than the actual problem, the working agreement on the amount of work the consultant is supposed to do was increased and how the organizational structure and environment is hindering the development of a solution.

Tasks of an Educational Consultant

All of the expected tasks of an educational consultant are to adhere to "*The Educational Consultant Guide* " which is shown to you at the beginning of your onboarding and explained one time by the management and saved into your own Microsoft Teams environment. The assigned tasks within the educational organization are customized to align with its unique educational level and

requirements. These tasks primarily encompass providing training and coaching on project management methods and strategies within the Dutch educational system, to fulfil the organization's specific request. All educational consultants share a common objective, which is to satisfactorily meet the organization's needs and work as external employees within the designated time frame. Furthermore, it is expected to fill out the project description template. Apart from the logistical part of the template (work hours, employer, timeframe etc.), there is space to mention any particularities. Filling out this form is the responsibility of the consultant. The purpose of this form is to gain and maintain insight into the content of the assignment, facilitate the potential handover of the assignment to another consultant, and provide clarity regarding the framework and agreements within a project. During periods when educational consultants are not working with a client (e.g., during holidays at the educational institution), you can utilize the time for personal development, professional advancement, supporting colleagues, and executing ongoing internal projects/assignments. Examples of internal assignments include developing research methodologies, writing reports/blogs, and performing other tasks relevant to our organization. Agreements regarding the utilization of these hours will be made in collaboration with the management. The is expected to have a proactive attitude from the consultant in this regard.

General information about the project-based organization and the organizational structure

The Project-Based Organization (project-based organization) comprises distinct departments dedicated to project management, scheduling software, and educational products within the company. The document "*General Information Document*" includes all the fundamental principles and organizational framework of the project-based organization which are rooted in flexibility, openness, and trust. This encompasses remote work and flexible working hours, as well as fostering transparency between management and consultants regarding project assignments, ongoing progress, and monthly updates. The educational consultants work half remotely all over the Netherlands and can decide which hours to work at home or in the office. The educational consultant is offered a project by the management who do this based on the skills and experience of their educational consultants to find the right match between the educational consultant and the client's request.

The educational consultants differ in their experience with some having a long-ranging background in projects others coming from professions that are related to education like teachers, and others coming from a master's track in educational sciences. educational consultants are allowed to decide whether to accept or decline the offer. If the offer is accepted, the educational consultant is set to work for a certain timeframe (2 months up to 2 years) on the project. Communication channels are established for seeking support from management and colleagues whenever needed on specific projects. These communication channels are connected to the Microsoft Teams environment where the workers as mentioned in "*The Educational Consultant guide*" it is promoted to become lifelong learners and always keep developing themselves. The company offers different training like time-management training or burnout training to support their employees. This information is important, to see how supportive the organizational environment of an educational consultant is and how engaged the management is in promoting these behaviours.

3.6 Needs and Problem Analysis

To comprehensively grasp the challenges and requirements encountered by educational consultants in the field of knowledge sharing, it is imperative to delve deeper into several key facets. This inquiry entails a thorough exploration of critical success factors of knowledge sharing within the Dutch project-based organization, which are predetermined and based on the literature inquiry, theoretical framework and results of the document analysis. Additionally, the aim is to acquire a deeper understanding of previously employed knowledge sharing tools and the experiences and opinions of educational consultants, which will give us a better comprehension of the design context and the needs of the educational consultants and the management (Reeves,2006).

3.6.1 Methods of the Problems and Needs Analysis

After the literature inquiry and document analysis gave an answer and overview of the first two sub-questions, a qualitative approach with semi-structured interviews will be conducted aiming at giving an elaborate analysis of the problems and needs of educational consultants related to knowledge sharing.

The focus lies on answering the last two sub-questions:

What are educational consultants' needs related to knowledge sharing in the Dutch project-based organization and what do educational consultants think are the critical success factors and limitations of knowledge sharing?

What specific knowledge is considered relevant for effective knowledge sharing among educational consultants?

3.6.1.1   *Respondents*

To gain more insight into the sub-questions of the analysis and exploration phase, I decided to select a variety of respondents for the problem & needs analysis by a non-probability quota sampling method. This method was chosen because the participation of different categories of respondents was supposed to be insured. These categories are called 'strata'. The sample size was 16 respondents, including three strata: Senior educational consultants, who have been in the company for at least 3 years (n=4), Junior educational consultants who have less than a year of experience (n=4), educational consultants who are neither junior or senior educational consultants' (n=8). The population was divided into three strata: Junior educational consultants, Medior and Senior educational consultants.

Junior educational consultants. The population of Junior educational consultants included 4 employees in the project-based organization who have all worked at the company for less than a year. The population was completely male and the ages ranged from 25 to 35. This age range is explained because many Junior educational consultants finishing their educational trajectory or have had their first job experiences in the last year or two. The information from Junior educational consultants will be valuable because of the outside perspective they can give on the company and the relation to the just completed mostly theoretical oriented academic life gives a high need for practical information and hence successful knowledge sharing.

Medior educational consultants. The population of educational consultants who are mediors have been part of the company for 1-3 years and make up the vast majority of the organization with 8 employees, which is double the group size of the other groups. Since the company is quite young with only seven years in the educational branch, logically, most employees are in this bracket. The age range for this group is quite versatile with 26-54 years old, this can be explained by Junior educational

consultants staying more than a year inside the company and still being quite young and also includes employees who have had a career already in the educational field and employees who simply want to try something different in their later part of their career. The information from this group will be interesting because of the versatility of qualifications, the higher experience of the company than Junior educational consultant and to be in the position where they have started settling more into the organization. How were the developments from a Junior educational consultant to now in terms of knowledge sharing?

Senior educational consultants. The population of Senior educational consultants includes 4 employees inside the project-based organization who have all worked for at least three years for the company. The age range for this group is between 45-57 years old, which is explained by the prior years of experience in the educational consultancy field and the settled approach to staying with the organization. The information of this group is essential because they have seen the complete progression of knowledge sharing tools, approaches and methods in the project-based organization and also have the most experience as an educational consultant. Additionally, the management itself is part of this group since they are also educational consultants which helps to identify which critical success factors of knowledge sharing are relevant in practice and important for the project-based organization.

3.6.1.2 *Instrumentation*

To collect data, a semi-structured interview is developed to ask each stratum (Appendices B) The Interview questions for the needs and Problem analysis are based upon the critical success factors of knowledge sharing in a project-based organization from Al-alawi (2007) and questions that resulted out of the literature inquiry and document analysis to investigate the difference of theory and practice of knowledge sharing inside the project-based organization. The collected data did not include the demographic characteristics of respondents so anonymization is ensured and results are not associated with an individual. The semi-structured interview has the same set-up throughout the interview. First, questions related to critical success factors for knowledge sharing in a project-based organization (Al-Alawi, 2007): *Ease of use, features and functionalities for knowledge sharing systems*, *trust*, *rewards* and *organizational culture* (e.g. "Can you describe how knowledge sharing is supported and encouraged in the project-based organization in the organization?").

Second, questions arose in the literature inquiry and the document analysis to examine how educational consultants' approach to knowledge sharing differs in practice from the intention and standards set by the project-based organization. Also, questions from the document analysis in which input from the educational consultants is essential to be able to design an effective knowledge sharing tool. The questions related to the document analysis and literature inquiry are related to the following topics: *Tasks and responsibilities of an educational consultant*, *relevant tacit and explicit knowledge to share for educational consultants* and *previous knowledge sharing tools and processes* (e.g. What knowledge sharing practices did you engage in?).

3.6.1.3   *Procedure*

The Ethics Committee of Humanities and Social Sciences of the University of Twente approved the methods of the whole educational design science. This step had to be done because human participants are involved in this research under the request number : 221045. The next step was to approach the different groups of educational consultants. The management itself allowed me to inform the entire company about the interviews. All units in the project-based organization participated in the interviews, except for one person who withdrew participation because of a long-term health problem that occurred.

First, the researcher reached out to the educational consultants via email to make an appointment and explain the goal of my master's thesis and how it could benefit their work, as well as logistical information about the anonymous and confidential data processing (see. Appendix C). Part of this process was to provide them with informed consent (Appendix D) before the interview that needed to be signed to continue. The interviews were all done via Teams or face-to-face depending on the time limitation of the educational consultants. The respondents were asked if they had signed the informed consent and if they allowed the audio recording and transcription of the interview. The interview proceeded and questions were paraphrased or translated into Dutch because English was not the first language of the respondents, which can influence content validity. After the interviews and the transcription were completed, all audio recordings were deleted.

