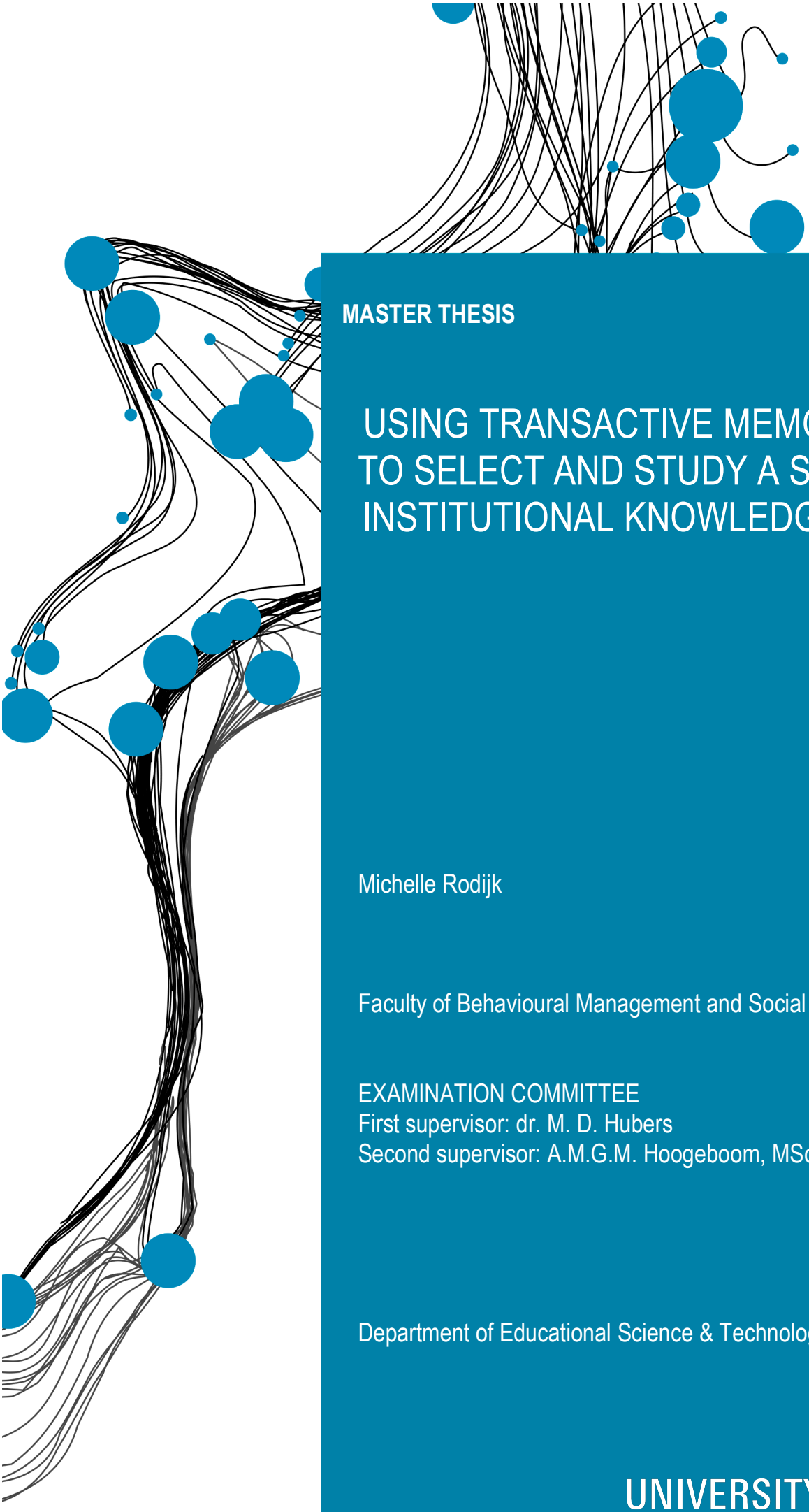

MASTER THESIS

USING TRANSACTIVE MEMORY SYSTEMS TO SELECT AND STUDY A STRATEGY FOR INSTITUTIONAL KNOWLEDGE RETENTION

Michelle Rodijk

Faculty of Behavioural Management and Social Sciences

EXAMINATION COMMITTEE
First supervisor: dr. M. D. Hubers
Second supervisor: A.M.G.M. Hoogeboom, MSc

Department of Educational Science & Technology

UNIVERSITY OF TWENTE.

Preface

This master thesis was conducted under the supervision of University of Twente. With the completion of this thesis, my masters programme in Educational Science and Technology came to an end.

During the process of graduating I have received a great deal of support from my husband, several family members, friends and my supervisor. A lot has changed in my life since I started this graduation project. I have grown personally, as well as professionally, and gave birth to our beautiful daughter. Although I experienced some health issues, my husband, family, friends and supervisor never ceased to support me. Therefore, I would like to use this opportunity to express my gratitude.

First, I would like to give a huge thanks to my husband. Throughout this process he has dealt with turbulent hormones and everything else that comes with being pregnant. On top of that, he has supported me during stressful moments with the patience of a saint. Even though he often had a 60-hour workweek, he took care of our little girl lovingly whenever I needed time to study.

Second, I would like to give special thanks to my parents, parents-in-law and family. They have always believed in me and encouraged me to further my abilities. I am very grateful for their support and trust.

Last, I would like to thank dr. M. D. Hubers, for her excellent support and providing me with much needed feedback that contributed to the completion of this thesis. Although we have stumbled upon several hurdles during this research project, she continuously remained optimistic and encouraging. I would also like to express my gratitude to A.M.G.M. Hoogeboom, MSc, for taking the time to provide me with valuable feedback during the last phase of the completion of this thesis.

Michelle Rodijk

Enschede, September 2019

Abstract

Background: In many organisations, knowledge retention can be considered a critical challenge, as it is often an afterthought. However, loss of expertise as a result of an employees' departure, could have a negative impact on an organisation. As a consequence of this loss, significant knowledge voids in the domains of productivity, decision-making and innovation can occur and interpersonal routines may be disrupted. It is therefore imperative that organisations recognize which knowledge areas are essential for its functionality and how to prevent its loss. Exploring the presence of TMSs can aid an organisation in revealing these knowledge areas. Therefore, organisations could benefit from implementing a knowledge retention strategy that is carefully selected, based on the presence of TMSs.
Purpose: The present study focused on selecting a knowledge retention strategy by exploring the presence of TMSs, as well as essential types of knowledge and skills. Furthermore, knowledge related problems that were expected to arise, or not, when an employee would leave the organisation were analysed.
Method: A cross-sectional case study was conducted in an organisation. A mixed method was used by conducting a questionnaire as well as a focus group study. In order to provide a selection of strategies, a list of criteria was composed.
Findings/Results: The findings indicated the presence of TMSs, however its efficiency could be improved. Specific types of domain knowledge were regarded to as the essential type of knowledge for the employees' performance of their job functions. The majority of the employees did not expect issues to arise when an employee would leave the organisation. However, obstacles regarding TMSs and the retention of knowledge were revealed. The members of the focus group had a unanimous preference for the "communities of practice knowledge retention strategy" to aid the organisation in retaining knowledge. It was considered a clear strategy and was expected to be up and running quickly.
Conclusions/Recommendations: Within the participating organisation, knowledge retention could be considered a critical challenge. Creating awareness on the subject of knowledge retention and the impact of knowledge attrition, would be a first step towards achieving knowledge retention. To identify essential types of knowledge, awareness of the types of knowledge and skills employees use for completing tasks should be confirmed. If this is not the case, certain knowledge areas could be overlooked. Within this study, obstacles were revealed and a list of criteria, that could be applied to existing knowledge retention strategies, was composed. The insights that were retrieved, as well as the composed list of criteria, may be useful for organisations that wish to implement a knowledge retention strategy.

Table of contents

1. Introduction

Over the past decade, organisations have had to incorporate major (technological) innovations which drive the need for versatile and rapid changes in workflow. In response to these changes, employees with expert skills and knowledge are becoming more important assets and this adds considerable market value to those employees. These employees are therefore more inclined to change jobs (Baguma, Ragsdell & Murray 2014; Lank, 1997). Consequently, organisations can benefit from implementing a knowledge retention strategy to keep the specific knowledge and skills of employees up to date, and above all, on board (Liebowitz, 2009).

The concept of transactive memory is a system by which knowledge can be retained (Argote & Guo, 2016; Wegner, 1986; Wegner, Giuliano & Hertel, 1985). A transactive memory system (TMS) has been conceptualised as group of combined individuals where information about specific topics is collectively encoded/hardwired, stored and recalled/retrieved (Wegner, 1986). A well-developed TMS can affect an organisation's efficiency and productivity in a positive way (Lewis, 2003; Lewis, Lange, & Gillis, 2005). This can aid an organisation in achieving knowledge retention, should changes within the organisation occur (Liebowitz, 2009).

In an ideal situation, there would be a proactive and smooth transition of knowledge and skills between departing employees and those who would take on their responsibilities. With this type of transition, the knowledge voids typically experienced by organisational change could be reduced. However, without a proactive and smooth transition, loss of expertise as a result of an employees' departure, due to, for example; retirement, resignation or market competition; may have a negative impact on an organisation as a whole. There are two reasons for this negative impact on an organisation. The first reason is that significant knowledge voids in the domains of productivity, decision-making and innovation will occur. The second reason is that colleagues' and associates' interpersonal routines will be disrupted and the future development of knowledge and skills as created by social interaction and day-to-day business will be inhibited (Baguma et al., 2014; Cascio, 1993; Fisher & White, 2000; Schmitt, Borzillo, & Probst, 2011).

Many organisations do not acknowledge the negative organisational impact of knowledge attrition, despite the overwhelming evidence. As a consequence, organisations are not proactive in knowledge retention as it is not considered to be a priority (Doan, Rosenthal-Sabroux, & Grundstein, 2011; Liebowitz, 2009). According to the research of Doan et al. (2011), knowledge retention can even be regarded to as one of the most critical

challenges for organisations. This could be explained by a number of reasons. Firstly, the possibility of wasting time and money due to repetition of failures that are already learned from (Liebowitz, 2009). Secondly, if an organisation is in a perpetual state of urgency and haste, there may exist a total lack of recognition that knowledge loss has a significant impact on the bottom line (Doan et al, 2011; Liebowitz, 2009). Lastly, it is not just the skill and knowledge of the particular individual that leaves the organisation, but the identity within a network or knowledge about the location of specific tools of the trade are also lost (Doan et al., 2011; Lank, 1997; Liebowitz, 2009). For that reason, employees within an organisation should recognize and acknowledge the loss of knowledge prior to the departure of the employee (Doan et al., 2011; Lank, 1997; Liebowitz, 2009).

To dive deeper into the concept of knowledge attrition and its impact, it is imperative that organisations recognize which knowledge areas are critical for continued operations and how to prevent its loss (Nonaka, 1994). To accomplish this, it is important to determine whether employees are aware of the knowledge and skills available to them through their colleagues, and the extent to which each uses this for their job function. When these available resources are not known, knowledge voids will persist (Fisher & White, 2000; Nonaka, 1994). The extent to which a TMS is present in an organisation, can confirm the employees' awareness of the types of knowledge and skills available and whether these are being used. Once the presence of a TMS is noted, and depending on the organisations willingness to support change, knowledge retention strategies could be suggested. In order to select such strategies, a tool for evaluating existing knowledge retention strategies, with regard to suitability within an organisation and the presence of a TMS, is required (Wu & Lee, 2007). In conclusion, it could be stated that organisations could benefit from implementing a knowledge retention strategy that is carefully selected, based on the presence of TMSs.

The study will be conducted in two phases. The first phase aims to gain insight into the presence of TMSs within an organisation, the types of knowledge and skills that are crucial to retain and knowledge related problems that are expected to arise, or not, when an employee would leave the organisation. The second phase aims to select a suitable knowledge retention strategy for the participating organisation. Specifically, the research questions for Phase 1 and 2 are as follows:

Phase 1: perception of the employees

1. Are TMSs present within the organisation and if so, in what capacity?
2. What type(s) of knowledge and/or skill is essential for an employee's performance of their job functions?
3. What knowledge related problems do employees expect to arise, or not, when a colleague would leave the organisation?

Phase 2: selecting a knowledge retention strategy

4. What knowledge retention strategy could be applied within the current state of the organisation and how would this strategy be perceived among the employees?

Phase 1:
Perception of the Employees

2. Theoretical Framework Phase 1: Perception of the Employees

This theoretical framework starts with exploring conceptual knowledge and knowledge retention. Furthermore, TMS will be discussed and the concept knowledge retention strategy will be briefly explained. Thereafter, a brief summary of the key concepts and relationships will be provided.

2.1 Knowledge

In the literature, knowledge is described and defined in many different ways. Knowledge could be divided into knowledge at the individual-, group- and organisational level (Martins & Meyer, 2012). At the individual level, knowledge originates within the mind of the individual. At group level, the individual knowledge is shared within and between groups. At the organisational level, the different types of individual knowledge are captured and codified and therefore, it (hopefully) becomes embedded within the organisation. This can also be referred to as organisational knowledge and these different types of knowledge could be studied. A few examples consist of procedural knowledge, specific product', community-generated' or expert knowledge' (Rathi, Given & Forcier, 2014). Therefore, knowledge could be referred to as a multidimensional concept with various meanings that can cover numerous content areas (Nonaka, 1994).

Knowledge within an organisation could also be seen as a process that combines the knowledge that individuals have, which in turn creates a web of the different types of knowledge an organisation possesses (Nonaka, 1994). Therefore, organisations would not be able to create organisational knowledge without knowledge at the individual level. For that reason, the study of Nonaka (1994) defines knowledge as based on an individual's commitment and point of view, which is designed and organized by the flow of information.

According to the research of Nonaka (1994), the individual knowledge that is created within an organisation, and therefore contributes to the creation of organisational knowledge, should be formalized. In order to prolong the creation of this type of knowledge, formal guidelines are considered to be a necessity for capturing individual knowledge. These guidelines are especially important for maintaining the created organisational knowledge, hence, the retention of knowledge.

2.2 Knowledge Retention

Within this theoretical framework, knowledge retention has thus far been referred to as maintaining organisational knowledge as is created at the individual level. Knowledge retention has also been regarded to as a crucial aspect for an organisations' functionality (Doan et al., 2011). Therefore, knowledge retention can be defined as continuously having and not losing knowledge that exists in the minds of individuals and which is essential to an organisation's functioning (Martins & Meyer, 2012).

To explore what knowledge is essential for an organisation to properly function, the types of knowledge that are essential to the employees' role and therefore to the organisation's functionality, should be determined (Nonaka, 1994; Martins & Meyer, 2012). For this reason, it is important to study the employees' awareness of their colleagues' specific knowledge and skills. When awareness of the types of knowledge and skills within an organisation is not present, employees would not be able to recognize knowledge voids. This consequently causes ineffective knowledge retention (Fisher & White, 2000; Nonaka, 1994). Within this study, specific knowledge and skills are also referred to as expertise.

In addition to awareness, the use of knowledge and skills among colleagues can contribute to the possible creation of future knowledge through patterns of social interaction. Without use of this expertise, this would be inhibited which would lead to the ineffective retention of knowledge as well as reduced creativity and innovation (Cascio, 1993; Fisher & White, 2000; Schmitt et al., 2011). Therefore, the analysis of awareness and use of knowledge and skills among colleagues could contribute to the realisation of effective knowledge retention. This could be achieved by exploring the presence of TMSs within an organisation. The presence of a TMS establishes that employees are aware of their colleagues' knowledge and skills, and use it in order to perform tasks (Ellis, Porter & Wolverton, 2007).

2.3 Transactive Memory System (TMS)

A TMS can be described as a combination of individual memory systems and communication of these memories between individuals (Wegner, Guiliano & Hertel, 1985). At the individual memory system level, knowledge can be stored internally and externally. Internally, knowledge can be codified and embedded within one's memory and retrieved when necessary. Knowledge that is not necessarily required to reside in an individual memory system for long term use, can be stored externally. For example, in the form of blogs, books or papers. This externally stored knowledge is retrievable and therefore retained, provided that its type and location are known (Wegner, 1986). Both internal and external storage of knowledge within a TMS can be used to ensure the persistence of

knowledge within an organisation that exists in the mind of the individual over time (Argote & Guo, 2016; Wegner, 1986). When the individual memory systems are combined and form a TMS, the members can function as locations for the external storage of knowledge for an individual memory system (Wegner, 1986).