3.6.1.4   *Methods*

Qualitative data were extracted from the interview transcripts within the computer software ATLAS.ti. A mixture of deductive and inductive analysis were conducted that adhered to the approach for qualitative analysis by Bingham & Witzowsky (2022). First, deductive strategies are used to organize and focus the data which is a top-down approach to data analysis in which the codes are built up by the theoretical framework, literature or propositions of the researcher. Second, inductive strategies are used to get an understanding of the data, by not forcing the data into an already existing picture and looking for themes within the predetermined codes. Bingham & Witzowsky (2022) explain how a qualitative data analysis process that includes both deductive and inductive analysis facilitates more organized and analytically sound research.

In this study the foundation for the codes are the critical success factors for knowledge sharing (Al-Alawi et al., 2007) and questions that arose out of the literature inquiry and document analysis. The Aim is to receive the prerequisites to design an effective knowledge sharing tool for the project-based organization by checking how successful knowledge sharing is at the moment in the project-based organization and input from the educational consultants about the critical success factors to ensure involvement in the design process. The different respondent's junior educational consultants, medior educational consultants and senior educational consultants are supposed to ensure versatility of answers to ensure that all employees' opinions are involved and different perspectives are taken.

First, the data is organized and codes are attributed. These codes are the main codes which are based on the critical success factors and questions that arose out of the literature inquiry and document analysis. It is important to mention that in the design of the interview scheme, the decision was made to combine certain codes due to the familiarity and similarity of the codes and the answers that would be produced. For example, the critical success factor "communication" was added to "organizational structure" and the critical success factor "information systems" was combined with "previous and current knowledge sharing tools" since communication seemed to be mentioned often concerning "organizational structure" and "information systems or tools" are in this study the knowledge sharing tools, hence part of the context of "previous and current knowledge sharing tools". The codes that were deemed important for a successful knowledge sharing tool were summarized into 7 codes with

general and specific questions. Features and functionalities for user experience and ease of use, trust, organizational culture and rewards, Tasks and responsibilities of an educational consultant, relevant knowledge to share for educational consultants and previous knowledge sharing tools and processes. The full interview scheme can be seen in Appendix B.

The third step was to establish a Codebook (see Appendix C) and establish a definition for each of the seven codes. The definition of the code served as a criterion for the inclusion or exclusion of data from the interview text that could be relevant to the code. In the fourth step, the interview text was subjected to coding. All data were thoroughly reviewed, and each line was individually examined to determine the alignment with the particular definition of the code.

Despite the absence of inter-coder reliability, which does affect the reliability of the results, the codebook was systematically adjusted to ensure alignment with the codes.

The fifth step was sorting the data into the relevant codes. If the data was determined to adhere to the definition, the data was assigned to the code. An example of a definition of a code is the definition of the Tasks and Responsibilities of educational consultants: "*Tasks and responsibilities that are paired with knowledge sharing and perceived challenges for being able to perform knowledge sharing successfully. This also includes information about gaps and differences between tasks and responsibilities given by the project-based organization and how are these Instructions met in practice.*" The full codebook for the deductive analysis can be seen in Appendix C.

The last step was to use the inductive approach to identify themes and findings in the data that was attributed to the different codes to be able to compare which type of educational consultant (junior, medior or senior) has which needs, and do these overlap or differ in the themes they mentioned. Lastly, the results are presented in the subsequent section of this study. and different frequencies of responses to the codes by junior, medior and senior educational consultants.

3.6.2   Problem Analysis: Results

In this section, the results of the problem analysis will be described. The investigation involved a mix of a deductive and inductive approach revolving around the aforementioned 7 codes:

Tasks and responsibilities of an educational consultant; *previous knowledge sharing tools and processes*; *relevant tacit and explicit knowledge to share for educational consultants; Ease of use, features and functionalities for knowledge sharing systems*; *Trust*; *Rewards and Benefits;* and *Organizational culture.* First, the text explains the predetermined codes of the deductive approach, followed by a thematic analysis that provides deeper insights into the most frequently mentioned topics, which are presented as main categories. *The information will be visualized in* the tables below which include educational consultants' frequencies of mentioning a text passage that relates to a main category to determine the most important topics for a successful knowledge sharing tool.

3.6.2.1   *Tasks and Responsibilities of Educational Consultants in practice and the role of knowledge sharing*

The code for Tasks and responsibilities of educational consultants in practice and the role of knowledge sharing was defined as Tasks and responsibilities that are paired with knowledge sharing and perceived challenges for being able to perform knowledge sharing successfully. This also includes information about gaps and differences between tasks and responsibilities given by the project-based organization and how are these Instructions met in practice. Below in Table 1 the most prominent categories that the semi-structured interview revealed are described.

Table 1

Results of Problem Analysis: Task and Responsibilities of Educational Consultants in practice and the role of knowledge sharing

Main categories	N	% of C	N of P	% of P
Proactive behaviour	25	32,05%	3 Junior	75% of Juniors
			7 Medior	87,5% of Mediors
			3 Senior	75% of Seniors
Professional development	22	28,20%	3 Junior	75% of Juniors
			6 Medior	75% of Mediors

			2 Senior	50% of Seniors
Teamwork	18	23,08%	2 Junior	50% of Juniors
			5 Medior	62.5% of Mediors
			4 Senior	100% of Seniors
Investigation of project opportunities and limitations	13	16,67%	2 Junior	50% of Juniors
			5 Medior	62.5% of Mediors
			3 Senior	75% of Seniors
∑	**78**	**100%**		

Note. Column 1 Themes that are shown here as main categories sorted by frequency; Column 2 Number of text passages related to the category; Column 3 Number of text passages in percentages compared to all text passages; Column 4 Number of participants, in this case, educational consultants corresponding to the text passages; Column 5 the percentages relative to all participants.

The educational consultants saw Proactive behaviour, professional development, teamwork and the investigation of project opportunities and limitations as the most important tasks and responsibilities for an educational consultant. Knowledge sharing has been mentioned in some of those themes as "a helping tool to complete the task", however, many challenges have been mentioned towards the ability to share knowledge in their daily work.

Proactive behaviour

Proactive behaviour was the most highlighted category with all three types of educational consultants having at least ¾ of participants mention Proactive behaviour. Mediors had the highest frequency with 87,5 %. educational consultants mentioned how it is essential to be proactive as an educational consultant and the relation to many other skills as Medior1 explains, " You need to be proactive as a consultant because the information will not just fly towards you, you have to ask, look for things, find information or you won't have developed."

Educational consultants stated that different projects can overlap in experience and proactively seeking knowledge from colleagues can facilitate the success of a project as Senior3 states, "Projects become much easier if a colleague has already had a similar project because even if it is a different context, the information saves more time than you might think."

Professional development

The professionalization and development of consultancy skills were mentioned by the majority of educational consultants with most of them being juniors and mediors and is related to continuous improvement with internal or external training as well as the management promoting this continuous learning approach. Medior4 explained, "As soon as you don't have a project you are asked to keep developing yourself with training online or in our own office, be it time-management, different consultancy methods or just talking with the boss about what you are interested in learning." Professional development is expected but also promoted with many indicating a positive relation to this responsibility the consultancy sector facilitates the development through its variety of projects automatically, but educational consultants understand how necessary adapting is for successful project completion.

Teamwork

Teamwork was noted as the most important skill by senior educational consultants and is seen as a responsibility by many consultants. Several employees mentioned, how Teamwork is essential for a project-based organization and an educational consultant because of the constant change of people you have to work with and the information that is necessary for you to come to a successful solution. This emerging theme had a lot of emphasis on Knowledge sharing and how colleagues share more tacit knowledge on how to deal with certain stakeholders in the project. Senior1 stated: "Once I had a project, where the contact person was a so know it and I can't stand those people and I mentioned this in a meeting with a colleague, and he was able to give me great advice on how to deal with these kind of people." Teamwork was also seen as a necessity in meetings with colleagues and roundtable meetings when sharing knowledge occurs the most within the project-based organization.

Investigation of opportunities and limitations of a project

Another prominent theme revolved around the investigation of opportunities and limitations of a project. This knowledge is essential for educational consultants to have successful projects and was another category that most senior educational consultants alluded to. For instance, Senior2 mentioned: "The most important thing is the investigation, what is possible? What is not? To be able to know what opportunities they are to maybe find a quicker way to the solution, or what problems there are to prevent obstacles to the solution."

This knowledge is rarely shared between educational consultants and is a task that they see as something individual and fully dependent on themselves. Medior 5 noted, "Well first you need to analyse it yourself, it's your project and your responsibility to find out, what works and what does not, and if you are struggling you can ask for help". This mindset was mentioned by all groups of educational consultants and especially the expectation of the project being too individual prevents many from even asking what others think are opportunities or limitations. Senior1 concisely summarized this thought:" You can give some advice on how to do certain things for projects but at the end of the day it is you at the project, you working with the people and you are asked to find a solution for their problem. We should ask more colleagues and have more sessions to share how to investigate opportunities, but we do not know what the exact problem they were working with and for me at least every project seems different."