According to the research of Lewis (2003) a TMS contains three components: specialization, credibility and coordination. There are two components that are required to be present within a TMS to confirm its presence; specialization and credibility. The third component, coordination, does not necessarily indicate the presence of a TMS. It does, however, illustrate the efficiency of such a system. The efficiency of a TMS is essential in relation to team performance; the higher the efficiency, the better a team is able to perform. The three components will be described by using a model of TMS development as displayed in Figure 1, by Ellis et al. (2007). The model includes several behavioural and cognitive components (Ellis et al., 2007).

TMS development model. As presented in Figure 1, the model displays the three components and the way these components can develop. Within the model, these components can be considered as cognitive manifestations of a TMS (Ellis et al., 2007). The behavioural components within a TMS are directory updating, information allocation and retrieval coordination. The further these components are developed, and therefore the TMS, the higher the ability to perform as a team (Ellis et al, 2007). This allows a higher efficiency in the quality of the performed tasks, and this could be an improvement for an organisation (Edmonson, Dillon & Roloff, 2007).

Specialization. Within the model (Figure 1), the development of a TMS starts with a behavioural component, directory updating. For this component, areas of expertise need to be memorized. Therefore, this is regarded to as the employees' awareness of their colleagues' expertise (Edmonson et al., 2007; Ellis et al., 2007; Lewis, 2003). Development of specialization within a TMS can be reached by applying cross-training which challenges employees to perform their colleagues' tasks (Ellis et al., 2007). Performing each other's tasks enables the recognition of overlap in expertise and this could expose knowledge gaps. Subsequently, specialization in certain knowledge areas will be needed in order to bridge these knowledge gaps (Edmonson et al., 2007; Ellis et al., 2007; Lewis, 2003). When specialization is enabled, development of information allocation and retrieval coordination can be enabled. This is done by active demonstration of the acquired expertise that the employees collectively possess (Ellis et al., 2007).

According to the research of Lewis (2003), specialization alone is not sufficient as confirmation of the presence of a TMS, since the development of specialized knowledge may occur for other reasons. Lewis (2003) argues that specialized knowledge can only be developed when the members of a TMS perceive each other as being credible. Without this,

it is likely that members will develop overlap in knowledge. Therefore, the presence of the components specialization and credibility indicate the presence of a TMS.

Credibility and coordination. Once information allocation and retrieval coordination are enabled, a so called 'distribution centre of knowledge' is formed. Within this centre, employees are fully aware of each other's expertise and use it in order to perform tasks. When the distribution centre of knowledge is formed, patterns of interaction through repeated social interaction can be developed in learning phase two. The development of social patterns is necessary in order to increase the efficiency and effectiveness within the distribution centre of knowledge (Ellis et al., 2007). Learning phase two includes development of team-skills such as collaborative problem-solving. This contributes to the development of these patterns (Ellis et al., 2007). The more efficient and effective knowledge is distributed, the more team members are able to cooperate and rely on each others' expertise. Concluding, it could be stated that a TMS is present within an organisation when employees have a shared understanding of their own as well as their colleagues' area of expertise and actively use this in order to perform tasks (Ellis et al., 2007; Lewis et al., 2005).

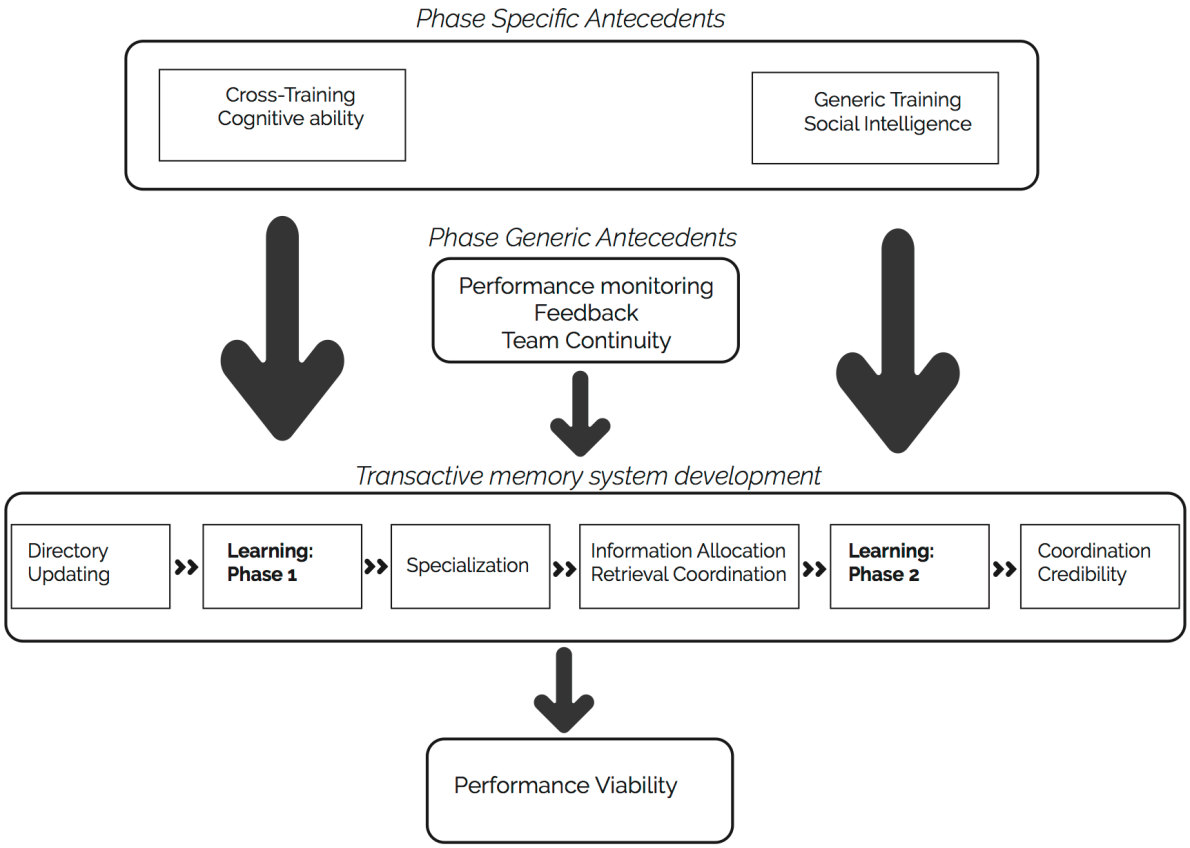

Figure 1 Transactive memory system development. Reprinted from *Learning to Work Together: An Examination of Transactive Memory System Development in Teams* by Ellis, A. P. J., Porter, C. O. L. H. and Wolverton, S. A., 2007, In V. L. Sessa, Work Group Learning, p.93.

2.4 Knowledge Retention Strategy

In order to be able to retain knowledge and enable a proactive and smooth transition of knowledge between employees, a strategy suitable to the current state of TMSs is required. A knowledge retention strategy may provide guidelines for the retention of knowledge and give employees insight in which types of knowledge are essential to retain (Liebowitz, 2009).

2.5 Summary Key Concepts and Relationships

Evidence suggests that knowledge retention can be regarded to as a crucial aspect within an organisation (Doan et al., 2011; Liebowitz, 2009). It appears to be especially important when employees leave an organisation, since knowledge and skills could be lost (Cascio, 1993; Fisher & White, 2000; Schmitt et al., 2011). Therefore, organisations need to recognize and acknowledge the loss of knowledge prior to the departure of an employee in order to be able to respond in an adequate manner (Doan et al., 2011; Lank, 1997; Liebowitz, 2009). This requires identification of the types of knowledge and/or skills that are present within the organisation, of importance to an employees' functioning and therefore to an organisation's functionality (Martins & Meyer 2012; Nonaka 1994). Consequently, the exploration of the presence of TMSs can aid the organisation in identifying the types of knowledge and/or skills (Edmonson et al, 2007; Ellis et al., 2007; Lewis, 2005; Wegner, 1986; Wegner et al., 1985). In addition, a knowledge retention strategy should be implemented in order to be able to properly respond to possible loss of knowledge (Liebowitz, 2009).

3. Method Phase 1: Perception of the Employees

To asses the presence of TMSs within the organisation and identify the essential types of knowledge and/or skills, and knowledge related problems, a questionnaire was conducted. In order to do so, a sample of the entire participating organisation was taken. The participating organisation was a large Dutch organisation and wished to remain anonymous and conducting a questionnaire digitally was not an option. Therefore, hardcopy questionnaires were handed out among different departments during office hours. This resulted in a relatively small sample size considering the size of the organisation.

3.1 Research Design and Context

Prior to conducting this study, there was no use of a formally embedded knowledge retention strategy within the organisation. Since there were a number of employees that were leaving the organisation and team continuity is important in order to establish the presence of TMSs over time, the research design that was applied for this study is cross-sectional. To explore the perception of the employees, a mixed-method approach was used. This consisted of a questionnaire within phase 1 and a focus group study within phase 2. Prior to conducting the questionnaire and the focus group study, the participants were requested to sign an informed consent document.

3.2 Respondents

For this present study, the participants were conveniently selected. A total of 50 hardcopy questionnaires were handed out. The response rate of the questionnaire was 88% (44 out of 50). The participants were ranging in age from 28 to 61 years (M=44, SD=10.74), with a majority being female (57%). The years of working experience within the organisation was ranging from 1 to 43 (M=13.05, SD=10.28). A large number of the employees was educated at university level (55%), while the remaining employees were either educated at MBO (27%) or at HBO (18%) level. Furthermore, 5 out of 44 (12%) participants were planning to leave the organisation within a year.

3.3 Instrumentation

All participants received a questionnaire to gain insight in their perception on aspects of knowledge retention within their organisation. The questionnaire consisted of quantitative and qualitative aspects. The questionnaire contained a short introduction with the possibility to ask questions to the researcher including contact information. The first part of the questionnaire that focused on the subject of the TMS scale was translated, in consultation

with a native speaker, to Dutch for the employees so that misunderstandings due to a language barrier would be avoided.

Presence of TMS. The capacity in which TMSs were present, or not, within the organisation was measured by asking respondents to complete the Likert-scale questionnaire by Lewis (2003) (see Table 3, Appendix 1). This scale was divided into three subscales that can be referred to as the cognitive components of a TMS: specialization, credibility and coordination (Lewis, 2003). Examples of the items are: “each team member has specialized knowledge of some aspects of our project’’ (specialization), “I was comfortable accepting procedural suggestions from other team members” (credibility) and “our team worked together in a well-coordinated fashion” (coordination).

The participants were also requested to grade these subscales based on their experiences within a team and to provide an explanation for their grading. This was added in order to gain a deeper understanding of the participants’ view on TMS. Grading was done by giving each subscale a number between 1 and 10, with 10 being the highest grade and 1 the lowest.

Essential types of knowledge and/or skills. The second part of the questionnaire included closed- and open-ended questions (see Table 4, Appendix 1). These questions were inspired by existing questionnaires (Robert, 2011; Rohra, 2011; Liebowitz, 2009). The questions were, however, adapted in consultation with the organisation to confirm applicability with the organisation’s structure (Appendix 2). Therefore, this part of the questionnaire was used to provide an indication of the perception of the employees on knowledge retention, the essential types of knowledge and/or skills, and knowledge related problems.

The essential types of knowledge and/or skills within the organisation were identified based on the types of expertise that employees mostly require during the performance of tasks. The types of expertise that could possibly be lost when employees would leave the organisation were also included. Questions were posed such as: “Do you make use of a colleague’s expertise in order to perform tasks?” and “What type of expertise do you mostly require during those meetings with a colleague?”.

Knowledge related problems. Prior to identifying possible knowledge related problems, the general perception of employees on knowledge retention was measured. This was included to gain insight in whether the concept knowledge retention was understood by the employees. An example of a question that was asked in order to do so is: “What is according to you, the current state of knowledge retention within the organization?”.

In order to study whether employees expect knowledge related problems to arise due to a departure, a question was asked such as: and “Do you expect any problems to arise when you would ever leave the organisation?”.

Furthermore, participants were requested to describe preconditions the organisation should meet in order to stimulate knowledge retention. The participants were also requested to elaborate on their perception of what the organisation should do against the possible loss of knowledge. The results of these questions will be used in preparation of phase 2: selecting a knowledge retention strategy, and composing a tool for evaluating existing knowledge retention strategies for suitability within an organisation.

3.4 Data Analysis

The retrieved quantitative data was analysed by descriptive analysis using SPSS Statistics. The qualitative part of the questionnaire consisted of seven open-ended questions. The results were transcribed using Atlas.ti. Since there was no suitable coding scheme available, coding schemes were developed based on literature research (see Appendix 3). Each code within the coding schemes includes a description in order to clarify the meaning of these codes. Thereby, examples from the questionnaire were added. Analysis of the results resulted in small alterations, for example; the code “other” was added in all coding schemes.

In order to ensure the reliability of coding during the analysis of the retrieved qualitative data, inter-rater reliability was established. In order to determine this, 10% of the items (1 out of 6) were coded by another student within the field. This resulted in an inter-rater reliability of 96.30% which could be described as nearly perfect.

To illustrate the process of coding, the following example is provided: ‘‘knowledge retention is not a knowledge area within this organisation, the managers do not specifically provide guidance concerning this topic’’. Within this example, concerns about (senior)management support, or lack of, were mentioned, since managers typically did not provide guidance in relation to the retention of knowledge. Therefore, the code “(senior)management support” was assigned.

Presence of TMS. Reliability of the questionnaire as designed by Lewis (2003), was measured by determining Cronbach’s Alpha for each subscale. All subscales included five items. However, in order to be able to determine Cronbach’s Alpha items 9, 10, 13 and 15 were contrary to the other items negatively formulated. Therefore, these items were recoded. The specialization subscale (α = .81) and the coordination subscale (α = .85) were indicated as reliable. The Cronbach’s Alpha of the credibility subscale appeared to be .64 which can be classified as questionable in order to ensure reliability. However, since the questionnaire is previously tested for reliability and the sample size within the present study is relatively small (*N* = 44*),* the item was not deleted from the questionnaire.

The questionnaire was conducted on an individual level. According to the definition of Wegner et al., (1985), a TMS is a combination of individual memory systems. This suggests

that the results should be reviewed on a combined/group level in order to determine its presence. In the study of Lewis (2003), the average of the within-group agreement coefficients (r_{wg}) is calculated in order to justify aggregation of the results into a score for each subscale on a combined/group level. Within-group agreement coefficients above .70 or greater are considered to be sufficient evidence of acceptable agreement among the participants' responses. The average r_{wg} of the subscales appeared to be .81, with 53,33% of the estimates falling above the .70 cut-off line. These results verify the participants' responses to be sufficiently similar. Reviewing the results on a combined/group level is therefore statistically justified. Subsequently, a score for each TMS subscale was be retrieved by averaging the participants' responses. These scores reflect the extent to which the subscales are developed according to the participants' perceptions. The research of Lewis (2003), divides these scores by three ranges. Considering the five point Likert scale, the ranges were interpreted as follows: low range scores (1.67 or lower), midrange scores (1.67 – 3.34) and high range scores (3.34 or higher). Low range scores reflect that some or all members review the subscale as poorly developed. A midrange score implies inefficiency of the subscale and a high range score indicates a well developed subscale.

For the analysis of the open-ended questions, coding schemes were composed (see Appendix 3). As a result, the coding schemes contained the three components (specialization, crediblity and coordination) and various obstacles in relation to knowledge retention (lack of sharing knowledge, competence-based trust, motivation, top management support) (Lewis, 2003; Liebowitz, 2009) (see Table 5, Appendix 3).

Essential types of knowledge and/or skills. The open-ended questions regarding the identification of the essential types of knowledge and/or skills included mentioning of similar types of knowledge and skills. Therefore, one coding scheme was developed. This included the types of knowledge and/or skills as mentioned by Alexander, Schallert and Hale (1991) Alexander and Judy (1988), Bazerman (1985) and Glaser (1984) (see Table 6, Appendix 3).

Knowledge related problems. For the analysis of the open-ended questions that aimed to identify possible knowledge related problems, coding schemes were composed. The coding schemes contained the essential types of knowledge and/or skills and possible expected issues (see Table 7 and Table 8, Appendix 3). Two more coding schemes were developed in order to analyse the open-ended questions that were asked in preparation for phase 2. These remaining coding schemes (see Table 9, Appendix 3) contained preconditions ((senior)management support, communication, knowledge sharing, incentives, time and cost) inspired by the research of Liebowitz (2009), Martensson (2000), Martins and Meyer (2012), Nadali, Nosratabadi and Pourdarab (2011) and Wu and Lee (2007) (see Table

8, Appendix 3). Furthermore, personalization and codification solutions based on the research of Liebowitz (2009) were included (see Table 10, Appendix 3).

4. Results Phase 1: Perception of the Employees

Within this chapter the results of phase 1 are discussed. Firstly, the presence of TMSs as perceived by the employees will be discussed. Secondly, the essential types of knowledge will be displayed. Thirdly, results of the perception of the employees on possible expected issues and knowledge at risk of getting lost will be provided. Furthermore, results of the questions that were asked in preparation for phase 2 will be discussed and an overall conclusion will be given.

4.1 Presence of TMS

The first research question aimed to study the presence of TMSs within the organisation and the extent to which the TMSs were present, or not. The individual group member TMS scale responses were averaged and grading of the subscales was analysed. The results displayed the highest score for credibility (M = 3.87, SD = .74), followed by specialization (M =3.65, SD =.70) and coordination (M = 2.93, SD = .75). Both the credibility and specialization scores could be regarded to as high range scores. The coordination score could be considered a midrange score. To calculate the correlation coefficients, a test of normality was conducted. The Shapiro-Wilk test confirmed non-normality for each subscale; specialization (W = .94, p = .02), credibility (W = .93, p = .01) and coordination (W = .95, p = .04). This test was chosen over the Kolmogorov-Smirnov test, since it was more appropriate considering the size of the sample (Öztuna, Elhan & Tüccar, 2006). Based on the results of the Shapiro-Wilk test, Spearman's rho correlation coefficients were calculated. The results showed a non-existent and insignificant correlation between specialization and coordination ($r_s(44)$ = -.102, p = .511). This was also concluded for the correlation coefficients and significance between specialization and credibility ($r_s(44)$ = .135, p = .381) and credibility and coordination ($r_s(44)$ = .172, p = .264).

Descriptive analysis of the grading of the subscales based on personal experience displayed the highest average score for the credibility subscale (M = 7.36, SD = .96), followed by the specialization subscale (M = 7.22, SD = 1.31) and lastly the coordination subscale (M = 6.39, SD = 1.88).

The retrieved results indicate that the participants generally agreed on the perception that their team possesses a wide range of knowledge areas (specialization). The score for credibility revealed that the majority of the participants agreed on the perception of being able to rely on each other's expertise. Therefore, specialization and credibility were generally perceived as present. Consequently, this indicates the presence of TMSs. However, its functioning could be improved. The results displayed a relatively lower score for coordination.

This implies that the present TMSs may be inefficient and the participants' perception towards cooperation within their team could be questioned.

The employees were given the opportunity to elaborate on their grades in order to gain a deeper understanding regarding the TMSs and/or reason(s) why specific subscales scored low. 18 out of the 44 participants (40.90%), provided an explanation. In the majority of these explanations, 11 out of 18 (61.11%), coordination was mentioned. These explanations were mostly negatively formulated with respect to coordination and comments such as: "Coordination is bad, because people often look at each other and assume the other does the task without consulting first" and "We could improve on coordination, but this is something the team is responsible for and not just one person" were made. With regard to the TMS scores and the grading of the components in which coordination scored lowest, the explanation could be found in the negative responses. In comparison, specialization was mentioned by 6 out of 18 (33.33%) participants in a positive context. Credibility was also regarded to as positively present by 2 out of 18 (11.11%) participants.

Interestingly, the results also revealed obstacles in relation to knowledge retention and TMSs. The obstacles that were mentioned in relation to TMSs were competence-based trust and lack of knowledge sharing. An example of a typical comment identifying a competence-based trust barrier was: "People often reason from their own expertise and trust is something that needs to grow within every project, sometimes this does not happen". This explanation could imply that employees mainly rely on their own expertise and do not explore or trust a colleagues' expertise within a project. An example of a justification that could represent the lack of knowledge sharing barrier would be: ''Employees from different establishments work as separate islands''. This explanation implies that knowledge might not be shared due to the so called 'separate islands' or silos.

Competence-based trust and lack of knowledge sharing are important factors within TMSs. After all, trust in each other's expertise and sharing this expertise, hence knowledge and skills, in TMSs are built. However, the credibility score was highly ranged. This indicates did indicate that participants agreed on the perception of being able to rely on each other's expertise. Therefore, these results could be considered contradictive.

4.2 Essential Types of Knowledge and/or Skills

The second research question was: "What type(s) of knowledge and/or skill is essential for an employee's performance of their job functions?". In order to be able to explore the essential type(s) of knowledge and/or skill for the employees and thus organisation's functioning, several questions were posed.

It was asked how often employees require a colleague's expertise in order to execute certain tasks. It appeared that a large majority of the participants (N=42) need a colleague's expertise in order to perform certain tasks. The majority of these participants, 15 out of 42 (35.71%), meet two to three times a week with this particular colleague to make use of this expertise.

Another open-ended question was asked concerning which type of expertise is mostly required during the meetings with colleagues. Results indicated that 31 out of 37 participants (83.78%), used expertise on specific domain knowledge during those meetings. The domains that were most frequently mentioned were research skills by 8 out of 29 participants (27.59%), secondly ICT knowledge by 7 out of 29 participants (24.14%), and lastly educational knowledge by 5 out of 29 participants (17.24%). Within these domains, skills concerning data analysis, knowledge on scientific research, knowledge on the technology of ICT systems and knowledge on educational resources were mentioned most often.

The last open-ended question that was asked regarded the type of expertise that would mainly be lost if/when the employee would leave the organisation. Results exhibited a concern about a loss of specific domain knowledge, as this was mentioned by 17 out of 37 participants (45.95%), who answered this question. Within these domains, research skills, mentioned by 8 out of 37 participants (21.62%), and ICT knowledge, mentioned by 7 out of 37 participants (18.92%), were mentioned by a majority as well as project-specific knowledge, by 5 out of 37 participants (13.51%).

4.3 Knowledge Related Problems.

This section aimed to provide an answer on the following research question: "What knowledge related problems do employees expect to arise, or not, when a colleague would leave the organisation?". In order to answer this research question, the overall view of the employees on knowledge retention was mapped. The results showed that the majority of the employees knows what conceptual knowledge retention entails (93.20%). Additionally, most employees acknowledge knowledge retention as something the organisation could benefit from (77.00%). The current state of knowledge retention is generally described as introductory (34.10%), but growing (38.60%). However, the majority of the participants (59.10%) did assess knowledge retention within the organisation as inadequate.

Results of the open-ended component of this question concerning whether employees expect problems when/if they would ever leave the organisation displayed that a vast majority of the respondents (68.20%) did not expect any problems. The open-ended component of this question gave participants the ability to provide explanations on why they would or would not expect any problems if they would ever leave the organisation.

Explanations that were given included: ‘‘Perhaps there would be some problems regarding my own projects but never nationwide, at best it would not be executed as efficient’’ and ‘‘Problem is a strong word, but it is not convenient to keep reinventing things or contacts’’.

The remaining participants (31.80%), did mention expected organisational issues concerning certain types of domain knowledge and skills. For example, ICT knowledge and sociocultural knowledge were mentioned as follows: ‘‘I expect problems concerning knowledge of the ICT systems’’ and ‘‘I expect problems with knowledge on social networks and knowledge of the client’’. The biggest issues were expected with knowledge on clients and networks within the organisation. Within the domain of ICT, it was mentioned that specific knowledge and skill of certain technology and the ICT systems, could potentially disappear.

4.4 Preparation Phase 2: Selecting a Knowledge Retention Strategy

In preparation of phase 2, the participants were requested to answer two open-ended questions. The first question concerned preconditions the organisation should meet in order to stimulate knowledge retention. 35 out of 44 participants (79.55%) provided an answer. The results displayed the preconditions senior management support (11 out of 35 participants) and knowledge sharing (10 out of 35 participants) as the most frequent mentioned preconditions, with percentages of 31.43% and 28.57% in the order given. Communication and time were also mentioned often by 22.86% of the participants (8 out of 35). Of lessor importance was the precondition of cost, since this was only mentioned once.

The second question regarded precautions the organisation should take against the possible loss of knowledge when employees would leave the organisation. The majority of the participants, 30 out of 44 (68.18%), provided an answer regarding this issue. The majority of the participants, 8 out of 30 (26.67%), considered providing enough time for knowledge retention and knowledge sharing as two crucial aspects. Additionally, senior management support was mentioned by 7 out of 30 participants (23.33%) and communication by 5 out of 30 participants (16.67%). Moreover, codification and personalization solutions were both mentioned four times along with recommendations such as timely replacement and creating clear policy on retaining knowledge, for example: ‘‘there should be a solid, long term plan for employees that will be leaving the organisation’’. The results that were retrieved from these two questions will be used in the process of selecting a strategy within phase 2.

4.5 Conclusion Phase 1: Perception of the Employees

The goal of the first phase of this research was firstly, to explore the presence of TMS within the organisation. Secondly, the essential types of knowledge and/or skills for an employee's performance of their job function. Lastly, the possible expected knowledge related problems due to a departure within the organisation.

Presence of TMS. The results demonstrated that functioning TMSs were present within the organisation where credibility scored highest and coordination lowest. Therefore, it could be stated that the efficiency of the TMSs could be improved. The obstacles that were discovered regarding TMSs were lack of knowledge sharing and competence-based trust. The presence of these obstacles seem to contradict the presence of TMSs within the organisation. There is also a possibility these obstacles could prohibit the optimal retention of knowledge as well as improvement upon the existing TMSs.

Essential types of knowledge and/or skill. Analysis of the results displayed that a vast majority of the participants would consider domain knowledge as the most essential type of knowledge within the organisation. Within these domains, research skills, ICT knowledge and educational knowledge were most frequently mentioned in relation to the knowledge and skill that is largely required. Interestingly, the type(s) of knowledge and/or skill that have a potential risk of causing the most impact to an organisation also appeared to be domain specific knowledge. Based on these results it could be stated that the type of knowledge and/or skill that is at risk of causing organisational impact would be domain knowledge.

Knowledge related problems. Results showed that according to the participants, knowledge retention at this particular organisation is considered to be inadequate. Nevertheless, the participants did recognize that knowledge retention is something the organisation could benefit from. Interestingly, the majority of the participants did not expect the organisation to encounter problems when/if they would leave the organisation. This seems to contradict the previous mentioned results. However, it was expected that, based on the lack of knowledge retention, projects and/or tasks would not be executed as efficiently and qualities such as creativity would be missed. A few participants did mention expected organisational issues concerning sociocultural knowledge and that certain types of domain knowledge such as ICT knowledge would create an issue. This would also contradict the previous results concerning the type of knowledge that would be essential. Here it is acknowledged that, not only domain knowledge, but also sociocultural knowledge could possibly also create an issue.

Phase 2:
Selecting a knowledge retention strategy

5. Theoretical Framework Phase 2: Selecting a Knowledge Retention Strategy

The theoretical framework of phase 2: selecting a knowledge retention strategy focuses on several topics. Firstly, the concept of knowledge retention strategy will be briefly repeated. Secondly, a list of scientific criteria for selecting a suitable knowledge retention strategy will be composed by using existing literature and the results of phase 1. Lastly, a selection of suitable knowledge retention strategies will be presented based on the list of scientific criteria. Subsequently, these results will be discussed during a focus group study which ultimately leads to the selection of a knowledge retention strategy for the participating organisation.

5.1 Knowledge Retention Strategy

As mentioned in the first phase of this study, a knowledge retention strategy is used to give employees insight in what types of knowledge would be essential to retain and how to retain these, based on a set of guidelines (Liebowitz, 2009). One of the key issues in order for knowledge retention within an organisation to succeed, is to embed the knowledge retention activities within the daily routines of the employees from the first day of employment. In this way, an organisational knowledge base can be built and possible surprises, in case an employee decides to leave, will be minimized (Liebowitz, 2009).

5.2 Selecting Criteria for a Suitable Knowledge Retention Strategy

In order to select a suitable knowledge retention strategy, a tool for evaluating any existing knowledge retention strategies with regard to suitability within the organisation is required (Wu & Lee, 2007). Therefore, a list of criteria, as a tool to evaluate knowledge retention strategies, was composed. This list is based on the results derived from the first phase of this study and through researching the existing literature. The list encompasses the basic qualities of a knowledge retention strategy as stated in the literature. This includes the type of strategy and activities that could be applied within such a strategy (Liebowitz, 2009; Nadali et al., 2011; Pourdarab et al., 2011; Wu & Lee, 2007). The list also includes mapping of different types of knowledge and identifying backup expertise (Liebowitz, 2009). Furthermore, credibility of the retained knowledge needs to be ensured in order to enable sustainability (Liebowitz, 2009).

The first phase of this study disclosed specific preconditions that could to be taken into account by the participating organisation, when implementing a knowledge retention

strategy is desired. For that reason, these preconditions are included in the list of criteria. The criteria for assessing the most suitable knowledge retention strategy will be discussed in a more detailed manner below.

Type of strategy. The first criterion on the list involves the most effective type of knowledge retention strategy. The literature describes that a dynamic knowledge retention approach, with a focus on; codifying, reusing knowledge and sharing interpersonal experiences, was identified as the most effective type of knowledge retention strategy (Nadali et al., 2011; Pourdarab et al., 2011; Wu & Lee, 2007). Evidence suggests that the main focus should be on a system-oriented approach, which focuses on codifying and reusing knowledge, rather than a personalized, or human-oriented, approach. The personalized approach puts the emphasis on sharing interpersonal experiences, and is considered of secondary importance within a dynamic knowledge retention approach (Wu & Lee, 2007).

Activities. Liebowitz (2009) describes that a knowledge retention strategy should be integrated within daily acitvities, that are initiated upon the hire date. In this manner, the organisation will not only experience less knowledge loss, it could also provide the opportunity to build or improve a solid knowledge area. Therefore, integrating activities is included as the second criterion. Aside from the acknowledgement that knowledge retention activities should be embedded in daily activities, such activities should also possess the ability to retain both successes and failures (Liebowitz, 2009). In this way, on a long-term basis the organisation could assess what works and what does not. If it does not work, it should be shed from practice and not repeated.

Mapping knowledge and identifying backup expertise. According to the research of Liebowitz (2009), an effective knowledge retention strategy should be able to map the type(s) of knowledge employees posses, as well as to identify backup expertise. By mapping knowledge and identifying backup expertise, the organisation could get an idea of the knowledge that might be lost and its potential impact on the success of the organisation (Liebowitz, 2009). Mapping knowledge requires identification of the types of knowledge and/or skills that are present and essential for the organisation. The presence of TMSs can confirm the ability of employees to do so. As this is also a form of knowledge sharing, it can enable the development of the components of a TMS (Edmondson et al., 2007). However, the results of the first phase of this study displayed knowledge sharing to be an obstacle in relation to the retention of knowledge and TMSs. Therefore, preconditions need to be identified and addressed.

Credibility of knowledge. A suitable knowledge retention strategy should focus on retaining knowledge in a credible way. In order to do so, besides having a structured way of retaining knowledge, it is important to determine what credible knowledge is (Liebowitz,

2009). Although the credibility score was highly ranged, competence-based trust was indicated as an obstacle for TMSs. Therefore, the credibility of knowledge between individuals or team members needs to be taken into account and if needed, addressed when choosing a strategy. An example would be to appoint an expert review panel which discusses and reviews the knowledge that needs to be retained for organisational productivity and success (Liebowitz, 2009).

Preconditions. The preconditions that were most frequently mentioned were (senior)management support, knowledge sharing, communication and time. Additionally, competence-based trust, as well as knowledge sharing, were mentioned as barriers towards the required components of TMSs in order to confirm its presence.

Within an organisation, a knowledge retention strategy is usually implemented and promoted by the management. This requires (senior)management support and communication (Martensson, 2000; Martins & Meyer, 2012). Additionally, (senior)management should encourage a culture of knowledge sharing, which requires trust (Martensson, 2000). A culture of knowledge sharing could also stimulate the development ofthe required components of TMSs (Lewis, 2003). Therefore, when an organisation would choose to implement a knowledge retention strategy, (senior)management support, communication and creating a knowledge sharing culture would be preconditions to overcome before deciding on implementing a knowledge retention strategy.