3.6.2.2   *Previous and Current Knowledge-Sharing Practices and Tools/ Success Factor: Information systems*

The Previous and Current knowledge practices and tools have been combined with the success factor of the information systems because of the high overlap of the answers. The answers yielded valuable insights into the previous knowledge sharing practices and tools within the project-based organizations context. Firstly, it was noted that all of the previous knowledge-sharing practices are still in place and belong to the current practices with some being utilized more frequently than others. As you can see below in Table 2, the practices that had the highest priority were the roundtable meetings,

WhatsApp communication, Microsoft Teams talks with colleagues and project reports on Microsoft Teams. The roundtable meeting especially seemed important due to being highlighted by every educational consultant across all experience levels.

Table 2

Results of Problem Analysis: Previous and Current Knowledge-Sharing Practices and Tools/ Success Factor: Information systems

Main categories	N	% of C	N of P	% of P
Roundtable Meetings	32	39,51%	4 Junior	100% of Juniors
			8 Medior	100% of Mediors
			4 Senior	100% of Seniors
Microsoft Teams discussions	23	28,39%	2 Junior	50% of Juniors
			6 Medior	75% of Mediors
			4 Senior	100% of Seniors
WhatsApp groups	16	19,75%	2 Junior	50% of Juniors
			5 Medior	62,5% of Mediors
			4 Senior	100% of Seniors
Project reports	10	12,35%	1 Junior	25% of Juniors
			3 Medior	37,5% of Mediors
			3 Senior	75% of Seniors
∑	81	100%		

Note. Column 1 Themes that are shown here as main categories sorted by frequency; Column 2 Number of text passages related to the category; Column 3 Number of text passages in percentages compared to all text passages; Column 4 Number of participants, in this case, educational consultants corresponding to the text passages; Column 5 the percentages relative to all participants.

Roundtable meetings

The roundtable meetings were one of the few categories across all codes to have the utmost importance to every educational consultant concerning knowledge sharing. The meetings occur every month and are mandatory, they are put into the calendar at the beginning of the year and if an employee cannot join they must notify the management. If this does not take place as the employees mentioned, a short disciplinary conversation between the management and the employee occurs. This was not seen negatively and even sometimes seen positively by employees since it reminds them to notify the management if anything hinders them from taking part in the meetings. educational consultants generally expressed positive associations with the roundtable meetings, however, they varied in their perspectives on the effectiveness of roundtable meetings.

According to Medior5, "Roundtable meetings provide a platform where bosses often bring up topics by somebody else and try to bring a shared understanding of ongoing projects to all the educational consultants." In addition, Junior3 noted, "While roundtable meetings can sometimes seem useless, particularly when working on the same project for an extended period, they do offer a valuable space for sharing success stories, helping to create positive team feeling.".

Conversely, Senior1 pointed out the constraint of time in such meetings, stating, "There's not always enough time in these meetings to delve into more significant issues requiring thorough discussion." The roundtable meetings seem helpful but adaption seems to be required to make the value of knowledge sharing known and to find solutions to dive into deeper issues but is still the essential foundation for knowledge sharing of the project-based organization.

Microsoft Teams discussions

A tool that received a lot of attention is Microsoft Teams, particularly for senior and medior educational consultants, in which conversations and discussions with colleagues take place and the most tacit knowledge about projects is shared. Many educational consultants mentioned how in roundtable meetings they get an idea of who is doing what and then propose a meeting via Teams to dive deeper into certain topics. The utilization of Teams as a knowledge sharing tool with colleagues

was emphasized by Junior3 who noted, "Teams serves as a central hub for project-related discussions, through Team talks I can zoom in on what I want to zoom in on and get an answer to my questions while also just talking with my colleagues about my holidays.

However, another educational consultant, Senior2 highlighted, "Project reports on Teams can be outdated or incomplete at times, posing a challenge for knowledge sharing and also demotivating me to put so much effort into my report, because what do I get out of it, except losing time." Microsoft Teams has many functions that educational consultants like but the utilization at the moment is not optimal and has to be further improved.

WhatsApp groups

Educational consultants, particularly senior educational consultants mentioned the WhatsApp group by the company is utilized for immediate reactions and uncomplicated issues and seems useful and efficient for problems of that nature but the amount of knowledge sharing that takes place is minimal. Medior2 highlighted the dedicated WhatsApp group, stating, "Having a WhatsApp group for quick questions, especially related to software, enables immediate and concise exchanges and efficient problem-solving."

Conversely, Junior1 mentioned, "The WhatsApp group is great but we are not sharing knowledge that is super relevant long-term for our projects, it is all short-term issues like the educational software's isn't working, does somebody know what to do? And then somebody answers and you do that and that's it." Consequently, the educational consultant's opinion about the WhatsApp group is that knowledge is indeed shared but only explicit knowledge for short-term solutions about their projects.

Project Reports

On Microsoft Teams there are project report templates which educational consultants are supposed to use to give an overview of how their projects progressed and how issues were solved at the end of the project and uploaded into a folder. Many educational consultants mention how some of these reports are incomplete and they do not see the necessity and value of writing down these reports, as well as only a majority of senior employees mentioned project reports as knowledge sharing processes and juniors and mediors to a lesser extent. Medior3 explained, " The reports are often

incomplete and you get some information out of it but mostly you then go ask the person who did the project instead of trying to find out what is in the report." However Senior2 for example seemed convinced of the value of the reports as a knowledge sharing tool: "If there are clearer rules and mandatory deadlines, I think project reports can help us because you can forget things in a conversation but If you write it down you have it all in one place."

3.6.2.3 *Relevant explicit and tacit knowledge affecting project success and collaboration*

Table 3 below shows the relevant explicit and tacit knowledge that educational consultants see as affecting their project success and collaboration was related to mainly tacit knowledge about how to manage communication with the personality of different stakeholders, successful project start and closure and Utilization and challenges of previous knowledge sharing tools. Communication strategies with stakeholders had the highest priority with ¾ of all educational consultants, particularly mediors agreeing about affecting project success and collaboration and thus making it the most valuable topic to share knowledge over.

Table 3

Results of Problem Analysis: Relevant explicit and tacit knowledge affecting project success and collaboration

Main categories	N	% of C	N of P	% of P
Communication strategies with stakeholders	27	42,18%	3 Junior	75% of Juniors
			7 Medior	87,5% of Mediors
			3 Senior	75% of Seniors
Project start and closure	22	34,38%	2 Junior	50% of Juniors
			5 Medior	62,5% of Mediors
			4 Senior	100% of Seniors
Utilization and challenges of	15	23,44%	2 Junior	50% of Juniors

previous knowledge sharing tools		3 Medior	37,5% of Mediors
		2 Senior	50% of Seniors
∑	**64**	**100%**	

Note. Column 1 Themes that are shown here as main categories sorted by frequency; Column 2 Number of text passages related to the category; Column 3 Number of text passages in percentages compared to all text passages; Column 4 Number of participants, in this case, educational consultants corresponding to the text passages; Column 5 the percentages relative to all participants. Communication strategies with stakeholders

Communication strategies with stakeholders

The Priority lies mainly in the tacit knowledge about the communication with stakeholders, which includes how to ask for information at the beginning of the project, dealing with stakeholders that do not see the immediate value of change or do not have trust in the educational consultant's abilities and also about how to deliver the results of a project to a client. Medior7 explained, "The most important knowledge is how you manage communication with the client and the employees in the organization, If you have someone difficult to deal with and you see your approach is not working, ask another colleague how their approach might differ can help to find your way of improving one's communications skills". With a variety of personalities of stakeholders and employees in an organization there comes a high need for an adaptation in terms of communication, many educational consultants saw this problem and additionally mentioned that this should be a topic brought up more frequently during roundtable meetings or in project reports.

Project Start and Closure

Many educational consultants find the most important is the first impression in a project since it builds the foundation for the rest of the project as well as the end of the project to leave a good impression of the company and oneself. Senior3 noted, "Just coming with a positive attitude can make a difference from day and night and especially asking many questions and seeming interested, from my experience puts the client at ease that you are eager to learn and wanting to find out what the

problem is as quickly as possible." Medior5 agreed with his colleague and added, " I had a project where I did enjoy my stay but I was happy it was finished to start something new and I delivered my product convincingly but the management informed me that the client would have appreciated a LinkedIn Post or something after a long year of working together as a sign of gratitude".

Utilization and challenges of previous knowledge sharing tools

Many educational consultants also mention the knowledge about how to use knowledge sharing tools and the challenges of how to get information for a project from colleagues or documents is paramount to having a simpler and more efficient project lifecycle. These knowledge sharing tools include project reports, knowing how to find and interpret other documents on Microsoft Teams or just talking with colleagues. Junior2 stated:" If you know how to read the information, like the project reports or other documents even if it is technical stuff, you can then ask people what they mean but if you don't know how to or it's not your personality it might get difficult."