An interesting obstacle that came up during phase 1, was a concern over the time that would be required for active participation in knowledge retention. Therefore, the time needed for the retention of knowledge should be minimized and able to be formally embedded within regular work activities (Martensson, 2000; Nadali et al. 2011; Wu & Lee 2007). This should be given significant consideration when selecting a strategy. As a result, this precondition was included in the third criterion.

Keeping costs under control is also important for most organisations (Martensson, 2000; Wu & Lee 2007; Nadali et al. 2011). Although this was only mentioned once by the employees, it is a precondition to be taken into account. Nevertheless, the costs of a knowledge retention strategy are dependable on the type of strategy that would be chosen in relation to, for example, the extent to which technology is required.

5.3 Selection of Knowledge Retention Strategies

In order to select a knowledge retention strategy that could be applied within the organisation, literature research has been conducted by using the list of criteria as described above. This resulted in the selection of three knowledge retention strategies that were most suitable for the participating organisation. Other strategies that were tested by using the list

of criteria were mentoring and apprenticeship as a knowledge retention strategy, the phased retirement knowledge retention strategy and the use of knowledge portals as a knowledge retention strategy (Chigada & Ngulube, 2016; LaMonica, 2001; Liebowitz 2009; Liebowitz et al., 2007; Nonaka, 2007). These strategies did not meet the same, or a higher, amount of criteria as the selected strategies did. Besides the criteria, the selected strategies include aspects of these strategies. Therefore, these knowledge retention strategies were excluded from this study.

Table 1 displays a summary of the criteria that were met, or not, by the knowledge retention strategies as described in the aforementioned, by using either the symbol "✓" for criteria the strategy did meet, and the symbol "X" for criteria the strategy did not meet.

Communities of practice knowledge retention strategy. The first strategy is the ''communities of practice knowledge retention strategy''. This strategy focuses on the retention of expert knowledge and skill, and uses specific formal roles with one leader. This leader sets the direction for the community (Chigada & Ngulube, 2016; Hargreaves & Gijbels, 2011; Liebowitz, 2009).

Type of strategy. The ''communities of practice knowledge retention strategy'' contains human-oriented activities such as storytelling and mentoring (Chigada & Ngulube, 2016; Liebowitz, 2009). The strategy is still mainly focused on system-oriented knowledge retention activities, such as creating knowledge materials (wiki's, weblogs and podcasts). Therefore, this strategy could be regarded to as a dynamic knowledge retention strategy and so the criterion "type of strategy" is met (✓).

Activities. The activities as mentioned earlier, possess the ability to be embedded on a regular basis and within daily activities, for example: mentoring or storytelling during lunchtime. Furthermore, within this strategy, the system-oriented activities (creating wiki's, weblogs and podcasts) focus on including minority and majority opinions which could be beneficiary on a long term basis (Liebowitz, 2009). Based on these aspects, the criterion "activities" is met on both human-oriented and system-oriented level (✓).

Mapping knowledge and identifying backup expertise. Specific types of knowledge could be mapped by setting this as a specific goal within a community of practice. However, the strategy does not explicitly focus on identifying backup expertise and mapping knowledge within this strategy is not specifically mentioned. The strategy does hold the possibility to map knowledge, but it is something the organisation should be made aware of. Therefore, the criterion "mapping knowledge" is met, (✓), and "identifying backup expertise" is not met (X).

Credibility of knowledge. The strategy uses a formal review panel within a community, in order to evaluate the credibility of the retained knowledge. In addition, there is

a focus on codification guidelines for the creation of knowledge materials. Therefore, this criterion is met (✓).

Preconditions. Active participation in a COP would take up additional time since every participant has a certain role to maintain. Scheduling time for the creation and review of knowledge materials is also highly important with regard to creating sustainability. However, there are also activities that could be performed as intensively as is considered necessary and do not necessarily require additional scheduled time, an example of such activities would be mentoring new employees. Certain applications of this strategy may require additional funding depending on whether the use of technology is preferred by the organisation. Concluding, it could be stated that the precondition "time" is met with regard to certain activities such as mentoring, but there are also activities that do require additional time, such as active participation in a COP, therefore this criterion could be considered both met (✓) and not met (X). The precondition "cost" could be regarded to as not met, since the strategy may require funding (X).

SECI knowledge retention strategy. The second strategy is the ''SECI (Socialisation, Externalisation, Combination, Internalisation) knowledge retention strategy'', which focuses on input derived from employees and management. Therefore, it ensures a knowledge flow from different directions. This increases the intention towards the retention of knowledge (Liebowitz, 2009). The strategy is based on the theory of knowledge creation and the belief that the retention of knowledge is an ongoing process (Nonaka & Takeuchi, 1995; Nonaka, Toyama & Konno, 2000). Therefore, it consists out of different phases and contains multiple activities.

Type of strategy. The strategy focuses on both human-oriented and system-oriented knowledge retention, with activities such as peer coaching and the use of knowledge portals (Chigada & Ngulube, 2016; Liebowitz, 2009; Rietveld & van Rooijen-Mutsaers, 2012; Weber, Gunawardena, & Abraham, 2008). Therefore, it can be classified as a dynamic knowledge retention strategy and this criterion is met (✓).

Activities. A number of activities within the ''SECI knowledge retention strategy'' could be formally embedded on regular basis, within daily activities. A few examples of these activities are peer coaching or the creation of knowledge materials (documentation). However, human-oriented activities such as business games and intercompany drinks are usually not able to be embedded within daily activities (Scannell, 2010). Furthermore, there is no explicit focus on the retention of both successes and failures. Therefore, this criterion could be considered both met concerning system-oriented activities (✓) and not met concerning human-oriented activities (X).

Mapping knowledge and identifying backup expertise. The strategy provides the opportunity to map knowledge, through the creation of knowledge materials within a knowledge portal. Knowledge portals are databases and contain knowledge materials on various areas (Liebowitz, 2009). Within knowledge portals, knowledge materials are stored and shared preferably while they are being developed (Chigada & Ngulube, 2016; Liebowitz, 2009; Weber et al., 2008). Sharing knowledge materials while these are being developed, in contrast to waiting until the materials are completed, stimulates the retention of knowledge among employees (Weber et al., 2008). Even though there is no explicit focus on mapping knowledge areas, the strategy does hold the possibility to map knowledge, but it is something the organisation should be made aware of. Therefore, the criterion "mapping knowledge" is met, (✓). However, there is no succession planning or identification of back up expertise. Therefore, this criterion is not met (X).

Credibility of knowledge*.* Knowledge is retained in a valid way by developing guidelines on codifying knowledge and continuously reviewing the created knowledge materials (Weber et al., 2008). This means that this criterion is met (✓).

Preconditions. Activities such as intercompany drinks, business games and the creation of knowledge materials could take up additional time of the employees. Scheduling time in order to execute these activities would be highly important for a sustainable use of this strategy (Liebowitz, 2009). Therefore, the precondition "time" was not met for all human-oriented activities. This strategy could be considered, however, more of a "way of life" and once embedded, a lot of aspects would be performed in regular activities. Therefore, this criterion could be considered both met and not met, (✓) and (X). Sharing and storing knowledge materials requires a digital platform which could also require additional funding, depending on the preferences of the organisation. Therefore, this criterion is not met (X).

Leaving expert debrief strategy. The third and last strategy is the ''leaving expert debrief strategy''. This strategy focuses on mapping knowledge and the creation of a knowledge portfolio (Hofer-Alfeis, 2008).

Type of strategy. The strategy focuses on both human-oriented and system-oriented knowledge retention activities, through mapping current and future high impact knowledge areas (Hofer-Alfeis, 2008). Within this strategy, activities such as lectures, organising workshops and creating a knowledge portfolio are used to retain knowledge. It could be considered a dynamic knowledge retention strategy (✓).

Activities. Activities such as organizing a workshop, creating a knowledge portfolio and mapping knowledge areas, take time and are usually not conducted on a regular basis. However, creating wiki's or weblogs can be created on regular basis and could be embedded

within daily activities. Therefore, the system-oriented activities could be formally embedded (✓), but the human-oriented activities could not (X).

Mapping knowledge and identifying backup expertise. The ‘‘leaving expert debrief strategy’’ focuses explicitly on mapping knowledge and includes a successor within the process. This means that the criterion is met (✓).

Preconditions. The ‘‘leaving expert debrief strategy’’ consists of executing eight steps. Each step takes time that might not be readily available. Thereby, templates are used that require additional instruction so that they can be used properly. There are also multiple activities, such as lectures and creating weblogs, that need to be conducted in order to create a knowledge portfolio properly. The timeframe that would be optimal for effective application of this strategy is also unclear. The time an employee has, to apply the ‘‘leaving expert debrief strategy’’ is limited. The strategy is also only applied when an employee has decided to leave the organisation. Concluding, it could be stated that the precondition “time” is not met (X). Certain applications may also require additional funding, depending on whether technology is preferred by the organisation. Therefore, the precondition cost may not be met (X).

Credibility of knowledge. The knowledge areas that are identified by the organisation, as mandatory for its operations, is compiled in collaboration with a manager, moderator and successor. Therefore, this becomes knowledge which is stored in a credible way (✓).

Table 1

Summary of the selected strategies according to the list of criteria

Criteria	**Communities of practice knowledge retention strategy**	**The SECI knowledge retention strategy**	**Leaving expert debrief strategy**
Type of strategy	✓	✓	✓
Activities:			
System-oriented	✓	✓	✓
Human-oriented	✓	X	X
Mapping domain knowledge	✓	✓	✓
Identifying backup expertise	X	X	✓
Credibility of knowledge	✓	✓	✓
Preconditions:			
Time	✓X**	✓X**	X
Cost	X*	X*	X*

X: the strategy may cost additional funding, depending on the preferences of the organisation.*
*✓X**: some of the activities can be embedded on a daily basis, but other activities require additional time.*

6. Method phase 2: Selecting a knowledge retention strategy

The second phase of this study concerned selecting a suitable strategy for effective knowledge retention. This phase focused on how the selected strategies were perceived among the employees. This consisted of a single focus group study in which the selected knowledge retention strategies were discussed. Within the organisation, it was not possible to conduct more than a single focus group study, with more than three participants. Therefore, the sample size could be considered too small. However, the sample did contain homogeneous aspects while maintaining sufficient variation on opinions, so meaningful insights could be retrieved.

6.1 Participants

For the second phase of this study, participants for the focus group were recruited from the pool of employees that participated in the questionnaire. There were three participants present during the focus group study, two of these were female (66.66%) and one male (33.33%). The focus group participants were acquainted, had worked together in the past and were from the same organisation. Therefore, the focus group sample contained homogeneous aspects. However, participants that were recruited did have different roles within the organisation which allowed for sufficient contrast in opinions. Prior to the focus group discussion, the participants were requested to sign an informed consent document.

6.2 Instrumentation

The main goal of the focus group study was to answer a question concerning the three selected strategies: ‘’What strategy do you consider as the most suitable for the organisation?’’. This could also be referred to as a perception poll. According to McKenney and Reeves (2012), a perception poll aims to collect information on the perceptions of employees that are obtained through a focus group discussion. Within the perception poll, feasibility and potential effectiveness could be evaluated within a focus group study by a critical discussion.

The questions that were presented within the focus groups, were inspired by the research of McKenney and Reeves (2012) and the composed list of criteria. The questions that were asked complemented the list of criteria as they discussed advantages and disadvantages of the strategies and its activities. It was also discussed whether the essential

types of knowledge could be retained and what preconditions were applicable to the organisation, in order for the strategies to succeed.

The questions were drafted in Dutch, to prevent misunderstanding due to possible language barrier, and posed by the researcher during the focus group study. This means that the researcher was present as a facilitator during the focus group. The focus group study aimed to collect opinions on all three strategies, which at some point converged in consensus on the most suitable strategy. Additionally, employees were asked if their opinion at the end of the discussion deviated from their initial opinion prior to the focus group discussion. The discussion was recorded using an IPhone 7. The document as presented to the focus group can be found in Appendix 4.

The document contained a short introduction, including contact information of the researcher, so that the participants had the opportunity to ask questions. The document also contained short explanations of the theoretical background to understand the terms that are used to describe three strategies. The explanations were carefully drafted, based on the literature research. This was translated to Dutch in order to prevent misunderstanding due to a potential language barrier. This translation was proofread by a second translator and native speaker. The document was sent by e-mail to all participants two days prior to the focus group discussion.

6.3 Data Analysis

The qualitative data of this study existed of audio recorded data. The data was transcribed as it related to the questions asked. Conclusions from the transcribed data were drawn per person per question. In order to clarify the way data was transcribed, an example to illustrate data that has been included and data that has not been included: “working more bottom up instead of top down would be an advantage” was included since it contained an opinion related to the question on disadvantages and advantages, whereas: ‘‘Especially now, since people are leaving, we notice that we could really benefit from using a strategy for knowledge retention”, was not included since it is nonrelated to the questions that were asked.

During the focus groups the researcher was present as the facilitator. It was made sure that the researcher did not state opinions or make any statements concerning the strategies or steered the conversation in any specific direction. This was confirmed by listening to the recording several times, in the presence of, and by, fellow students.

7. Results phase 2: Selecting a knowledge retention strategy

This chapter will discuss the results that were obtained in the second phase of this study, and focused on the research question: ‘‘What knowledge retention strategy could be applied within the current state of the organisation and how would this strategy be perceived among employees if implemented?’’ The focus group study results will be presented, followed by a discussion of the preferred strategy.

7.1 Focus Group Study

The results derived from the focus group study indicated a clear and unanimous preference for the communities of practice knowledge retention strategy. In general, each strategy had its advantages and disadvantages, concerns/missing aspects and obstacles (preconditions or barriers) in relation to knowledge retention. Table 2 provides an overview of the retrieved results.

Table 2

Focus group study results

Focus group results	**Communities of practice knowledge retention strategy**	**The SECI knowledge retention strategy**	**Leaving expert debrief strategy**
General impression	Valuable and clear	Reminds of the 70:20:10 model (McCall, 1988)	Time pressure
Advantages	• Input from both top-down and bottom-up is possible • Multiple participants and not dependent on one person’s motivation • Continuous knowledge retention • Participation in COP comes with a certain status, people would take pride in participating	• Specific activities • Continuous knowledge retention	• Tacit knowledge • Appreciation for departing employee Based on needs of successor

Disadvantages	• Change in participants COP • Strategy provides room for a community to differ in formality	• Complex • Abstract • Based on motivation	• Pressure time due to limited time • Knowledge retention is a single occurrence • Not always successor already present
Retention of essential types of knowledge	Domain knowledge as well as procedural and sociocultural knowledge	Domain knowledge as well as procedural and sociocultural knowledge	Less domain knowledge, more sociocultural and procedural knowledge
Concerns	• How to deal with change in participants • Sustainability long term • Representing needs from colleagues vs. individual needs participants COP	• How to divide the different roles • How to use the retained knowledge • Sustainability long term	• Limited time may cause loss of knowledge • Costs a lot of time for the supervisors
Obstacles	• (Senior)management support • Time*	• (Senior)management support • Time* • Knowledge sharing	• (Senior)management support • Time* • Communication

Time: as provided by the organisation to retain knowledge, not the same as "time" in the list of criteria, which concerns the possibility of embedding activities in routines on a regular basis.*

One of the biggest advantages of the COP knowledge retention strategy that were mentioned, was the clarity of the strategy and the opportunity for continuous knowledge retention throughout the entire tenure of an employee. The opportunity to provide input from the front-line worker instead of a top-down approach was also considered a valuable aspect. As the organisation is currently maintaining a top-down structure. However, guidelines on formality should be set and there were some concerns regarding sustainability and employee turnover: ''how would we deal with employees that are leaving the community or a change of employees within the community with regard to sustainability?''. It was also mentioned that a good use of the communities of practice knowledge retention strategy would likely save the organisation time and money in the long-run.

The remaining two strategies were not selected as the preferred strategy, for a number of reasons. The “leaving expert debrief strategy” did not provide the opportunity for continuous knowledge retention. This was mentioned as one of the biggest disadvantages of the strategy. Another disadvantage that was pointed out, was the limited time before the employee departs. In this way, the retention of knowledge becomes a hasty decision and a considerable loss of knowledge would occur when applying this strategy. The “SECI knowledge retention strategy”, was perceived as too abstract and practical guidelines in order to apply this strategy were missing. As a result, the focus group questioned whether this strategy could be actively applied and sustainability could be ensured.

In addition to reviewing and discussing each strategy, participants were requested to rank the obstacles based on applicability within the organisation. The preconditions that were considered most important to the organisation were time (i.e. as provided by the organisation in order to retain knowledge), communication and support from (senior)management. Furthermore, barriers that were mentioned were support from (senior)management, motivation for sharing knowledge and lastly, lack of knowledge sharing at present. These obstacles were considered essential to overcome and a plan on formality and sustainability of the COP knowledge retention strategy within the organisation is needed to be prepared.

7.2 COP Knowledge Retention Strategy and TMS

The results of phase 1 confirmed the presence of TMSs within the organisation. The efficiency of the TMSs, however, did provide room for improvement as coordination scored lowest. For that reason, setting up and creating sustainability for an effective use of the COP knowledge retention strategy may be challenging for the participating organisation.

An aspect that was also considered of importance regarding the COP knowledge retention strategy and TMSs, is team continuity. Since there were a large number of employees that were leaving, the organisation could benefit from implementing the COP knowledge retention strategy when the transition is completed.

7.3 Overall Conclusion Phase Two: Selecting a Knowledge Retention Strategy

The goal of this phase of the study was to select a knowledge retention strategy by using the list of criteria and a focus group study. The focus group explored the knowledge retention strategies and discussed, and selected, a knowledge retention strategy.

The members of the focus group had a unanimous preference for the “communities of practice knowledge retention strategy” to aid the organisation in retaining knowledge. Furthermore, it was considered to be a clear and ready to use strategy and could be up and

running quickly. The other strategies were discarded due to a number of reasons. The "leaving expert debrief strategy" does not provide continuous knowledge retention. The "SECI knowledge retention strategy" was regarded to as too abstract and the lack of practical guidelines could not be overlooked.

The barriers and preconditions that were repeatedly disclosed by the focus group study involved receiving (senior)management support and good communication, as well as time needed to implement the knowledge retention strategy and to perform knowledge retention activities within the organisation.

As the coordination component scored lowest, it may be more difficult for the participating organisation to implement and sustain the COP knowledge retention strategy in an effective way.

8. Discussion

This discussion section includes a brief overview of the research conclusions, a critical review of this study and finally, insights into the practical implications of knowledge retention within organisations and recommendations for future research.

8.1 Overview conclusions

Phase 1 studied the perception of employees on knowledge retention. The results from this inquiry demonstrated that TMSs were present within the organisation, and the essential type(s) of knowledge and/or skill consisted of specific types of domain knowledge. The domains mentioned included ICT knowledge and research skills. Benefits of the retention of knowledge were also recognized, however there were no expected issues due to the departure of an employee.

The results of phase 2 displayed a unanimous preference for the “community practice of knowledge retention” strategy. This was among other factors due to its clarity and the opportunity for continuous knowledge retention.

8.2 Review

Presence of TMS (phase 1). The presence of TMSs within an organisation in relation to knowledge retention can confirm the ability of identifying types of knowledge that are present. A TMS can therefore contribute to the ability of identifying types of knowledge that are essential for an organisation’s functioning (Liebowitz, 2009; Martins & Meyer 2012; Nonaka 1994). This is crucial in order to achieve knowledge retention within an organisation and to be able to apply a knowledge retention strategy properly. The results of this study showed that TMSs were present within the organisation, but their efficiency could be improved. This presence, however, indicates awareness among employees of their colleagues’ knowledge and skills (Ellis et al.,2007). It also indicates that the creation of future knowledge can be facilitated and knowledge voids can be recognized and mitigated (Cascio, 1993; Fisher & White, 2000; Nonaka, 1994; Lewis, 2003; Schmitt et al., 2011).

The credibility score was found to be the highest. Considering the model of Ellis et al., (2007), it could be expected that the specialization score would be highest. However, the research of Lewis (2003), states that employees within a TMS will only develop specialized knowledge, when they are able to rely on each other. Therefore, the score for credibility could not be considered as unusual. Another reason for this score being the highest could be that, there are multiple employees within the TMS whom possess the same type of expertise.

Even though the TMS holds a wide range of knowledge areas. Consequently, the specialization score may be lower than the credibility score.

The obstacles that were discovered regarding TMS, include lack of competence-based trust and the absence of knowledge sharing. However, if one considers the score of credibility, which indicates that employees were able to rely on each other's expertise, these barriers seem to contradict the presence of TMSs.

Evidence suggests that lack of competence-based trust is a crucial obstacle with regard to the development of the required components of a TMS (Robertson, Gockel, & Brauner, 2013). Lack of knowledge competence-based trust and absence of knowledge sharing are also related to each other; knowledge sharing requires competence-based trust (Robertson et al., 2013). With regard to knowledge retention, these obstacles can occur when knowledge retention has no priority within an organisation (Baguma et al., 2014; Martensson, 2000). Even though knowledge retention was not regarded to as a priority in this organisation, TMSs were found to be present.

Since these obstacles were results from open-ended questions and only 40.91% of the participants provided an explanation, it is possible that bias may have occurred and participants have exaggerated or minimized possible issues (Paulhus, 1991). Answers could have been influenced by the participant's feelings at the time of conducting the questionnaire. The open-ended questions were, however, selected from an existing questionnaire and participants signed an informed consent document prior to conducting the questionnaire ensuring anonymity. The questionnaires were anonymously self-completed and could be handed in at a specific location without the researcher present. Therefore, the chance of bias to occur may have been reduced. Therefore, the existence of these obstacles should be further looked into, since this could inhibit the presence or further development of the required components of TMSs and the ability to retain knowledge (Baguma et al., 2014; Martensson, 2000; Robertson et al., 2013).

Essential types of knowledge and/or skills (phase 1). According to the retrieved results, the essential type of knowledge for the employees' functioning is domain knowledge. The type of knowledge that has a potential risk of causing organisational impact is also considered to be domain knowledge. Research shows that if there is a shortage of specific domain knowledge and skills for a certain job function, employees may experience an immediate negative impact (Baguma et al., 2014; Cascio, 1993; Fisher & White, 2000; Schmitt et al., 2011). Considering domain knowledge as an essential type of knowledge would therefore be justifiable.

During the literature research, it was found that procedural- and sociocultural knowledge could lead to substantial changes within current structures of an organisation due to the departure of an employee (Baguma et al., 2014; Cascio, 1993; Fisher and White,

2000; Schmitt et al., 2011). It could be expected that these types of knowledge would have also been regarded to as essential for an employee's functioning. However, sociocultural knowledge was only mentioned by a few participants.

Studies show that when these types of knowledge are lost, it may lead to a decrease in the employees' problem-solving and decision-making skills, as well as general performance on a more long-term basis (Baguma et al., 2014). Consequently, the impact of this type of knowledge loss would be less noticeable for the employees directly after a departure. Therefore, it could be that the importance of the retention of these types of knowledge would be easily overlooked. This would be in line with the fact that knowledge retention, at the moment of conducting this study, was not an area of interest within the organisation. Another explanation could be that the employees are not aware of the types of knowledge are used when performing their job function (Baguma et al., 2014).

Knowledge related problems (phase 1). The literature research displays that the employees within an organisation need to recognize and acknowledge the possible loss of knowledge prior to the departure of an employee (Doan et al., 2011; Lank, 1997; Liebowitz, 2009). The results that were retrieved from the participating organisation showed that a large majority did not expect any issues, when or if, they would leave the organisation. Evidence suggests that the retention of knowledge is considered not to be a priority in many organisations (Doan et al., 2011; Liebowitz, 2009). This was also found in the participating organisation. Based on the results, it could be stated that within the organisation, issues that might arise due to the departure of the employee are generally not acknowledged prior to the departure. For that reason, knowledge retention could be regarded to as a critical challenge for the participating organisation. Especially since there are multiple employees whom are leaving the organisation (Doan et al., 2011).

A minority of the participants did expect possible issues concerning knowledge loss. These results displayed that issues were mostly expected in specific types of domain knowledge. As discussed earlier, when there is a specific type of knowledge void after a departure, employees may experience an immediate negative impact (Baguma et al., 2014; Cascio, 1993; Fisher & White, 2000; Schmitt et al., 2011).

The obstacles that were revealed in relation to knowledge retention for the preparation of phase two were (senior)management support, knowledge sharing and time. Senior management support is considered an essential aspect, in the light of recognizing knowledge retention as a critical challenge within the organisation (Martensson, 2000; Martins & Meyer, 2012). Senior management could also be held responsible for creating a knowledge sharing culture, and the facilitation of knowledge retention. An example to illustrate this facilitation would be providing the employees with a sufficient amount of time for the retention of knowledge.

As mentioned earlier, the study of Baguma et al. (2014) states that when knowledge retention has no priority, this could cause a lack of knowledge sharing in an organisation. An obstacle that was mentioned regarding TMSs, was lack of competence-based trust. Increasing competence-based trust among employees can aid the organisation in creating a knowledge sharing culture (Robertson, 2013). This could also stimulate the development of the components of TMSs (Ellis et al., 2007). In order to do so, knowledge retention needs to be recognized as an area of interest within the participating organisation (Baguma et al., 2014).

Selecting a knowledge retention strategy (phase 2). For the selection of a knowledge retention strategy, a list of criteria was composed. This list could potentially aid organisations in choosing a suitable knowledge retention strategy. The preconditions that were revealed were taken into account, as well as the presence of TMSs. The focus group study displayed a unanimous preference for continuous knowledge retention and the communities of practice strategy. This preference for continuous knowledge retention was to be expected, since employee departure can often be unpredictable. Therefore, the retention of knowledge should be integrated within daily activities from day one (Doan et al., 2011; Liebowitz, 2009).

The preferred communities of practice knowledge retention strategy is based on the theory of Lave and Wenger (Hargreaves & Gijbels, 2011), and developed as a knowledge retention strategy according to the research of Liebowitz (2009). The communities of practice approach in the field of knowledge retention is a widely used strategy (Richard et al., 2014).

In order to for the strategy to be effective and sustain, there are a few aspects that need to be taken into account, aside from formally embedding the strategy. For example, stimulating intrinsic motivation with regard to sustainability; when members within a community who share the same problem solve this together, the community is more likely to sustain (Liebowitz, 2009). Turnover within a community of practice should also be taken into account (Hargreaves & Gijbels, 2011). Knowledge attrition, due to turnover within a community, could be reduced by applying knowledge retention activities within a community of practice. Such an activity could be for example mentoring. Furthermore, evaluation of the problem-solving process is important, as well as receiving feedback on the created knowledge materials (Liebowitz, 2009).

Progress of a community of practice can also be retained by measuring community metrics (Liebowitz, 2009). This could exist out of: measuring the number of created knowledge materials sorted by author, measuring the progress of the creation of knowledge materials in percentages and the number of times the documents are used by colleagues. According to Hargreaves and Gijbels (2011), technology can be a great tool to support a

community of practice, however only using technology does not suffice. The social aspect remains important in order for the approach to succeed.

8.3 Limitations

In addition to the validated TMS questionnaire by Lewis (2003) and the questionnaires on knowledge retention according Liebowitz (2009), Robert (2011) and Rohra (2011), new questions needed to be formulated in order to achieve the goals of this study. The risk is that the validity and reliability of the questionnaire was compromised and bias due to formulation of the questions could have occurred. Therefore, the results retrieved provided an indication of the perception of the employees on knowledge retention and the questionnaire can only be used within this particular organisation.

Considering the study was conducted within one Dutch organisation, the results cannot be generalized to other organisations (Saunders, Lewis & Thornhill, 2009). However, conducting this study within one organisation did provide the opportunity to retrieve meaningful insights, since open-ended questions were included within the questionnaire and a focus group study could be conducted.

Since little resources were available within the participating organisation, a sample was selected based on convenience (Dooley, 2001). Convenience sampling can cause under or over representation of specific groups within the sample. Furthermore, the participating organisation is a large organisation with many departments. All the departments within one building were included, however other departments were not included due to availability of resources. When these departments were included, there is a possibility there would have been different outcomes. Some employees also declined to take part in this research. This could be due to work activities or doubts regarding the intentions of this study. However, did the other employees that did agree to take part in this study, participate out of kindness or out of possible frustrations/unhappiness? This also has consequences for generalizability of the results; it is unlikely that the sample taken within one building, represents the entire population of the organisation.

According to Lewis (2003) a measurement of a TMS should be based on the conceptualization of Wegner (1987) and applicable to different groups and tasks. This was accomplished by the dispersion of the questionnaire among different departments, consisting of several teams and a variety of job functions. This study was conducted cross-sectional. It would have been better to measure TMSs longitudinal in order to establish changes over time. Recognition of knowledge retention as an area of interest by senior management could have occurred in the meantime. As a consequence, obstacles such as competence-based trust and lack of knowledge sharing could have been overcome (Baguma et al., 2014;

Robertson, 2013). Resolving these obstacles could also have developed the capacity in which TMSs were present within the organisation (Ellis et al., 2007).

Studying TMSs in a longitudinal way, could have potentially resulted in a discovery of differences in perceptions of the employees on knowledge retention, and knowledge related problems. However, in the present study, due to the major transition within the participating organisation and the importance of team continuity, measuring the TMSs in a longitudinal way would have caused a biased view.

8.4 Practical implications

From the results of the questionnaire, the literature research and the focus group study, it could be stated that creating awareness among senior management on the subject of knowledge retention and the impact of knowledge attrition, would be a first step towards achieving knowledge retention within the organisation (Doan et al., 2011). The other obstacles that were revealed regarding knowledge retention and the presence of TMSs; barriers and preconditions, should also be taken into account. The most important obstacles need to be determined prior to implementing a knowledge retention strategy, when effective knowledge retention is desired within an organisation (Liebowitz, 2009; Martensson, 2000; Martins & Meyer, 2012; Nadali et al., 2011; Wu & Lee 2007).

Studying the presence of TMSs, could also aid the organisation in achieving knowledge retention. This could be done by becoming aware of the ability to identify the different types of knowledge and skills within the organisation, by confirming its presence (Liebowitz, 2009; Martins & Meyer 2012; Nonaka 1994). Identifying these types of knowledge and skills is crucial, in order to be able to identify essential types of knowledge and to achieve knowledge retention (Martins & Meyer, 2012). Additionally, there are two aspects that are required in order to identify the essential types of knowledge for the organisation's functioning. Firstly, it needs to be made sure that the employees are aware of the types of knowledge and skills they possess. Secondly, the employees should be made aware of the type of knowledge and skills the employees use for the performance of their job function (Baguma et al., 2014). When this is not the case, knowledge that is essential, but not necessarily perceived as urgent to retain since their impact is more noticeable on a long-term basis, could be overlooked.

When the communities of practice knowledge retention strategy has been put in place, attention could be paid to measuring its progress in order to ensure sustainability (Liebowitz, 2009). Furthermore, a plan for dealing with turnover could be made in order to reduce its possible effects on a community of practice.

8.5 Recommendations for future research

The widely used approach for the retention of knowledge; the communities of practice knowledge retention strategy, appeared to be the preferred strategy within the focus group study. Although a lot of research has been conducted within the field of communities of practice, it would be interesting to learn more about how the communities of practice knowledge retention strategy could contribute to the development of the components of TMSs.

The focus group study revealed that the presented strategies all had its advantages and disadvantages. Therefore, it could be studied whether the use of combined knowledge retention strategies would be effective for the retention of knowledge and/or could possibly have the potential to resolve expected issues, or the disadvantages of other strategies, within organisations. It would also be interesting to take the presence of TMSs and the obstacles that were revealed during this study into account. Perhaps the creation of a roadmap, to assist organisations in choosing a customized knowledge retention strategy, which takes TMSs into account, as well as obstacles that apply to the organisation, could be interesting to look into.

As organisations continue to disperse around the globe, the use of technology is also becoming increasingly important. Technology that connects employees continuously everywhere around the world, is an ever growing trend (Dulebohn & Hoch, 2017). According to the study of Koblas and Jackson (2008), research should be conducted in the field of geographically dispersed TMSs. In addition to traditional teams in which TMSs are formed, virtual teams also allow TMSs to form, develop and sustain when geographically dispersed (Peltokorpi, 2008). It could be studied how these TMSs can achieve knowledge retention by using a knowledge retention strategy such as the communities of practice knowledge retention strategy.

Lastly, contradicting results were retrieved regarding the capacity in which TMSs were present, as well as the barriers that were discovered. It was also found that a lack of recognition regarding knowledge retention could cause absence of knowledge sharing (Baguma et al., 2014). Knowledge sharing requires competence-based trust (Robertson, 2013). Therefore, it would be useful to study whether recognizing knowledge retention as an important asset, could as a consequence stimulate the development of the components of TMSs when the barriers lack of knowledge sharing and absence of competence-based trust apply.