3.6.2.4 *Organizational Structure*

The organizational structure is seen as mostly positive by the educational consultants. Table 4 reveals, that the organizational culture is characterized by an open-door policy, priority of project success, internal training and support for knowledge sharing tasks. These were noted by several educational consultants as an integral aspect of how the management supports knowledge sharing. Open door policy and project success were mostly agreed upon as being the foundation of the project-based organization with juniors and mediors mentioning those categories the most.

Table 4

Results of Problem Analysis: Organizational structure

Main categories	N	% of C	N of P	% of P
Open-door policy	25	32,89%	4 Junior	100% of Juniors
			7 Medior	100% of Mediors
			2 Senior	50% of Seniors

Priority of project success	23	30,26%	3 Junior	75% of Juniors
			7 Medior	100% of Mediors
			3 Senior	75% of Seniors
Internal training	15	19,74%	2 Junior	50% of Juniors
			5 Medior	62,5% of Mediors
			1 Senior	25% of Seniors
Support for knowledge sharing tasks	13	17,11%	1 Junior	25% of Juniors
			4 Medior	50% of Mediors
			2 Senior	50% of Seniors
∑	**76**	**100%**		

Note. Column 1 Themes that are shown here as main categories sorted by frequency; Column 2 Number of text passages related to the category; Column 3 Number of text passages in percentages compared to all text passages; Column 4 Number of participants, in this case, educational consultants corresponding to the text passages; Column 5 the percentages relative to all participants.

Open-door policy

All junior and medior educational consultants mentioned the Open-door policy of their company and how it defines the organization due to always knowing the management is approachable and open to suggestions. Junior4 explains, " The open door policy is something that might be hard in the beginning to make use of but once the first time is done, there is a sense of encouragement to ask for help if a project is not going well or there are time-restraints for oneself coming up in the private life."

Priority of project success

The success of the project is still seen as a number one priority for educational consultants particularly mediors perceiving that the tasks of other parts of the job like knowledge sharing are

optional and that project success and completion have higher priority. Medior5 explains, " Knowledge sharing is supported but I don't hear about it except at the roundtable meetings sometimes, and it gives me the feeling as long as I do a good job in my project that is what counts." In addition, the completion of projects brings further projects because of the newly gained experience, making it an even higher priority and is seen as a pillar of the organizational culture as well.

Internal training

Conversely, educational consultants did mention that there are internal trainings for shortcomings in the skills of an educational consultant, the most prominent ones are related to personal effectiveness, time management and software skills. These insights underscore the idea that the foundation of the project-based organization is supporting knowledge sharing, but the reminders and attention towards knowledge sharing tools and procedures are minimal, which facilitates the perspective of educational consultants to complete one project and move on to the next. Junior3 explains, "Internal training is a great help to develop but it just doesn't foster the skill like what we talk about now, knowledge sharing but it still a great opportunity as an employee."

Support for knowledge sharing tasks

Regarding knowledge sharing, the support as mentioned lies in the roundtable meetings and project status reports. These tasks are mentioned in the educational consultant guide that is available on Microsoft Teams and are explained to a new educational consultant at the start of their contract. The support is noticed but the sentiment from educational consultants especially by mediors that the direct facilitation is minimal. Medior6 added, " Casually, I do share knowledge with my colleagues, I do not think that is necessarily encouraged but the management tries to make us feel comfortable at all times and mention things in the roundtable meetings."

3.6.2.5   *Features and Functionalities for User Experience and Ease of Use*

As Table 5 reveals, there was a clear consensus about the functionality and features of the user experience by educational consultants. The most notable themes were simplicity and ease of use, time efficiency, conversing with colleagues inside of the tool and reminders in the roundtable meetings. All

educational consultants agreed that Simplicity and ease of use are of utmost importance for a

knowledge sharing tool.

Table 5

Results of Problem Analysis: Features and Functionalities for User Experience and Ease of Use

Main categories	N	% of C	N of P	% of P
Simplicity and ease of use	35	39,77%	4 Junior	100% of Juniors
			8 Medior	100% of Mediors
			4 Senior	100% of Seniors
Time efficient tools	24	27,27%	2 Junior	50% of Juniors
			7 Medior	100% of Mediors
			3 Senior	75% of Seniors
Communication within tools	17	19,32%	3 Junior	75% of Juniors
			4 Medior	50% of Mediors
			1 Senior	25% of Seniors
Reminders for usage of tools	12	13,64%	1 Junior	25% of Juniors
			3 Medior	32,5% of Mediors
			2 Seniors	50% of Seniors
Σ	88	100%		

Note. Column 1 Themes that are shown here as main categories sorted by frequency; Column 2

Number of text passages related to the category; Column 3 Number of text passages in percentages

compared to all text passages; Column 4 Number of participants, in this case, educational consultants

corresponding to the text passages; Column 5 the percentages relative to all participants.

Simplicity and ease of use

All of the educational consultants mentioned that the highest priority is the simplicity and ease of use for a knowledge sharing tool due to educational consultants not showing the intention to learn about an entire new tool and have their projects that are the main focus. Senior4 states" "We have Microsoft Teams which we are not at all utilizing to the extent that we should but we all know how to work with it and it's simple, another software with all the software from our educational institutions is just too much." In addition, time efficiency was mentioned to such a large extent especially since it became a category on its own.

Time efficient tools

Time efficiency can be seen as part of simplicity and ease of use but Medior3, for example, points out: "If you introduce something completely brand new and we need to learn about it while we are doing our project, which we all have, then the time and effort, I and others will put in will be minimal because project success and client satisfaction are still number one." Educational consultants seem to indicate that simplicity is not enough but the time efficiency to document and share knowledge should be kept at the minimum for an ideal outcome.

Communication within tools

Another important detail was the need to be able to communicate with colleagues within the knowledge sharing tool. Junior2 explained, " Right now we have the WhatsApp group and Teams where you can send a quick text or schedule a meeting with a topic to talk about that should and needs to be part of the knowledge sharing tool." The quick communication channels were important to educational consultants to stay in contact and have the choice between a fast exchange like a message or a meeting for a longer, more in-depth exchange.

Reminders for usage of tools

A small group of a variety of educational consultants mentioned how the tools were already in place and no new tools were needed but a reminder or direction during the roundtable meetings could fix the issues. Medior1 points out, " A reminder or something that is mentioned per email or in roundtable

meetings by the management might be enough because that doesn't exist and I would do some of the things more If I was reminded."

3.6.2.6   *Trust*

The aspect of Trust which is essential for knowledge sharing was a topic which brought interesting insights into the boundary conditions of a knowledge sharing tool. Below Table 6 shows, that the most noteworthy categories related to trust were the relationship and rapport with colleagues and especially the trust in senior colleagues as well as trust in the management. All of the juniors and seniors agreed that the relationship and rapport with colleagues were essential and both juniors and mediors agreed also upon particularly the senior colleague's trust being helpful and facilitating knowledge sharing.

Table 6

Results of Problem Analysis: Trust

Main categories	N	% of C	N of P	% of P
Relationships and rapport with colleagues	28	42,42%	4 Junior	100% of Juniors
			7 Medior	87,5% of Mediors
			4 Senior	100% of Seniors
Senior colleagues trust	23	34,85%	4 Junior	100% of Juniors
			8 Medior	100% of Mediors
			2 Senior	50% of Seniors
Trust in management	15	22,73%	3 Junior	75% of Juniors
			4 Medior	50% of Mediors
			2 Senior	50% of Seniors
∑	66	100%		

Note. Column 1 Themes that are shown here as main categories sorted by frequency; Column 2 Number of text passages related to the category; Column 3 Number of text passages in percentages

compared to all text passages; Column 4 Number of participants, in this case, educational consultants corresponding to the text passages; Column 5 the percentages relative to all participants.

Relationships and rapport with colleagues

Trust was particularly strong when colleagues shared a positive relationship and a good rapport existed between colleagues. Medior5 expressed, "The relationship between colleagues is what is important, I share my mistakes and things that go wrong mostly with colleagues I know for a longer period, there might be instances where I ask the management or another colleague but if I'm stressed, I need someone who knows me." Senior4 added, " If you have a colleague you trust, of course, more and more deeper information comes out, about private life or professional it's just more is shared and that is normal." The rapport and relationship seem to be a cornerstone for many educational consultants to build the foundation for sharing information.