The results of this study indicate that analysing TMSs are useful for the selection of a strategy for achieving knowledge retention. Obstacles were revealed and a list of criteria, that could be applied to any existing knowledge retention strategy, was composed. The insights that were retrieved, as well as the composed list of criteria, may be useful for organisations

that wish to implement a knowledge retention strategy. For example, becoming aware of the obstacles, that can apply to TMSs and knowledge retention, could aid an organisation in understanding which obstacles need to be overcome in order to achieve knowledge retention and the presence of efficient TMSs. When a knowledge retention strategy is already implemented within an organisation, but the retention of knowledge is still not achieved, these insights could also be useful. Analysing the presence of TMSs, establishing the essential types of knowledge and knowledge related problems, may not always be easily accomplished within any organisation. Still, the present study might ensure organisations that this will be able to provide meaningful insights regarding knowledge retention.

References

Alexander, P., & Judy, J. (1988). The Interaction of Domain-Specific and Strategic Knowledge in Academic Performance. *Review of Educational Research*, *58*(4), 375-404. doi:10.3102/00346543058004375

Alexander, P., Schallert, D., & Hare, V. (1991). Coming to Terms: How Researchers in Learning and Literacy Talk about Knowledge. *Review of Educational Research*, *61*(3), 315-343. doi:10.3102/00346543061003315

Argote, L., & Guo, J. M. (2016). Routines and transactive memory systems: Creating, coordinating, retaining, and transferring knowledge in organizations. *Research in Organizational Behavior*, *36,* 65-84. doi:10.1016/j.riob.2016.10.002

Baguma, S., Ragsdell, G., & Murray, I. (2014). Employees' responsibilities in a knowledge retention strategy: a Ugandan case study. *Proceedings of the 11th International Conference on Intellectual Capital, Knowledge Management and Organisational Learning*, 485-492. Retrieved from: https://dspace.lboro.ac.uk/dspace-jspui/bitstream/2134/17548/1/Employee_responsibilities_%20in_a_knowledge_retention_strategy_29_07_2014.pdf

Bazerman, C. (1985). Psysicists reading physics. *Written Communication*, *2*(1), 3-23. doi:10.1177/0741088385002001001

Cascio , W. F. (1993). Downsizing: what do we know? What have we learned? *Academy of Management Executive*, *7*(1), 57-73. doi:10.2307/4165111

Chigada, J., & Ngulube, P. (2016). A comparative analysis of knowledge retention strategies at selected banks in South Africa. *Business Information Review*, *33*(4), 221-227. doi:10.1177/0266382116683892

Doan, Q. M., Rosenthal-Sabroux, C., & Grundstein, M. (2011). A reference model for knowledge retention within Small and Medium-Sized Enterprises. *Proceedings of the International Conference on Knowledge Management and Information Sharing*, 1, 306-311. doi:10.5220/0003632003060311

D. Dooley (2001), *Social Research Methods*. Upper Saddle River (N.J.): Prentice Hall.

Dulebohn, J. H., & Hoch, J. E. (2017). Virtual teams in organizations. *Human Resource Management Review , 27*(4), 569-574. doi:10.1016/j.hrmr.2016.12.004

Edmonson, A., Dillon, J. R., & Roloff, K. S. (2007). Three perspectives on Team Learning. *The Academy of Management Annals*, *1*(1), 269-314. doi:10.1080/078559811

Ellis, A. P. (2007). Learning to Work Together: An Examination of Transactive Memory System Development in Teams. In V. L. Sessa, *Work Group Learning*, 91-115. New York, USA: Taylor & Francis Inc. doi:0.4324/9780203809747-10

Fisher, S., & White, M. (2000). Downsizing in a Learning Organization: Are There Hidden Costs? *The Academy of Management Review*, *25*(1), 244–251. doi:10.2307/259273

Glaser, B. G., & Strauss, A. L. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Research.* New Jersey: Aldine.

Hargreaves, S., & Gijbels, D. (2011). From the theory of situated cognition to communities of practice: J. Lave and E. Wenger. In F. Dochy, D. Gijbels, M. Segers, & P. Van den Bossche, *Theories of Learning for the Workplace: J. Lave and E. Wenger,* 66–78. Oxon: Routledge

Hofer-Alfeis, J. (2008). "Knowledge management solutions for the leaving expert issue", *Journal of Knowledge Management, 12* (4), 44-54. doi:10.1108/13673270810884246

Koblas, J. E., & Jackson, P. D. (2008). The Organization as a Transactive Memory System. In J. E. Koblas, & P. D. Jackson, Becoming Virtual. *Contributions to Management Science,* 111-133. Crawley, Australia: Physica-Verlag HD. doi:10.1007/978-3-7908-1958-8_8

LaMonica, L. (2001, May). *The Case for Knowledge Management at DPA: Is What We Don't Know Hurting Us?* Retrieved from: http://www.tlainc.com/articl22.htm

Lank, E. (1997). Leveraging Invisible Assets: The Human Factor. *Longe Range Planning, 3*(30), 406-412. doi:10.1016/S0024-6301(97)90258-2

Lewis, K. (2003). Measuring Transactive Memory Systems in the Field: Scale Development and Validation . *Journal of Applied Psychology, 88*(4), 587–604. doi:10.1037/0021-9010.88.4.587

Lewis, K., Lange, D., & Gillis, L. (2005). Transactive Memory Systems, Learning, and Learning Transfer. *Organization Science*, *16*(6), 581–598. doi:10.1287/orsc.1050.0143

Liebowitz, J. (2009). *Knowledge Retention: Strategies and Solutions.* Boca Raton: Auerbach Publications Taylor & Francis Group.

Liebowitz, J., Ayyavoo, N., Nguyen, H., Carran, D., & Simien, J. (2007). Cross-Generational Knowledge Flows in Edge Organizations. *Industrial Management & Data Systems Journal*, *107(*8), 1123-1153. doi:10.1108/02635570710822787

Martensson, M. (2000). A critical review of knowledge management as a management tool. *Journal of Knowledge Management*, *4*(3), 204–216. doi:10.1108/13673270010350002

Martins, E. C., & Meyer, H. W. J. (2012). Organisational and behavioural factors that influence knowledge retention. *Journal of Knowledge Management, 16*(1), 77–96. doi:10.1108/13673271211198954

McCall, M. W. (1988). *The lessons of experience: How successful executives develop on the job.* Lexington, MA: Lexington Books. doi:10.5465/ame.1989.4274748

McKenney, S., & Reeves, T. C. (2013). Educational Design Research. In M. J. Spector, D. Merrill, J. Elen, & M. J. Bishop, *Handbook of Research on Educational Communications Technology*, 131-140. New York: Springer Science + Business Media. doi:10.1007/s10758-014-9231-7

Nadali, A., Nosratabadi, H. E., & Pourdarab, S. (2011). ANP-FIS Method for Determining the Knowledge Management Strategy. *International Journal of Information and Education Technology, 1*(2), 107–113. doi:10.7763/IJIET.2011.V1.18

Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation. *Organization Science, 5*(1), 14-37. doi:10.1287/orsc.5.1.14

Nonaka, I. (2007, July). The Knowledge-Creating Company. *Harvard Business Review*, 162-171. Retrieved from: https://hbr.org/2007/07/the-knowledge-creating-company

Nonaka, I., & Takeuchi, H. (1995). *The Knowledge-creating Company: How Japanese Companies Create the Dynamics of Innovation.* Oxford: Oxford University Press.

Nonaka, I., Toyama, R., & Konno, N. (2000). SECI, Ba and Leadership: A Unified Model of Dynamic Knowledge Creation. *Long Range Planning, 33*(1), 5–34. doi:10.1016/S0024-6301(99)00115-6

Öztuna, D.G., Elhan, A.H., & Tüccar, E. (2006). Investigation of Four Different Normality Tests in Terms of Type 1 Error Rate and Power under Different Distributions. *Turkish Journal of Medical Sciences , 36* (3), 171-176. Retrieved from: https://dergipark.org.tr/download/article-file/129239

Paulhus, D. L. (1991). Measurement and Control of Response Bias. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman, *Measures of Personality and Social Psychological Attitudes*, 17-59. San Diego, CA, US: Academic Press. doi:10.1016/B978-0-12-590241-0.50006-X

Peltokorpi, V. (2008). Transactive Memory Systems. *Review of General Psychology , 12* (4), 378-394. doi:10.1037/1089-2680.12.4.378

Pourdarab, S., Nadali, A., & Nosratabadi, H. E. (2011). Determining the Knowledge Management Strategy Using Vague Set Group Decision. *International Conference on Management and Artificial Intelligence*, *6*, 60-64. Retrieved from: http://www.ipedr.com/vol6/13-A00034.pdf

Rathi, D., Given, L. M., & Forcier, E. (2014). Understanding the types of knowledge representations that meet non-profit organisations' knowledge needs. *Proceedings of the American Society for Information Science and Technology, 51*(1), 1–10. doi:10.1002/meet.2014.14505101051

Richard, L., Chiocchio, F., Tremblay, M. C., Lamy, G., Champagne, F., & Beaudet, N. (2014). Communities of Practice as a Professional and Organisational Development Strategy in Local Public Health Organisations in Quebec, Canada: An Evaluation Model. *Healthcare Policy | Politiques de Santé*, *9*(3), 26–39. doi:10.12927/hcpol.2014.23731

Rietveld, L., & van Rooijen-Mutsaers, K. (2012). Wat werkt bij supervisie, intervisie en coaching? *Professionalisering in de jeugdzorg*. Retrieved from: https://www.lerenindesocialprofit.be/Leren/Maniervanleren/LE_2.7_watwerktbijsupervisieintervisiecoaching.pdf

Robert, M. (2011, July 12). *Questionnaire in Knowledge Management.* Retrieved from: https://www.scribd.com/document/56801896/Questionnaire-in-Knowledge-Management

Robertson, R., Gockel, C., & Brauner, E. (2013). Trust your teammates or bosses? Differential effects of trust on transactive memory, job satisfaction, and performance. *Employee Relations, 35* (2), 222-242. doi:10.1108/01425451311287880

Rohra, G. (2011, July 12). *Questionnaire in Knowledge Management.* Retrieved from: https://www.slideshare.net/girish_rohra/questionnaire-in-knowledge-management

M. Saunders, P. Lewis, & A. Thornhill (2009), *Research methods for business students.* Harlow: Pearson Education Limited.

Scannell, M. (2010). *The Big Book of Conflict Resolution Games: Quick, Effective Activities to Improve Communication, Trust and Collaboration*. New York: Mcgraw-Hill Companies, Inc.

Schmitt, A., Borzillo, S., & Probst, G. (2011). Don't let knowledge walk away: Knowledge retention during employee downsizing. *Management Learning*, *43*(1), 53–74. doi:10.1177/1350507611411630

Weber, R., Gunawardena, S., & Abraham, G. (2008). Representing and Retrieving Knowledge Artifacts. *The iSchool ate Drexel, College of Information Science and Technology*, 86-97. doi:10.1007/978-3-540-89447-6_10

Wegner, D. M. (1986). Transactive memory: A contemporary analysis of the group mind. In B. G. Mullen, *Theories of Group Behavior*, 185-208. New York: Springer. doi:10.1007/978-1-4612-4634-3_9

Wegner, D. M., Guiliano, T., & Hertel, P. T. (1985). Cognitive interdependence in close relationships. In W. J. Ickes, *Compatible and incompatible relationships*, 253-276. New York: Springer-Verlag. doi:10.1007/978-1-4612-5044-9_12

Wu, W.-W., & Lee, Y.-T. (2007). Selecting knowledge management strategies by using the analytic network process. *Expert Systems with Applications*, *32*(3), 841–847. doi:10.1016/j.eswa.2006.01.029

Appendix 1

Questionnaire phase one

Table 3

Questionnaire transactive memory system

Transactive memory system scale items (Lewis, 2003)	
Specialization	
1.	Each team member has specialized knowledge of some aspect of our project.
2.	I have knowledge about an aspect of the project that no other team member has.
3.	Different team members are responsible for expertise in different areas.
4.	The specialized knowledge of several different team members was needed to complete the project deliverables.
5.	I know which team members have expertise in specific areas.
Credibility	
6.	I was comfortable accepting procedural suggestions from other team members.
7.	I trusted that other members' knowledge about the project was credible.
8.	I was confident relying on the information that other team members brought to the discussion.
9.	When other members gave information, I wanted to double-check it for myself. (reversed)
10.	I did not have much faith in other members' "expertise". (reversed)
Coordination	
11.	Our team worked together in a well-coordinated fashion.
12.	Our team had very few misunderstandings about what to do.
13.	Our team needed to backtrack and start over a lot. (reversed)
14.	We accomplished the task smoothly and efficiently.
15.	There was much confusion about how we would accomplish the task. (reversed)

Note: Items 1-15 in this scale use a 5-point disagree-agree response (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree).

Table 4

Questionnaire phase one

Questionnaire part one		
Background information		
1.	Wat is uw geslacht?	
2.	Wat is uw leeftijd?	
3.	Hoeveel jaren bent u werkzaam binnen de organisatie?	
4.	Wat is uw opleidingsniveau?	
Transactive memory system scale items (Lewis, 2003)		
	Specialisatie	
1.	Elk teamlid bezit gespecialiseerde kennis over een aspect van ons project.	
2.	Ik heb kennis over een aspect van het project dat geen enkel ander teamlid bezit.	
3.	Verschillende teamleden zijn verantwoordelijk voor expertise in verschillende domeinen.	
4.	De specialistische kennis van verschillende teamleden was nodig om het project uit te kunnen voeren en op te leveren.	
5.	Ik weet op welk gebied teamleden expertise bezitten.	
	Geloofwaardigheid	
6.	Ik voelde mij comfortabel met het accepteren van suggesties omtrent procedures van andere teamleden.	
7.	Ik vertrouwde erop dat de kennis van andere teamleden over het project geloofwaardig was.	
8.	Ik kon gerust op de informatie die andere teamleden in een discussie brachten vertrouwen.	
9.	Wanneer andere teamleden informatie verstrekten, wilde ik het voor mezelf dubbelchecken (reversed).	
10.	Ik heb niet zoveel vertrouwen in de ‘’expertise’’ van mijn teamleden (reversed).	
	Coördinatie	
11.	Ons team werkte op een goed gecoördineerde manier samen.	
12.	Er waren weinig misverstanden binnen ons team over wat te doen.	
13.	Ons team moest vaak terug naar de basis en opnieuw beginnen (reversed).	
14.	We hebben de taak efficiënt en soepel volbracht.	
15.	Er was veel verwarring over hoe we de taak moesten volbrengen (reversed).	
Noot: Voor items 1-15 in deze schaal is een 5-punt oneens – eens schaal gebruikt (1=zeer mee oneens, 2=oneens, 3=neutraal, 4=mee eens, 5=zeer mee eens).		
16.	Kijkend naar de drie onderwerpen van het eerste gedeelte van de vragenlijst. Hoe zou u dit binnen uw team beoordelen? Beoordeel de onderwerpen specialisatie, geloofwaardigheid en coördinatie van het best ontwikkeld naar het minst ontwikkeld. Omcirkel hierbij het gewenste cijfer (1 t/m 10) en licht uw antwoord toe.	
Questionnaire part two		
Nr.	Vraag	Antwoordmogelijkheden
1.	Weet u wat wordt bedoeld met het borgen van kennis?	o Ja o Nee
2.	Hoe denkt u over kennisborging?	o Nog nooit van gehoord o Dit doet de organisatie al maar dan onder een andere naam o Het is een strategisch onderdeel van de organisatie o Het is iets waar de organisatie van kan profiteren

		o Het is maar een managementtrend o Anders, namelijk:
3.	Wat is volgens u de huidige status van kennisborging binnen de organisatie?	o Dit bestaat niet o Tussenfase o Introductiefase o Groeifase
4.	Hoe zou u kennisborging binnen uw organisatie beoordelen? Toelichting	o Helemaal niet goed o Niet goed o Gemiddeld o Goed o Zeer goed
5.	Aan welke randvoorwaarden moet volgens u voldaan worden wanneer de organisatie kennisborging wil stimuleren?	
6.	Blijft u werkzaam bij de organisatie of zult u de organisatie binnen nu en een jaar gaan verlaten?	o Ik verwacht werkzaam te blijven binnen de organisatie o Ik verwacht de organisatie binnen nu en een jaar te gaan verlaten
7.	Wanneer/indien u de organisatie (ooit) zult verlaten, welke type kennis zal voornamelijk verloren gaan? Denk hierbij aan ICT kennis, product kennis, communicatieve kennis, et cetera.	
8.	Maakt u gebruik van de expertise van (een) collega('s) bij het uitvoeren van taken?	o Ja o Nee
9.	Indien ja, hoe vaak per week ontmoeten jullie elkaar? Indien u met meerdere collega's samenwerkt neem hierbij dan de collega in gedachten met wie u het meest samenwerkt.	o Dagelijks o 2-3 keer per week o Eens per week o Eens per twee weken o Eens per maand
10.	Indien ja, van welke expertise maakt u voornamelijk gebruik tijdens ontmoetingen met die collega (bijvoorbeeld financieel, wetgeving, technologie etc.)?	
11.	Verwacht u dat uw collega('s) tegen problemen aan zullen lopen nadat/indien u de organisatie verlaten hebt/zult verlaten?	o Ja o Nee

	Toelichting	
12.	Wat zou de organisatie volgens u moeten doen tegen het mogelijk verlies van kennis wanneer medewerkers de organisatie verlaten?	
13.	Zou u geïnteresseerd zijn in het deelnemen aan een focusgroep over kennisborging strategieën?	o Ja o Nee
14.	Indien u ja geantwoord heeft schrijf dan uw e-mailadres op zodat ik u, geheel vrijblijvend, meer informatie toe kan sturen.	

Appendix 2

Questionnaire phase one as presented to participants

VRAGENLIJST KENNISBORGING

Beste participant,

Bij voorbaat hartelijk dank voor het invullen van deze vragenlijst. Het doel van deze vragenlijst is om inzicht te verkrijgen in uw expertise, expertise van uw team en of jullie als team bewust zijn van elkaars expertise en actief daar gebruik van maken. Daarnaast is het doel om uw visie op kennisborging binnen de organisatie in kaart te brengen. Het gaat hierbij om uw eigen mening, er kunnen geen goede of foute antwoorden worden gegeven. Het geheel zal ongeveer tien minuten van uw tijd in beslag nemen.

De data zal anoniem verwerkt worden. Dit betekent dat alleen de onderzoekers toegang hebben tot de data. De organisatie kan niet bij uw antwoorden en zal niet worden geïnformeerd over wie er deelnemen. Wel ontvangt de organisatie een kort rapport met de algemene uitkomsten (bijvoorbeeld gemiddelde scores). Hierin zijn individuele antwoorden niet te herleiden.

Ik zou u graag willen verzoeken om voorafgaand aan het invullen van de vragenlijst het toestemmings-formulier in te vullen. Dit formulier kunt u vinden op de laatste pagina. Indien u vragen heeft, neem dan gerust contact met mij op. Ik ben te bereiken via: m.rodijk-1@student.utwente.nl.

De vragenlijst zal beginnen met een aantal achtergrondvragen, vervolgens komen in deel 1 vragen aan bod omtrent uw expertise en expertise van uw team. Daarna zal in deel 2 uw visie in kaart worden gebracht.

Alvast hartelijk dank voor uw tijd en het invullen!

Achtergrondvragen

Wat is uw geslacht (m/v): _____

Wat is uw leeftijd: _____

Hoeveel jaren bent u werkzaam binnen de organisatie: _____

Wat is uw opleidingsniveau: _____

UNIVERSITY
OF TWENTE.

Vragenlijst – deel 1

Toelichting:
Dit deel van de vragenlijst draait om het in kaart brengen van expertise. De vragenlijst bestaat uit zestien vragen waarbij u kunt antwoorden door een kruisje in het hokje te zetten met het gewenste antwoord. U kunt hierbij een project in gedachten nemen dat u met uw team uitgevoerd heeft. Wanneer er in de vragenlijst "taak" benoemd wordt, betekent dit het project als geheel.

1. Elk teamlid bezit gespecialiseerde kennis over een aspect van ons project.

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

2. Ik heb kennis over een aspect van het project dat geen enkel ander teamlid bezit.

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

3. Verschillende teamleden zijn verantwoordelijk voor expertise in verschillende domeinen

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

4. De specialistische kennis van verschillende teamleden was nodig om het project uit te kunnen voeren en op te leveren.

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

5. Ik weet op welk gebied teamleden expertise bezitten.

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

6. Ik voelde mij comfortabel met het accepteren van suggesties omtrent procedures van andere teamleden. Toelichting: met procedures wordt manier van werken/uitvoeren van taken bedoeld.

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

7. Ik vertrouwde erop dat de kennis van andere teamleden over het project geloofwaardig was.

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

8. Ik kon gerust op de informatie die andere teamleden in een discussie brachten vertrouwen.

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

9. Wanneer andere teamleden informatie verstrekten, wilde ik het voor mezelf dubbelchecken.

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

10. Ik heb niet zoveel vertrouwen in de "expertise" van mijn teamleden.

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

UNIVERSITY OF TWENTE.

11. Ons team werkte op een goed gecoördineerde manier samen.

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

12. Er waren weinig misverstanden binnen ons team over wat te doen.

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

13. Ons team moest vaak terug naar de basis en opnieuw beginnen.

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

14. We hebben de taak efficiënt en soepel volbracht.

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

15. Er was veel verwarring over hoe we de taak moesten volbrengen.

☐ Zeer mee oneens ☐ Mee oneens ☐ Neutraal ☐ Mee eens ☐ Zeer mee eens

16. In bovenstaande vragen zit een bepaalde verdeling. De vragen zijn onder te verdelen in drie onderwerpen die bijdragen in het ontwikkelen van de efficiëntie van een team, namelijk: specialisatie, geloofwaardigheid en coördinatie. Hieronder volgt per onderwerp een korte uitleg.

- **Specialisatie:** wanneer een team weet welke expertise de verschillende teamleden bezitten kan er worden gekeken naar overlap in kennis en hoe de te verdelen taken hierbij het meest efficiënt verdeeld kunnen worden. Hierna kan elk teamlid zich **specialiseren** in een bepaald gebied waar benodigde kennis over ontbreekt.

- **Geloofwaardigheid:** het kunnen vertrouwen op elkaars expertise is noodzakelijk binnen een team. In deze context betekent dit dan ook de overtuiging van de individuele teamleden omtrent het vertrouwen hebben in de expertise andere teamleden.

- **Coördinatie:** dit bevat de perceptie van individuele teamleden richting het vermogen om samen te werken met elkaar. Teamleden zijn hierbij bewust van elkaars sterke en minder sterke kanten en kunnen hierop anticiperen en zich aanpassen. Leden kunnen gemakkelijk schakelen en contact opnemen met het teamlid waarvan expertise nodig is.

16. Kijkend naar de drie onderwerpen van het eerste gedeelte van de vragenlijst. Hoe zou u dit binnen uw team beoordelen? Beoordeel de onderwerpen specialisatie, geloofwaardigheid en coördinatie van het best ontwikkeld naar het minst ontwikkeld. Omcirkel hierbij het gewenste cijfer en licht uw antwoord toe.

Specialisatie:	1	2	3	4	5	6	7	8	9	10
Geloofwaardigheid:	1	2	3	4	5	6	7	8	9	10
Coördinatie:	1	2	3	4	5	6	7	8	9	10

Toelichting: _____

_____

_____

Einde deel 1

UNIVERSITY OF TWENTE.

Vragenlijst – deel 2

Toelichting:
Dit deel van de vragenlijst heeft als doel uw visie op kennisborging in kaart te brengen. De vragenlijst bestaat uit 13 gesloten en open vragen. De gesloten vragen kunt beantwoorden door een kruisje in het hokje te zetten met het gewenste antwoord. Er is telkens één antwoord mogelijk.

De definitie die in dit onderzoek centraal staat voor het borgen van kennis luidt als volgt: het behouden, van werkgerelateerde kennis van individuele werknemers welke essentieel is voor het functioneren van een organisatie.

1. Weet u wat wordt bedoeld met het borgen van kennis?

   ☐ Ja ☐ Nee

2. Hoe denkt u over kennisborging?

   ☐ Nog nooit van gehoord
   ☐ Dit doet de organisatie al maar dan onder een andere naam
   ☐ Het is een strategisch onderdeel van de organisatie
   ☐ Het is iets waar de organisatie van kan profiteren
   ☐ Het is maar een managementtrend
   ☐ Anders, namelijk: _____

3. Wat is volgens u de huidige status van kennisborging binnen de organisatie?

   ☐ Dit bestaat niet
   ☐ Introductiefase
   ☐ Tussenfase
   ☐ Groeifase

   Toelichting fasen:

   - **Introductiefase:** kennisborging staat in de zogenaamde kinderschoenen en wordt opgestart. Medewerkers worden geinformeerd en de eerste medewerkers gaan ermee aan de slag.
   - **Tussenfase:** kennisborging is aanwezig binnen de organisatie, er wordt wel wat kennis geborgd maar medewerkers zijn er niet bijzonder actief mee bezig.
   - **Groeifase:** kennisborging wordt actief gebruikt binnen de organisatie en er wordt steeds meer kennis geborgd.

4. Hoe zou u kennisborging binnen uw organisatie beoordelen?

   ☐ Helemaal niet goed ☐ Niet goed ☐ Gemiddeld ☐ Goed ☐ Zeer goed

   Licht uw antwoord toe: _____

   _____

   _____

   _____

UNIVERSITY OF TWENTE.

5. Aan welke randvoorwaarden moet volgens u voldaan worden wanneer de organisatie kennisborging wil stimuleren?

Antwoord: _____

_____

_____

_____

6. Blijft u werkzaam bij de organisatie of zult u de organisatie binnen nu en een jaar gaan verlaten?

☐ Ik verwacht werkzaam te blijven binnen de organisatie

☐ Ik verwacht de organisatie binnen nu en een jaar te gaan verlaten

7. Wanneer/indien u de organisatie (ooit) zult verlaten, welke type kennis zal voornamelijk verloren gaan? Denk hierbij aan ICT kennis, product kennis, communicatieve kennis, et cetera.

Antwoord: _____

_____

8. Maakt u gebruik van de expertise van (een) collega('s) bij het uitvoeren van taken?

☐ Ja ☐ Nee

9. Indien ja, hoe vaak per week ontmoeten jullie elkaar? Indien u met meerdere collega's samenwerkt neem hierbij dan de collega in gedachten met wie u het meest samenwerkt.

☐ Dagelijks ☐ 2-3 keer per week ☐ Eens per week

☐ Eens per twee weken ☐ Eens per maand

10. Indien ja, van welke expertise maakt u voornamelijk gebruik tijdens ontmoetingen met die collega (bijvoorbeeld financieel, wetgeving, technologie etc.)?

Antwoord: _____

_____

11. Verwacht u dat uw collega('s) tegen problemen aan zullen lopen nadat/indien u de organisatie verlaten hebt/zult verlaten?

☐ Ja ☐ Nee

Evt. toelichting: _____

_____

UNIVERSITY OF TWENTE.

12. Wat zou de organisatie volgens u moeten doen tegen het mogelijk verlies van kennis wanneer medewerkers de organisatie verlaten?

Antwoord: _____

_____

_____

_____

Focusgroepen

Als vervolg op deze vragenlijst zullen er twee focusgroepen samengesteld worden van minimaal vier en maximaal zes medewerkers. Eén focusgroep zal bestaan uit medewerkers die in ieder geval het komende jaar bij de organisatie verwachten te blijven werken, de andere groep zal bestaan uit medewerkers die verwachten de organisatie binnen een jaar te gaan verlaten. Deze focusgroepen hebben als doel om kennisborging strategieën uit te proberen en deze te evalueren. Dit zullen naar alle waarschijnlijkheid drie strategieën worden.

De bedoeling is om de drie strategieën voorafgaand aan een gezamenlijke meeting individueel in te vullen. Tijdens de meeting zullen deze dan geëvalueerd worden waarbij er uiteindelijk één strategie gekozen zal worden. Uiteraard zal deze meeting in overleg gepland worden.

13. Zou u geïnteresseerd zijn in het deelnemen aan een focusgroep over kennisborging strategieën?

☐ Ja ☐ Nee

Indien u ja geantwoord heeft schrijf dan uw e-mailadres op zodat ik u, geheel vrijblijvend, meer informatie toe kan sturen.

_____

Einde deel 2

Appendix 3

Coding schemes

Table 5

Coding scheme - rating the transactive memory system

Subject	Code	Description	Example
Transactive memory system scale	Coordination	The perception of the individuals within a team towards their ability of working together.	‘‘Coordination is only possible on a day-to-day basis (short-term).’’
	Specialization	Expertise of individual team members within a team.	‘‘Specialization is low, since the level of expertise within our team is mostly equivalent.’’
	Credibility	Individuals team member’s beliefs on being able to rely on the other team members.	‘‘I believe credibility to be most developed, as we trust on each other’s expertise areas.’’
Knowledge retention barriers	Lack of sharing knowledge	Employees may prefer keeping their acquired knowledge to themselves for competetive advantages.	‘‘Employees from other establishments work as separate islands.’’
	Competence-based trust	Trust based on competences entails that employees have a tendency to rely on knowledge and advice provided by coworkers who they see as competent in that specific area.	‘‘It is not clear who can bring in certain expertise, not everyone trusts one another.’’
	(Senior) management support	Supporting employees in actively retaining knowledge and promoting knowledge retention policy.	‘‘The coordinator does not do her job properly.’’
Other	Other	All elaborations that did not provide meaningful insight.	‘‘There is much room for improvement.’’

Table 6

Coding scheme – types of knowledge

Subject	Code	Description	Example
Types of knowledge	Sociocultural knowledge	The way humans see and interact with the world, based on knowledge and beliefs on ethnicity, culture and communities or social networks within the organisation.	‘‘Network knowledge and knowledge of the client’’
	Domain knowledge	An area of knowledge that entails a certain field or study.	‘‘ICT knowledge’’
	Strategic knowledge	Knowledge of processes that are planned and implemented in order to facilitate the usage and acquirement of knowledge on management level.	‘‘Management knowledge’’
	Procedural knowledge	Knowledge about processes and routines.	‘‘Process knowledge’’
	Declarative knowledge	Knowledge on factual information about for example a certain product.	‘‘Product knowledge’’
Other	Other	All elaborations that did not provide meaningful insight.	‘‘No idea’’

Table 7

Coding scheme – knowledge retention barriers

Subject	Code	Description	Example
Knowledge retention barriers	Lack of sharing knowledge	Employees may prefer keeping their acquired knowledge to themselves for competetive advantages.	‘‘Few people share what they do, often it is not clear what someone is capable of.
	Competence-based trust	Trust based on competences entails that employees have a tendency to rely on knowledge and advice provid ed by coworkers who they see as competent in that specific area.	‘‘People often reason from their own expertise and trust is something that needs to grow within every project, sometimes this does not happen’’
	Motivation	Motivation towards sharing knowledge. When employees leave an organisation due to for example dismissal, employees may feel frustrated and would not want to share their knowledge and skills.	‘‘People are aware of the necessity and want to do something with it, here and there it is done thoroughly, but not yet in a structured way.’’
	(Top) management support	Supporting employees in actively retaining knowledge and promoting knowledge retention policy.	‘‘There are some guidelines, templates and procedures within the organisation, but they are not always available or known among the employees.’’
Other	Other	All elaborations that did not provide meaningful insight.	‘‘All research is stored.’’

Table 8

Coding scheme – preconditions

Subject	Code	Description	Example
Preconditions towards knowledge retention	(Top) management support	Supporting employees in actively retaining knowledge and promoting knowledge retention policy.	‘‘We require support from all management layers.’’
	Communication	Communication from managers towards employees which focuses on creating awareness in risks of losing knowledge.	‘‘The necessity of retaining knowledge should be emphasized by the managers.’’
	Knowledge sharing	Employees share their acquired knowledge and skills within the organisation.	‘‘We should be sharing stuff and not working on separate islands, therefore communicating openly and trusting each other.’’
	Time	Giving employees enough time that is required for actively retaining knowledge.	‘‘Time for retaining knowledge should be scheduled.’’
	Cost	Keeping the costs of using a suitable knowledge retention strategy as low as possible.	‘‘Time, space and money should be made available for the retention of knowledge in every project or process.’’
Other	Other	All elaborations that did not provide meaningful insight.	‘‘There must be no resistance.’’