Senior colleagues trust

Trust seemed to be elevated in conversation with senior colleagues with a higher amount of experience which Junior3 confirms, " One of my colleagues has worked here for a while and I trust him because of his expertise but also because we can joke around, talk about work, and joke around again." In addition, Medior2 stated how senior colleagues had a role-model function," When I started, I had a colleague who just knew what to do already and him helping me in the first weeks was the start of a good relationship and a later friendship, and you tell those people more at work. "

Trust in management

The trust itself in the project-based organization seemed to be high, also related to the management but the educational consultant conveyed the collective sentiment that success is far more shared than mistakes and if pitfalls are shared more it could facilitate that trust process. Senior1 gave the example, "In roundtable meetings, the time is so short that I rather share in front of everyone what is going well and maybe something small that went wrong but also directly how I fixed it, I feel like I see the same from other colleagues. " However, the absence of judgment by management and the active promotion of sharing mistakes without adverse consequences were underscored by other educational consultants contributing to a climate of trust. Junior4 emphasized, "There's no judgment from management; they

actively encourage the sharing of mistakes, fostering a culture where errors are seen as opportunities for growth rather than mistakes." The perspectives differed in the questions about encouragement of sharing mistakes but all educational consultants agreed that it is essential for sharing knowledge.

3.6.2.7 *Rewards and Benefits*

Depicted below in Table 7, are the rewards and benefits of knowledge sharing and what they should look like were categorized into four themes, namely awareness of knowledge sharing benefits, integration of knowledge sharing into work hours, career development opportunities and recognition for knowledge sharing activities. All seniors agreed upon awareness of knowledge sharing benefits being significant, conversely, all juniors agreed upon career development opportunities playing a pivotal role.

Table 7

Results of Problem Analysis: Rewards and Benefits

Main categories	N	% of C	N of P	% of P
Awareness of knowledge sharing benefits	23	31,94%	2 Junior	50% of Juniors
			7 Medior	87,5% of Mediors
			4 Senior	100% of Seniors
Integration of knowledge sharing into work hours	18	25,00%	3 Junior	75% of Juniors
			5 Medior	62,5% of Mediors
			3 Senior	75% of Seniors
Career development opportunities	17	23,61%	4 Junior	100% of Juniors
			5 Medior	62.5% of Mediors
			1 Senior	25% of Seniors
Recognition for knowledge sharing	14	19,45%	2 Juniors	50% of Juniors

activities		6 Mediors	75% of Mediors
		1 Senior	25% of Seniors
	∑ **72**	**100%**	

Awareness of knowledge sharing benefits

A recurring theme was the varying degrees of awareness regarding the benefits of knowledge sharing especially for senior educational consultants. While participants acknowledged some advantages, such as easing projects with common problems or shared intuition, a collective acknowledgement emerged that not all benefits were fully recognized.

Senior3 expressed, "There's a partial awareness of the benefits, especially in projects with common issues; however, I do not know all potential advantages." Another senior educational consultant, Senior2 confirmed this sentiment:" I do not know exactly what studies or in general how sharing can help, I see it more as just talking and bettering my skills."

Integration of knowledge sharing into work hours

A noteworthy preference surfaced regarding the integration of knowledge sharing into work hours to align with compensation, which means that the time spent on the knowledge sharing tool or conversations with colleagues is part of the normal working hours. The perception exists that it is not part of the working hours and is something that is added to their workload as Medior6 articulated, "It would be ideal if knowledge sharing was integrated into work hours and compensated."

Career development opportunities

Another theme that emerged was the emphasis on the development of the personal career and how an information meeting to kickstart this process might be necessary. Many educational

consultants particularly juniors but also a majority of mediors mention this topic and how this process might incentivize them and others to share more knowledge. Junior1 adds: "If I can see how I would develop because of all of these knowledge sharing activities and how it helps me further later on a lot more especially newcomers would be interested."

Recognition for knowledge sharing activities

Employees voiced the desire for formal recognition of their efforts, with suggestions ranging from appreciation at roundtable meetings to peer acknowledgement in informal channels. Medior6 suggests, "Recognition, whether through roundtable meetings or informal channels like a thank you or a like in the WhatsApp chat would also be appreciated." Another medior, Medior4, adds, "If at the roundtable meetings, we would have more time and the presenter appreciates you sharing a mistake or something, others would see and understand, I can just say things and it is even promoted." Other educational consultants like a senior educational consultant conversely believe, that the project-based organization is already supporting knowledge sharing efforts, which shows a bit of difference in the support and recognition of knowledge sharing activities inside the project-based organization by different groups.

3.7 The Analysis and Exploration phase: Conclusion

In the Analysis and Exploration phase, 4 questions were researched to get a more in-depth view of how to create a successful knowledge sharing tool for the Dutch project-based organization and receive information on potential strengths and limitations.

Question 1: *What are the boundary conditions and knowledge sharing tools for effective knowledge sharing for a project-based organization in research?*

Question 2: *What boundary conditions and knowledge sharing tools for effective knowledge sharing are presently utilized within the Dutch project-based organization?*

Boundary conditions and knowledge sharing tools in research

To answer the first question, the method of choice was a literature inquiry. The work by Al-Alawi et al. (2007) fit the context of this research and resulted in utilizing the critical success factors

for knowledge sharing for a project-based organization as the boundary conditions for a successful knowledge sharing tool. These included organizational structure and culture, interpersonal trust, information systems, communication, reward systems and motivation. Since the focus lies on creating a knowledge sharing tool, under the point information systems the aim was to find out which knowledge sharing tools are the most effective. Additionally, since tacit knowledge was identified in the theoretical framework as knowledge mostly in need of sharing, the research focuses on knowledge sharing tools that share tacit knowledge in project-based organizations. For low or medium tacit knowledge, blogs and social media, wikis or knowledge banks were identified by research. Blogs had the advantage of socialization between colleagues and immediate feedback. Wikis or knowledge banks could facilitate the tacit knowledge of what other colleagues are working on and how projects were solved which creates interdependence by being able to see who has not uploaded their reports to the knowledge bank. For a higher amount of tacit knowledge face-to-face meetings, online meetings or online communities of practice are necessary to convey the non-tangible knowledge in a manner that is understandable since it takes more time to explain the details of one's ways of working.

Boundary conditions and knowledge sharing tools in practice

To answer the second question, a document analysis was chosen with a deductive approach. The inclusion criteria included general information about the project-based organization, relevant knowledge for the project-based organization that should be shared, tasks of educational consultants and previous or current knowledge sharing tools or practices. It revealed that the Dutch project-based organization's existing framework relies on monthly roundtable meetings and Microsoft Teams as the primary channels for knowledge sharing among educational consultants. Yet, documents revealed these meetings are short and right to the point with a lack of depth for specific topics. Furthermore, the utilization of Microsoft Teams as a platform for knowledge sharing seems favourable since most of the data of the project-based organization is stored here but also seems to have its constraints. The uploads of descriptions and reports of projects which are supposed to facilitate explicit knowledge sharing through documentation are often incomplete, which makes the effectiveness of a knowledge sharing tool unclear.

As for the boundary conditions, documents revealed that the organization has clear principles of flexibility, openness and trust, with the educational consultants being able to work remotely and have the freedom to accept and decline project offers. The document analysis revealed the company seems to foster continuous learning and knowledge sharing by offering different training programs and having guides on how to fill out the project description documents. However, the extent to which these approaches contribute to the desired outcome of effective knowledge sharing by educational consultants requires further analysis of how these approaches are viewed in practice and what the needs of educational consultants are for effective knowledge sharing.

Educational consultant's needs and challenges related to a successful knowledge sharing tool

Educational consultants in the project-based organization expressed various needs, problems and advantages related to a successful knowledge sharing tool. Proactive behaviour, professional development, teamwork, and insights on project opportunities and limitations are seen as the most prominent topics. The educational consultants are aware of knowledge sharing and view it as a helpful tool, however it being carried out effectively seems challenging. Proactive behaviour seemed essential since it involved seeking help from colleagues to learn from their experiences and knowledge in projects. Since everyone is working on their projects and his limited time for knowledge sharing, it was deemed necessary to promote this behaviour to create a successful knowledge sharing. Professional development which is facilitated by internal training and is considered important by almost every educational consultant and how knowledge sharing fosters this development needs to be part of a knowledge sharing tool. Teamwork is mentioned as the most important skill, especially highlighting tacit knowledge that is created in projects while dealing with different stakeholders as essential for a successful project. Completing the project successfully is seen as the top priority and seems to be related to investigating project opportunities and limitations but this is perceived as more of an individual task by educational consultants with limited sharing capability. Related to knowledge sharing tools, roundtable meetings, WhatsApp and Microsoft Teams are mentioned by educational consultants. However, educational consultants give different opinions about the effectiveness of the knowledge sharing tools. The roundtable meetings seem helpful for some with others having the perception of them being too short, to dive into deeper issues and repetitive if the projects stay the

same for a prolonged period. Teams have been seen as an effective tool highlighting everyone's knowledge of the tool for simplicity and ease of use and its many options to share knowledge. Yet, also stresses the incomplete project reports and constraints during projects to fill them out sufficiently, as well as the lack of motivation and interdependence because of other colleagues following the same trend. The organizational structure is perceived as supportive and a management that trusts their employees and facilitates growth. Conversely, this leads to some educational consultants perceiving important tasks as knowledge sharing as optional. Trust has been identified as crucial for successful knowledge sharing by educational consultants, and a need for a higher amount of sharing of mistakes and problems in roundtable and personal meetings to help build an organizational culture full of learning opportunities. Rewards and motivation for using knowledge sharing tools and knowledge sharing in general, included formal acknowledgement in roundtable meetings or private meetings, integration of knowledge sharing tasks into work hours and how career development can be reached by sharing knowledge. This showed the importance of highlighting the knowledge sharing benefits and incentives for participation for educational consultants and their lack of knowledge of the advantages of their professional development. The boundary conditions and needs and opinions of educational consultants have been discussed and the knowledge sharing tools which are presently utilized. Further exploration of what the content is that needs to be shared the most for educational consultants to create a knowledge sharing tool needs to be identified.

Relevant knowledge for educational consultants to share in the practice

In the exploration of the particular knowledge thought necessary and relevant to share for educational consultant's success in projects, various themes emerged. The most important theme is tacit knowledge related to managing communication with different stakeholders and personalities during projects. To understand how to navigate and handle complicated employer dynamics and share experiences on positive and negative outcomes to approaches. This includes strategies for gathering information at project initiation and closing as well as managing stakeholders resistant to change and successfully delivering project results. Notably, the knowledge of how to make a positive first

impression is deemed important to many educational consultants since it builds the foundation for successful communication with the stakeholders.

Additionally, explicit knowledge from project reports is discussed, with an emphasis on addressing effective communication strategies and insights into issues encountered throughout a specific project lifecycle. This knowledge is perceived to have a positive impression on clients and stakeholders, help to overcome challenges during a project, and leave a positive impact on employers' organizational structure which in turn leads to a positive impression for the Dutch project-based organization. Furthermore, the educational consultants have a clear opinion that project opportunities and constraints are individual tasks, they recognise that to improve project outcomes and enhance problem-solving, it is beneficial to share insights and experiences in this field.

Overall, the relevant knowledge for educational consultants to share in practice revolves around stakeholder management, effective communication strategies, insights and lessons learned from both successful and difficult project experiences. Lastly, the knowledge itself on how to share knowledge properly for effective knowledge sharing among educational consultants in the project-based organization is important to teach as well to create the most effective knowledge sharing tool for the project-based organization.

3.8   The Analysis and Exploration phase: Synthesis

In the following, the findings of the Analysis and Exploration phase are synthesized to create the four main products revised problem definition, long-range goals, partial design requirements, and initial design proposition. The design propositions explain how the design requirements can be approached and are directly related to each other. These products are utilized as the Input for the Design and Construction phase according to McKenney and Reeves (2012).

3.8.1   Revised Problem Definition

The Analysis and Exploration phase revealed a new problem definition: How can the exchange of relevant knowledge among educational consultants in a project-based organization be effectively facilitated? This led to the realization that the focus must be on utilizing tools already familiar to the organization. Are the boundary conditions, such as organizational culture, trust, and

communication, considered in the facilitation of these tools? First, the challenge lies in better communication regarding tacit knowledge about project initiation, stakeholders' communication strategies and effective problem-solving during more difficult periods of a project. The existing tools like roundtable meetings, Microsoft Teams and WhatsApp which are utilized for knowledge sharing show variability in effectiveness but are seen as the primary tools educational consultants want to use. Consequently, the tools can lead to incomplete project reports limited engagement and a lack of interdependence which leads to missed knowledge sharing opportunities.

Second, the organizational culture relies on the pillars of openness, trust and encouragement but there is a perception among educational consultants that knowledge sharing tasks are optional leading to restriction of participation.

Third, the trust between educational consultants to share knowledge is limited to the success of projects and mistakes or errors are often not shared due to limited time in roundtable meetings and a lack of leadership to create a culture of support to start sharing mistakes so colleagues could follow.

3.8.2   Long Range Goals

The long-range goals for the project-based organization consist of establishing a foundation for a knowledge sharing culture- and usage of knowledge sharing tools to facilitate the longevity and robustness of this culture.

1. By December 2024, foster a learning culture where educational consultants share knowledge on effective communication strategies, stakeholder management, and problem-solving during 90% of project experiences.

2. Integrate daily knowledge sharing into the workflow by December 2024, ensuring 80% of team members recognize and discuss mistakes as opportunities for growth.

3. By July 2024, utilize internal training sessions to demonstrate the importance and benefits of professional development, emphasizing knowledge sharing for project success to 95% of participants.

4. By September 2024, enhance the functionality of existing knowledge-sharing tools to support long-term goals and simplify knowledge sharing among 90% of consultants.

5. Develop and implement a comprehensive roadmap by March 2024 for educational consultants and management to monitor the progress of long-range goals and ensure a 95% success rate.

3.8.3 Partial Design Requirements and Initial Design proposition

The partial design requirements have a corresponding design proposition to fulfil the long-term goals (McKenney & Reeves, 2012). The requirements and propositions can foster initial ideas for potential solutions to give a foundation for the Design and Construction phase where these ideas will be further discussed and explored to map out solutions.

Table 9

Partial Design Requirements and Initial Design Propositions

Partial Design Requirement	Initial Design Proposition
1. The Design should give educational consultants information about the benefits and rewards for employees and their professional development.	1. The management should create internal training with practices about which knowledge should be shared and its benefits for the employees and use of the tools to store the information.
2. The Design should make knowledge sharing easy and simple for educational consultants and be able to integrate it into the daily workflow.	2. The knowledge sharing practices need to be part of already existing tools with a manual for optimal usage and a time frame for knowledge sharing activities by the management
3. The Design should foster the restructuring and completion of the project reports and support interdependence between employees.	3. The integration of mandatory knowledge sharing activities with a set time frame for those activities. As well as a senior educational consultant who employs a kind of leadership for knowledge sharing activities for the project-based

	organization.
4. The Design needs to facilitate communication between colleagues and promote participation in roundtable meetings.	4. The guide for consultants needs to be adapted on how to make use of the roundtable meetings and what topics to focus on. The promotion of indirect follow-up conversations with colleagues is of interest as a more specific knowledge sharing mechanism.
5. The Design should include a way to control the status of the knowledge sharing process and practices to ensure long-range success.	5. A roadmap with different checkpoints and long-range goals should be created to keep the project-based organization in line and have expectations clear.

4   Discussion

4.1 Conclusion

The investigation into the boundary conditions for creating a knowledge sharing tool within a project-based organization has yielded interesting insights that confirm the literature and theoretical framework of previous studies. Through theoretical and practical approaches, several conclusions have been drawn to create recommendations for a knowledge sharing tool aimed at fostering knowledge sharing practices within the Dutch project-based organization.

The findings underlined the already-found importance and significance of organizational culture, trust, communication, information systems, reward systems, and motivation for effective knowledge sharing processes proposed by Al-Alawi et al. (2007). The high frequency of tacit knowledge and its significance in organizations and its challenges align with the work of Nonaka and Takeuchi (1995) and Dhanaraj (2004). The existing tools in the Dutch project-based organization include roundtable meetings, Microsoft Teams, project reports, and WhatsApp groups. These varied in effectiveness and

were not a comprehensive solution for meeting the management's goals for knowledge sharing standards inside the organization.

The results revealed that face-to-face communication is a frequently mentioned catalyst between colleagues to create an effective knowledge sharing environment through interpersonal trust. The issues of the knowledge sharing tools were the limited engagement and incomplete project reports on the project lifecycle, confirming the belief that face-to-face knowledge sharing is superior as the work of Panahi et al. (2013) suggests.

Educational consultants expressed what is important for successful knowledge sharing. This includes the need for proactive behaviour, professional development, teamwork, a culture of sharing mistakes, insights into project opportunities and limitations, and more information about the benefits of knowledge sharing. The challenges included the perception of limited time for knowledge sharing, knowledge sharing being seen as optional, incomplete project reports, and a lack of interdependence and motivation among colleagues. Thus, to create a knowledge sharing tool, the involvement and opinions of employees are essential to minimize the difference between the theoretical standards of the management for knowledge sharing and the practical and realistic solutions.