Table 9

Coding scheme – expected problems

Subject	Code	Description	Example
Types of knowledge	Sociocultural knowledge	The way humans see and interact with the world, based on knowledge and beliefs on ethnicity, culture and communities or social networks within the organisation.	‘‘Social network knowledge’’
	Domain knowledge	An area of knowledge that entails a certain field or study.	‘‘ICT knowledge’’
Other	Other	All elaborations that did not provide meaningful insight.	‘‘Yes, within the current situation I am the person that knows most about certain activities’’

Table 10

Coding scheme – preventing loss of knowledge

Subject	Code	Description	Example
Preconditions towards knowledge retention	Top management support	Supporting employees in actively retaining knowledge and promoting knowledge retention policy.	‘’Long term vision and not skipping from one subject to another, but this should be taken seriously with one exit program.’’
	Communication	Communication from managers towards employees which focuses on creating awareness in risks of losing knowledge.	‘’Employees should be made aware of the available knowledge within the organisation.’’
	Knowledge sharing	Employees share their acquired knowledge and skills within the organisation.	‘’Knowledge should be shared on a regular basis, especially when finishing projects.’’
	Incentives	Reward systems that are a crucial factor in making sure that employees actively contribute and understand the benefits of retaining knowledge.	‘’A step by step off-boarding process in order to retain knowledge, where employees receive payment even though they are working less.’’
	Time	Giving employees enough time that is required for actively retaining knowledge.	‘’Time should be made available for this.’’
Knowledge retention solutions	Personalization solution	All solutions, thus tools, activities or strategies that aim to retain interpersonal knowledge.	‘’Unique knowledge about the organisation should be transferred to co-workers.’’
	Codification solution	All solutions, thus tools, activities or strategies that aim to codify knowledge.	‘’We should implement wiki’s and FAQ’s.’’
Other	Other	All elaborations that did not provide meaningful insight.	‘’No idea’’

Appendix 4

Document with information about the selected strategies for phase two as presented to the participants

INFORMATIEDOCUMENT FOCUSGROEP

Beste deelnemer,

Allereerst wil ik u graag bij voorbaat hartelijk danken voor deelname aan deze focusgroep. De opzet van deze focusgroep is om drie kennisborgingstrategieën te bespreken waaruit uiteindelijk een voorkeur zal blijken. Het uiteindelijke doel van de focusgroep is om te bepalen welke strategie het meest kansrijk is binnen de organisatie en waarom.

Er is reeds literatuuronderzoek gedaan en een vragenlijst afgenomen waaruit onder andere is voortgekomen dat specifieke domeinkennis van essentieel belang is voor medewerkers. Hierbij werden met name onderzoeksvaardigheden, ICT en onderwijskundige kennis benoemd. Deze typen kennis zijn het vaakst benodigd en hebben een risico om verloren te gaan wanneer medewerkers afscheid nemen van de organisatie. Daarnaast is het voor het borgen van kennis van belang om (project)teams te blijven ontwikkelen en randvoorwaarden binnen de organisatie te evalueren.

In dit document zijn drie strategieën kort beschreven met aansluitend een aantal vragen die gedurende de focusgroep gesteld zullen worden. Deze vragen en strategieën kunt u voorafgaand aan de focusgroep doornemen en daarbij onderaan deze pagina alvast een voorkeur voor één van de drie strategieën noteren.

De focusgroep discussie zal worden opgenomen door middel van een IPhone 7. De data zal geheel anoniem worden verwerkt. Dit betekent dat alleen de onderzoekers toegang hebben tot de data. De organisatie kan niet bij uw antwoorden en zal niet worden geïnformeerd over wie er deelnemen. Wel ontvangt de organisatie een kort rapport met de algemene uitkomsten (bijvoorbeeld gemiddelde scores). Hierin zijn individuele antwoorden niet te herleiden.

Ik zal u aan de start van de focusgroep vragen om het bijgevoegde toestemmingsformulier in te vullen. Dit formulier kunt u vinden op de laatste pagina. Indien u vragen heeft, neem dan gerust contact op. Ik ben te bereiken via: m.rodijk-1@student.utwente.nl.

Hartelijke groet,

Michelle Rodijk

Noteer hieronder voorafgaand aan de focusgroep uw voorkeur:

Voorkeur strategie: _____

UNIVERSITY
OF TWENTE.

ACHTERGRONDINFORMATIE

Onderstaande achtergrondinformatie is nodig om de uitleg van de strategieën goed te kunnen begrijpen.

De strategieën zijn zorgvuldig geselecteerd op basis van een aantal criteria. Deze zijn opgesteld vanuit literatuuronderzoek en daarnaast de resultaten van de vragenlijst die reeds is afgenomen. Een van die criteria richt zich op typen kennisborgingstrategieën.

Er zijn over het algemeen drie typen kennisborgingstrategieën te herkennen, namelijk de systeem-georiënteerde strategie, de mens-georiënteerde strategie en de dynamische strategie. De systeem-georiënteerde strategie focust zich op het vastleggen van documentatie. De mens-georiënteerde strategie richt zich voornamelijk op het delen van kennis door middel van het uitwisselen van persoonlijke ervaringen. De dynamische strategie is een combinatie van de mens-georiënteerde strategie en de systeem-georiënteerde strategie. Dit is volgens studies de meest effectieve strategie. De drie strategieën die besproken zullen worden zijn hier dan ook op geselecteerd en kunnen daarom ook geclassificeerd worden als dynamische strategieën.

UNIVERSITY
OF TWENTE.

COP-KENNISBORGINGSTRATEGIE

De community of practice (COP) kennisborgingstrategie is opgebouwd vanuit het principe van een COP. Een COP is niets anders dan een groep medewerkers met gezamenlijke interesses en visie die kennis delen in het belang van een community of organisatie. Hierbij krijgt elke medewerker een duidelijke rol toegewezen. Het doel hierbij is om van elkaar te leren waarbij nieuwe medewerkers leren van de meer ervaren medewerkers door middel van mentorschap.

Het doel van een COP-kennisborgingstrategie is hierbij niet alleen het delen van kennis met nieuwe medewerkers, maar ook het delen van kennis onder medewerkers die bijvoorbeeld een soort expertise nodig hebben. Dit houdt in dat de COP-kennisborgingstrategie met name gericht is op het borgen van kennis van experts.

De rollen binnen een COP-kennisborgingstrategie zijn bijvoorbeeld een leider welke richting geeft aan de community en een content manager, hij of zij beheert alle materialen en informatie die worden gedeeld binnen de community. Daarnaast zijn er topic coördinatoren, die zijn verantwoordelijk voor het maken van de zogenaamde kennismaterialen over bepaalde onderwerpen.

De kennismaterialen die worden gecreëerd over bepaalde onderwerpen kunnen worden gedeeld via een digitaal platform, een zogenaamde "wisdom area". Deze kennismaterialen zijn bijvoorbeeld best practices, rapportages van after action reviews of richtlijnen vanuit de organisatie. Alvorens deze materialen gedeeld kunnen worden in de "wisdom area" worden deze formeel geëvalueerd door een panel, aangesteld door de organisatie. Hierbij worden de kennismaterialen op kwaliteit beoordeeld.

Vanwege de dynamische aard van de strategie zijn er twee soorten kennisborgingsactiviteiten binnen de COP-kennisborgingstrategie. Op een systeem-georiënteerd level betreffen dit activiteiten zoals het opzetten van wiki's, het schrijven van weblogs of kennis opslaan via podcasts (digitale mediabestanden met daarin bijvoorbeeld audio trainingssessies of videos). De mens-georiënteerde activiteiten bevatten het delen van kennis door middel van mentorschap en storytelling. Storytelling betekent het leren van experts door het delen van verhalen tijdens georganiseerde bijeenkomsten zoals bijvoorbeeld een lunch of events.

UNIVERSITY OF TWENTE.

SECI-KENNISBORGINGSTRATEGIE

De tweede strategie is genaamd de SECI-kennisborgingstrategie en is gebaseerd op het principe dat het delen van kennis een voortdurend proces is dat bestaat uit verschillende fases.

Het proces begint met socialisatie (S), hierbij wordt kennis gedeeld door het delen van ervaringen, samenwerken en observatie. Dit wordt gevolgd door externalisatie (E), deze fase focust zich op het documenteren van kennis. Vervolgens wordt deze kennis gecombineerd, kritisch bekeken en hierop gerapporteerd in de combinatie fase (C). Eventuele nieuwe inzichten kunnen hierdoor worden gedocumenteerd. Als laatst volgt de internalisatie fase (I). Hierbij wordt er actief gebruik gemaakt van de opgeslagen kennis. Wanneer deze fasen zijn voltooid begint het proces weer opnieuw, maar dan op basis van de opgeslagen kennis.

De input voor deze documentatie en het delen van kennis komt vanuit de behoefte van medewerkers en/of de organisatie zelf. Tijdens de fasen kunnen er verschillende activiteiten plaatsvinden om kennisborging mogelijk te maken, voorbeelden van activiteiten worden hieronder kort toegelicht.

Socialisatie fase
Een activiteit die gebruikt zou kunnen worden binnen deze fase is bijvoorbeeld peer coaching door middel van een intervisiegroep. Hierbij worden de medewerkers voor deze groep geselecteerd op verschillende expertiselevels. Dit verhoogt de effectiviteit van het doel kennisborging. Daarnaast zouden er vrijdagmiddagborrels georganiseerd kunnen worden of businessgames gespeeld kunnen worden om binnen het team vertrouwen en betrokkenheid te verhogen.

Externalisatie fase
Activiteiten binnen deze fase zijn meer systeem-georiënteerd en belangrijk voor de volgende fases. Op de kwaliteit van deze documenten borduurt de rest van het proces namelijk voort. De kennismaterialen die gecreëerd kunnen worden zijn bijvoorbeeld best practices, protocollen, videos, e-mails, datasets of software. De materialen zouden gedeeld kunnen worden via digitale kennisportalen, ook wel organisatiebijbels genoemd. Om de kwaliteit van de kennismaterialen te waarborgen zouden er duidelijke richtlijnen opgesteld kunnen worden.

Combinatie fase
In deze fase worden de kennismaterialen in de digitale kennisportalen bekeken en mogelijk verbeterd.

Internalisatie fase
Deze fase is niet specifiek gericht op het borgen van kennis, maar meer op het vergaren van kennis door gebruik van de opgeslagen kennismaterialen.

UNIVERSITY
OF TWENTE.

LEAVING EXPERT DEBRIEF STRATEGIE

Deze strategie richt zich op het borgen van kennis van één individueel en het in kaart brengen van huidige en mogelijk toekomstige kennisgebieden die een hoge impact zouden kunnen hebben op de organisatie. De strategie wordt vooral toegepast wanneer er bekend is dat een medewerker zal gaan vertrekken. Om kennis te kunnen borgen moeten er volgens de strategie acht stappen worden ondernomen.

De eerste stap is het voorbereiden van een workshop met een moderator. De output van deze fase is een geplande workshop en identificatie van de kennisgebieden door middel van een kennislijst. De tweede stap is het verder voorbereiden van de workshop en het evalueren van de kennislijst in samenwerking met een manager en opvolger. Daarnaast wordt er een kennisportfolio opgesteld door middel van het invullen van verschillende templates en een model voor toekomstige samenwerking met degene die de organisatie zal gaan verlaten (bijvoorbeeld in de rol van consultant).

Stap drie tot en met stap zes worden tijdens de workshop uitgevoerd. Hierbij draait het om het nogmaals evalueren van kennisgebieden, het documenteren van kennismaterialen met daarbij informatie over relaties en netwerken en het bepalen van acties die zullen moeten worden ondernomen om overdracht te realiseren. De kennis omtrent relaties en netwerken kunnen worden overgedragen door mens-georiënteerde activiteiten zoals het voeren van discussies of het samenwerken tijdens de workshop. De zevende stap betreft het stellen van prioriteiten met betrekking tot het overdragen van kennis. De laatste stap gaat om het uitvoeren van deze acties en het communiceren van de resultaten.

UNIVERSITY
OF TWENTE.

OVERZICHT

COP-kennisborgingstrategie

- Focus op borgen van kennis van experts;
- Specifieke formele rollen met één duidelijke leider die de richting bepaalt;
- Kennis wordt valide geborgd door het gebruik van een formeel review panel;
- Mens-georiënteerde activiteiten:
  - Mentorschap onder medewerkers met de focus op nieuwe medewerkers;
  - Verhalen delen gedurende de lunch, een conferentie of andere events.
- Systeem- georiënteerde activiteiten, het creëren van o.a.:
  - Kennismaterialen in de zogenaamde 'wisdom area';
  - Wiki's;
  - Weblogs;
  - Podcasts.

SECI-kennisborgingstrategie

- Focus op input en behoefte van medewerkers of management om bepaalde kennis te borgen;
- Kennis wordt valide geborgd door gebruik te maken van duidelijke richtlijnen en continu evalueren van de kennismaterialen;
- Mens-georiënteerde activiteiten:
  - Onderlinge coaching;
  - Vrijdagmiddagborrels;
- - Businessgames.

  Systeem- georiënteerde activiteiten, het creëren van o.a.:
  - Kennisportalen.

Leaving expert debrief strategie

- Focus op het vastleggen van huidige en toekomstige kennisgebieden die een hoge impact zouden kunnen hebben op de organisatie;
- Kennisborging wanneer medewerker vertrekt;
- Mens-georiënteerde activiteiten:
  - Discussies m.b.t. kennisgebieden die een hoge impact zouden kunnen hebben;
  - Lezingen;
  - Organiseren van een leaving expert debrief workshop.
- Systeem- georiënteerde activiteiten, het creëren van:
  - Een kennisportfolio;
  - Weblogs;
  - Wiki's;
  - Boeken.

VRAGEN OVER DE STRATEGIEËN

Onderstaande vragen zullen tijdens de focusgroep per strategie besproken worden. Deze vragen hoeft u niet voorafgaand aan de focusgroep te beantwoorden.

1. Wat is uw eerste indruk van de strategie met betrekking tot het bereiken van het uiteindelijke doel? Doel: borgen van kennis binnen de organisatie.

2. Welke drie voordelen en drie nadelen met betrekking tot het bereiken van het doel zou u kunnen bedenken kijkend naar de context van de organisatie?

   Voordelen
   1.
   2.
   3.

   Nadelen
   1.
   2.
   3.

3. Resultaten uit de vragenlijst lieten zien dat met name specifieke domein kennis het meest aangesproken wordt binnen de organisatie. Binnen deze categorie werd onderzoeksvaardigheden, ICT en onderwijskundige kennis het vaakst genoemd. Denkt u dat deze soorten kennis geborgd kunnen worden met behulp van deze strategie? Waarom wel/niet?

4. Zijn er onderdelen die missen of zaken waar u zich zorgen over maakt kijkend naar deze strategie en het uiteindelijke doel?

5. Binnen de literatuur wordt er gesproken over bepaalde randvoorwaarden en barrières voor het borgen van kennis. De randvoorwaarden zijn: ondersteuning vanuit het (top)management, communicatie vanuit management, het delen van kennis, gebruik van incentives (stimulans of beloning), tijd en kosten. De barrières die daarnaast genoemd worden zijn: ondersteuning vanuit het (top)management, motivatie m.b.t. het delen van kennis, het (gebrek aan) delen van kennis en vertrouwen in elkaars kennen en kunnen. Welke van deze barrières en randvoorwaarden zijn er van toepassing binnen de organisatie om deze specifieke strategie te doen slagen en waarom?

UNIVERSITY
OF TWENTE.

Extra vragen

1. Rankschik de randvoorwaarden zoals benoemd in vraag 5 (1 - meest belangrijk, 6 - minst belangrijk) toegepast op de situatie binnen de organisatie. Deze randvoorwaarden zijn: ondersteuning vanuit het (top)management, communicatie vanuit management, het delen van kennis, gebruik van incentives, tijd en kosten.

   1.

   2.

   3.

   4.

   5.

   6.

2. Rankschik de barrières zoals benoemd in vraag 5 (1 - meest belangrijk, 4 - minst belangrijk) toegepast op de situatie binnen de organisatie. De barrières zijn: ondersteuning vanuit het (top)management, motivatie m.b.t. het delen van kennis, het (gebrek aan) delen van kennis en vertrouwen in elkaars kennen en kunnen.

   1. (meest belangrijk)

   2.

   3.

   4. (minst belangrijk)