In the Dutch project-based organization, juniors benefit from clear guidance on already existing knowledge sharing tools and integration into their daily workflow, while mediors require encouragement for proactive engagement and leadership support. Seniors play a critical role in supporting a culture of knowledge sharing by leading by example, potentially providing training on effective leadership, and optimizing existing tools. By aligning these efforts with long-range goals, such as promoting a learning culture and enhancing communication, the organization can cultivate a robust knowledge sharing environment conducive to continuous improvement and project success.

In terms of interpersonal factors, trust is a crucial element. Face-to-face communication is often cited as a key factor in building trust among colleagues. Proactive behaviour is essential for all levels of employees to engage in knowledge sharing, while effective teamwork and a culture of sharing mistakes and insights are crucial for successful knowledge sharing. Addressing the lack of interdependence among colleagues is necessary to enhance motivation and engagement.

Regarding organizational factors, fostering an organizational culture that emphasizes the importance of knowledge sharing is vital. Implementing reward systems can motivate employees to participate in knowledge sharing activities, and leadership support is particularly important for mediors to encourage proactive engagement in knowledge sharing.

In terms of systems, refining existing tools such as Microsoft Teams, project reports, and WhatsApp groups to make them more effective is necessary. Providing tailored training on the optimal usage of knowledge sharing tools and establishing monitoring and evaluation mechanisms with clearly defined checkpoints to track progress are also important steps.

4.2 Recommendations

Based on the insights gathered from the results and conclusions, recommendations are formulated to facilitate long-term sustainability for the Dutch project-based organization and advance the field of knowledge sharing and knowledge sharing tools in project-based organizations.

For the design of an effective knowledge sharing tool, emphasis should be laid on the communication of tacit knowledge across diverse project phases including project initiation, stakeholder communication, and effective problem-solving skills during challenging project phases. This involves refining existing tools to not create a higher workload while nurturing communication and active engagement by providing tailored training on optimal usage of tools and fostering a culture of interdependence among employees. Furthermore, establishing monitoring and evaluation mechanisms with clearly defined checkpoints and overarching organizational goals to evaluate the progress of knowledge sharing initiatives and ensure long-term success is necessary.

Practical steps towards realizing these objectives include mandatory training sessions for employees to underscore the benefits of knowledge sharing and establishing project reporting guidelines. Moreover, proactively consulting with employees over input on projects and planning quarterly meetings to evaluate the progress guided by a strategic roadmap that outlines the course of action with milestones to become a knowledge sharing organization. These milestones can include mastering tool utilization,

evaluation of quarterly meetings, and facilitation of face-to-face knowledge sharing like roundtable meetings.

Finally, for future studies, a more comprehensive approach to knowledge sharing can be created by encompassing all facets of knowledge management —from creation to dissemination— while taking into account individual employee characteristics such as the personalities of employees. This could result in a more detailed and complete picture of effective knowledge sharing.

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6   Appendices

6.1   Appendix A. Document Analysis codebook

Code label		Code definition	Anchor example
Main code	**Document source**		
Previous or current knowledge	The educational consultant guide	Information on the processes and methods that have	The educational consultant guide reveals all educational consultants participate in a monthly 30-minute

sharing tools and processes	The project template	been used or are still being used by the project-based organization for knowledge sharing. This can include meetings and documentation that are intended to support knowledge sharing among educational consultants.	roundtable discussion that the management of the project-based organization leads. The meetings involve broad and quick knowledge sharing on the status of their project. However, details are supposed to be discussed in separate meetings with colleagues who seem to be familiar with an issue. The educational consultants are expected to take notes during their projects to come prepared for the roundtable meetings. Proactive behaviour is expected to connect with another colleague who might be of help or has revealed a similar situation in the roundtable meeting.
Relevant knowledge for the project-based organization that should be shared	The project template	Information about knowledge deemed relevant for sharing within the project-based organization. It includes information about project-related processes and solutions, logistical	The project template shows that relevant knowledge for the project-based organization included logistical particulars about a project, like details about the employer, start date and weekly workload. It also is encompassed by specific issues and details about the project itself,

		specifics for software previously used, and reoccurring issues that are encountered in projects. This knowledge is seen as essential for the success of their projects.	This can include communication with stakeholders and employers and challenges during projects of all natures like a discrepancy between the initial request for a project and the current request or changed request. It is supposed to include also details about the evolution of the project over time.
Tasks of an educational Consultant	The educational consultant guide	The tasks and mandatory obligations of educational consultants are expected by the project-based organization. It contains information about the primary objectives of educational consultants, what is expected in terms of the management of the project lifecycle, project documentation and	The educational consultant guide explains educational consultant's main tasks involve the responsibility for the current project that they are designated to and its success. This includes working with the software of their employers to support the educational institution providing advice on training and coaching on project management methods within the Dutch educational system. Outside of the project hours, educational consultants are supposed to engage in personal development that is fostered by the project-based organization through internal training about

		responsibilities outside of a project regarding the improvement of soft and hard skills.	time management and personal efficacy and external training after arrangements with the project-based organization. In addition, proactive behaviour is expected by the educational consultant which includes supporting colleagues and dealing with or improving internal projects.
General Information about the project-based organization and the organizational structure.	The general information document The educational consultant guide	General information about the organizational structure of the project-based organization. It includes details about the departments with the project-based organization, basic organizational concepts and values, communication channels, the range of autonomy by an employee and how the management	The general information document revealed the project-based organization is made up of three different structures that focus on project management, scheduling software, and educational products. The values of the company emphasize flexibility, transparency, openness and trust. educational consultants can work remotely and flexible hours, but once a week to come to the office is mandatory except your project is at such a distance that after an agreement you can work fully remote. There are different lines of communication set up, mostly through Microsoft Teams and

		supports its employees.	Outlook to ask for help from colleagues and contact the management if there are any issues or questions about the project or other issues. The management also supports a lifelong learning approach through internal training and expects employees to follow that approach. The idea is an open-door policy with no control over the hours employees spend on their project but focus more on the outcomes.

First, the researcher introduces himself and explains the procedure of the interview. The information about the ethical consent how the data will be anonymized and the recording will be deleted after the analysis process. Next, the aim and the goal of the study are explained and the recording and interview start.

1. Tasks and Responsibilities of Educational Consultants a. Could you provide an overview of the typical tasks and responsibilities of educational consultants within the project-based organization? b. How is knowledge sharing integrated into your daily work and projects as an educational consultant? c. Are there any specific knowledge sharing needs or challenges you face in your role?

2. Previous and Current Knowledge Sharing Practices and Tools

a. What knowledge sharing practices did you engage in? b. What knowledge sharing tools have you used or observed in the past within the project-based organization? b. What are the strengths of these practices and tools? What are the limitations of these knowledge sharing practices and tools? c. Can you share any specific challenges or issues you have encountered while trying to share knowledge with colleagues? d. What features or functionalities would you like to see in a knowledge sharing tool specifically designed for educational consultants?

3. Relevant Knowledge for Educational Consultants to Share a. In your opinion, what types of knowledge or information are considered relevant and valuable for educational consultants to share with colleagues? IF Tacit: What challenges and opportunities do you see in sharing tacit knowledge among educational consultants?   b. When do you believe is the most valuable moment in which it is

particularly valuable to share knowledge for the success of projects? Can you provide any specific examples or scenarios where sharing tacit knowledge is particularly crucial for educational consultants? c. Why do you believe it is important to share this knowledge within the project-based organization?

4. Organizational Structure and Support for Knowledge Sharing a. Can you describe how knowledge sharing is supported and encouraged in the project-based organization/ the organization? b. How does the organization stimulate you to share relevant knowledge and information with your colleagues? If there are only formal ways, are there any informal mechanisms or vice versa in place for promoting knowledge sharing among educational consultants? c. How does the management or leadership within the project-based organization stimulate knowledge sharing among educational consultants? d. How often do you share knowledge with colleagues outside of the roundtable meetings? e. Is it communicated from the management what is expected from you as an educational consultant in terms of Knowledge sharing and in which way? (e.g. discussions, collaborations for projects) ? f. What do you need from the management or colleagues to engage in effective knowledge sharing?

5. Features and Functionalities for User Experience and Ease of Use a. What is important for you in a tool for enhancing knowledge sharing?? b. Are there any specific preferences or features and functionalities you have regarding the interface, navigation, and accessibility of a tool? Or ideas for organizing, categorizing, and searching for knowledge within the tool? c. Do you have any good or bad examples of using a knowledge sharing tool? d. How can the tool enable collaboration, feedback, and interaction among educational consultants?

6. Trust a. Are you able to share mistakes or achievements of a project with your colleagues that is still ongoing or is completed? If not, why do you believe it might be difficult to share experiences of problems? b. What do you think you need in a roundtable meeting from the management to promote sharing your feelings, opinions, or perceptions on your gained knowledge? c. What do you think you need from your colleagues or management to promote sharing your feelings, opinions, or perceptions on your gained knowledge? What do you think you could learn from your colleagues?

7. Rewards a. Do you see how knowledge sharing can be rewarding for you (Intrinsic or extrinsic)? b. Are you aware of knowledge sharing and its benefits for your profession (intrinsic)? c. Do you believe

gaining recognition from your organization would promote your engagement in knowledge sharing (Extrinsic)?

After the interview, the researcher thanks the participant for the Interview and if any further questions, comments or concerns arise about the interview or study itself, the participant can contact the researcher. If the participant is interested in the outcome a confirmation is given to ensure to share the results with the participant.

6.3 Appendix C. Information Sheet

Research Objective:

This research, led by Fabian Ellenberger, aims at creating a knowledge sharing tool for educational consultants in a project-based organization using an Educational Design Research Approach. The results of the data will create a report with the intention to enhance the knowledge sharing processes inside Dutch project-based organization. In addition, the data will inform the graduation of the researcher and is shared with the University of Twente.

Procedure:

As a participant in this research, you will be contacted with several proposals for an interview, then the interview will take place, and your responses will be audio-recorded and transcribed for the purpose of data collection.

Potential Risks and Inconveniences :

Participation is completely voluntary, and participants have the autonomy to not answer questions that they feel uncomfortable with, and withdrawal is possible is at any time.

Confidentiality of Data:

The participant privacy is protected by implementing rigid measures to ensure anonymization. No confidential or personally identifiable data is disclosed that could compromise the anonymization of the participant. Data will be stored securely at the University of Twente Master thesis repository with encrypted data carriers for ten years. After those ten years, the data will either be deleted or go through further anonymization process. Ethical approval has been obtained from the ethics committee of the University of Twente and access to data is only possible in an anonymous form.

Voluntary Participation:

Participation in this research is voluntary, and participants are allowed to withdraw at any stage of the study without consequences. For ,complaints, Inquiries or to stop participation, participants can contact the researcher, Fabian Ellenberger, with the below provided contact information.

Fabian Ellenberger

[Tel. number]

[Email]

For objections regarding the design and/or implementation of the research, you can also contact the Secretary of the Ethics Committee / domain Humanities & Social Sciences of the Faculty of Behavioural, Management and Social Sciences at the University of Twente via ethicscommittee-hss@utwente.nl. This research is carried out by the University of Twente, Faculty of Behavioural, Management and Social Sciences. If you have specific questions about the handling of personal data, you can also address them to the UT Data Protection Officer by sending an email to dpo@utwente.nl.

Lastly, you have the right to submit a request to the researcher, Fabian Ellenberger, for inspection, change, deletion, or adjustment of your data.

Consent Form for [Creating a knowledge sharing tool for educational consultants in a project-based organization using An Educational Design Research Approach]

YOU WILL BE GIVEN A COPY OF THIS INFORMED CONSENT FORM

Please tick the appropriate boxes

Taking part in the study

I have read and understood the study information, or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.

I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.

I understand that taking part in the study involves capturing audio-recordings for the interview, that will be transcribed into text and deleted after the analysis process is finished.

Use of the information in the study

I understand that information I provide will be used for a master thesis report.

I understand that personal information collected about me that can identify me, such as [e.g. my name or where I live], will not be shared beyond the researcher.

Consent to be Audio Recorded

I agree to be audio recorded.

Future use and reuse of the information by others

I give permission for the anonymized transcripts that I provide to be archived in the master thesis repository of the University of Twente. So it can be used for future research and learning. The anonymization is done by data masking and replacing the participants name by the position and a number (e.g. Senior 2).

Signatures

_____   _____

Name of participant :

       Signature   Date

I have accurately read out the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands to what they are freely consenting.

_____   _____   _____

Researcher name [printed]   Signature   Date

Study contact details for further information:

Fabian Ellenberger

[Tel. number]

[Email]

6.5   Appendix E. Codebook: Critical Success Factors for Knowledge Sharing

Code	Definition of Code	Examples
Task and responsibilities of educational consultants in practice and role of knowledge sharing (TREC)	Task and responsibilities that are paired with knowledge sharing and perceived challenges for being able to perform knowledge sharing successfully. This also includes information about gaps and differences between tasks and responsibilities given by the project-based organization and how are these Instructions met in practice.	Junior 1: "I'm excited on what opportunities, the you know.., professional development of the company entails, I haven't participated in any of the trainings, but I have already wrote myself in for one in a month and I'm excited to develop my skills more and am searching actively always for new things to learn." Medior 3: "I have realized the most important job that you have is to do your project successfully and of course anticipate the obstacle coming your way for a relaxed and successful project. This means looking at the opportunities but also the limits that you have on a project, that is what a consultant does. Always develop and stay ahead of the curve, we say!" Senior 1: "In my experience, I have understood the significance of teamwork in achieving project success. If you work together you have many eyes, more

		perspectives, which means more opinions but also more insights."
Previous and Current Knowledge Sharing Practices and Tools (PKSPT)	Information that includes all of the organizations prior knowledge sharing procedures and resources. This includes resources that have been mentioned in the document analysis and tools that have not been included yet. The opinions about those tools from educational consultants is also considered relevant information.	Junior2 : "I find roundtable meetings and our whatsapp group to be helpful and quick, for quick communication and sharing the information with my colleagues." Medior1: "Using Microsoft Teams is a big part of our work and eh.. , for project reports and discussions and also helps with just working together and sharing knowledge with each other." Senior 4: "The challenges of projects and success are shared during the roundtable meetings and this is a big part of our organization that you can always now what I going on and that is still used today and will be maybe changed, who knows, but I like them and believe they are important for our organization."
Relevant explicit and tacit knowledge affecting project success and	Information regarding explicit and tacit knowledge that is relevant for projects success and effective collaboration. This can	Junior1: "I have learned a lot, from as you might have guessed from my senior colleagues, it is normal to learn from each other here and the most helpful was probably, yes, about the employers and how to communicate better and have respect but also be clear. "

collaboration (RETK)	include ways of working, dealing with challenges and learned lessons from projects that can aid other educational consultants project lifecycles.	Medior6: " Being involved in the start and end of a project and these processes has really helped me to better my project management skills but also like client relations and the way you get seen." Senior2: " I think that the knowledge about how certain software work is also relevant, if I use one of our scheduling programs for a project and I had a colleague show me how some of it works, its clear its easier and makes the project more successful and the client happier. "
Rewards and Benefits (RB)	Information about what incentives, motivations and recognitions employees need for knowledge sharing activities and what the project-based organization is offering at the moment for the employees. Includes information about the level of awareness of educational consultants	Junior4: "If I had the feeling that knowledge sharing is part of my work hours, it would motivate me to say more inside the roundtable meetings." Medior1: "Even if fit just a formal acknowledgement like a "thanks for sharing!" , I think it would encourage me and others to start sharing my expertise with the rest of team. " Senior3: " If I see clear opportunities to further develop my career, like a specialized training, a certificate or mentoring session, it would incentivize me to support knowledge sharing more inside the organization. "

	Information about the level of trust inside the organization, in between colleagues and between colleagues and the management, as well as the overall culture of trust in the project-based organization.	Junior3:" I want to share my thoughts and ideas with my colleagues when I know there is a level of trust an support and appreciation of my Input."
Trust (TR)		Medior2:" I do have trust in the management and that is essential for me to feel motivated in my role because I know if something happens in my project they have my back."
		Senior1: "Over the years, I have made close connections to some colleagues, especially the ones that also stayed longer, this has helped to make a comfortable working culture and I have trust to those colleagues. "
Features and Functionalities for User Experience and Ease of Use (FFUE)	Information that refers to the usability and user experience of the tools that are being used and what features and functionalities are wanted for a knowledge sharing tool.	Junior4: "The easiest to work with systems, and tools is for them to be simple, you know? Not having to learn too much new things because you are already learning new things in your projects."

Medior1: "Time and efficiency is what we also work with as consultants and I believe a feature should be that it is a tool easy to use and not eh.. too high of a learning curve. "

Senior2: "I have used different tools in many projects and in our organization mainly Teams and Outlook, but I know that simplicity is the key, so you can focus on |

		the work
Organization Culture (OC)	Information about how the organizational culture differs between the theory and the practice. This includes advantages and disadvantages of how the organization functions and how much support knowledge sharing tasks receive.	Junior4: " I appreciate a lot that we have an open-door policy or what it's called, where you can just talk openly with the management, it makes the project-based organization transparent and promotes communication." Medior4: "The internal training is something that was beneficial for my professional path and development you know? Just learning about how I can more efficient and I was missing that in my last job, to keep developing." Senior3: "The organization is promoting a culture that trusts and can share mistakes, but I do think that there is still room for improvement and sometimes I do believe that there is too much trust from the management and more things should be mandatory so that they really get done."