Master thesis

Mapping the dissemination and application process of lessons learned in a project-based organisation.

Lex Geurds (S2540843)

Faculty of Behavioural, Management and Social Sciences,
University of Twente

Master Thesis Business Administration Part 2

1st supervisor: Dr. Desirée van Dun

2nd Supervisor: Dr. Lara Carminati

3rd supervisor: Dr. Julia Wijnmaalen.

April 6, 2023

Acknowledgements

Before you is my master thesis *"Mapping the dissemination and application process of lessons learned in a project-based organisation".* A single case study conducted at the P&T department of the case company.

Through this acknowledgement, I would like to thank the case company for the opportunity to conduct my research. I would also like to thank all the people who contributed to this research in any way, especially the respondents and participants of the questionnaire and focus groups. It was incredibly nice to enjoy your enthusiasm on the subject. I would also like to thank Ilse Boontje in special for the supervision from within the case company.

Finally, I would like to thank my supervisors from the university, Julia Wijnmaalen, Desirée van Dun and Lara Carminati, for their guidance during my graduation. Thank you for your support, stimulating feedback, and pleasant conversations. Without your help my graduation would not have succeeded.

Abstract

Lessons learned are mainly applied in project-driven organisations because these organisations are regularly confronted with the fact that they have to reinvent the wheel due to knowledge and experiences which are not always shared. Working with lessons learned is a process and a suitable solution for knowledge sharing. Through these lessons learned, people can share their acquired knowledge and experience with other employees and the organisation. This way, opportunities are exploited, and mistakes are avoided.

However, literature shows that the process of working with lessons learned often stops after identifying these lessons learned. Indeed, the dissemination and application process of lessons learned proves to be tricky. Therefore, this research focuses on the factors that influence the dissemination and application of lessons learned.

A single case study was conducted to identify the factors influencing the dissemination and application of lessons learned at the case company. To identify these factors, the researcher used two data collection methods. First, the researcher distributed a digital questionnaire for the target group. Secondly, two focus groups were conducted in the form of a workshop mapping the process of working with lessons learned so that the factors that influence dissemination and application could be identified.

The data collected from both collection methods showed three overarching levels namely: Organisational, Individual and Operational, containing nine aggregate dimensions which are: Closed organisational culture, Deficient knowledge management, No job satisfaction due to inexperience, Deficient employee knowledge level, Personal preferences, The inadequate presentation of lessons learned, User convenience of knowledge database and dissemination methods, and Inadequate content quality. These dimensions influence the dissemination and or application of lessons learned. From the findings, it appeared that centrality, oral transmission, and the need for a central knowledge centre were the most important issues influencing the dissemination and application of lessons learned.

This thesis makes practical recommendations to any company looking to implement lessons learned or optimise the processes of dissemination and application of lessons learned. The need for managers to recognize motivation as crucial aspect of dissemination, the importance of centrality in the accessibility of lessons learned and the content quality is important, as it has to match well with the wishes and needs of the users of lessons learned. finally, an organisation has to ensure that employees receive the right introductory period, so that they are up to date with specific subject knowledge and can immediately start working with lessons learned. This thesis also makes theoretical contributions. The research offers nine factors influencing the dissemination and application process of lessons learned. Which lead to the researcher adding an extension in the form of a new dimension namely operational to Duffield and Whitty's existing SYLLK model. Therefore, providing future researchers and or managers with more insights in the process of dissemination and application of lessons learned.

List of figures and tables

List of abbreviations

Abbreviation	**Definition**
OL	Organisational learning
OLC	Organisational learning culture
LL	Lessons learned
KM	Knowledge management
P&T	Case company department
PM	Project managers
PMO	Supporting staff
MT	Management team

Table of content

1.0 Introduction

The modern global economy is shifting towards an economy based on knowledge and services and is therefore moving further away from an old-fashioned industrial economy based on production (Walczak, 2005). To keep up with this shift in economy, organisations are continuously working on the development of their business processes to ensure themselves staying ahead of competition (Lehnert, Linhart, & Roeglinger, 2017). This competitive advantage is largely achieved through process efficiency (Antony & Gupta, 2019). To continue optimising business processes to increase efficiency, most organisations use projects to successfully carry out their business operations (Hobday, 2000).

Organisations working mainly with projects are called Project-based organisations (PBO's). A PBO is defined as, *"an organisation that mainly use projects to produce products and/or services"* (Bell, van Waveren, & Steyn, 2016 p. 18). PBO's are strong due to their flexibility and innovativeness however, PBO's are weaker at the coordination of cross-project resources and the facilitation of companywide learning (Hobday, 2000). Therefore, to create the right circumstances for a PBO to be successful, PBO's need to focus on project management and their learning process (Argyris & Schon, 1978; Huber, 1991).

Crossan, Lane and White (1999) show that effective project management can be achieved by applying Organisational Learning (OL). Organisational learning is "*the process through which organisations change or modify their mental models, rules, processes, or knowledge, maintaining or improving their performance"* (Chiva, Ghauri & Alegre, 2013 p. 684). To achieve OL, organisations must control human and system factors. The human factors include learning, culture and social. The system factors include technology, process, and infrastructure (Duffield & Whitty, 2015). However, in 90% of cases when OL does not take place or fails, it is because of the human factors mentioned above (Maqsood & Finegran, 2009). An example of a human factor influencing the OL process are project managers (PM). Pemsel & Wiewiora (2013) have shown that: *"Project-managers can be people- oriented, free-thinkers, passionate, autocratic conservative and pragmatic, which in most cases can lead to hinder in organisational cross- project sharing of knowledge"* (p. 38). Therefore, it is safe to say that human factors play the most important part in OL (Duffield & Whitty, 2015).

A common strategy for applying OL is to make use of lessons learned. Lessons learned (LL) have been defined as *"a recommendation based on analysed experiences (positive or negative), from which other can learn in order to improve their performance on a specific task or objective"* (Milton, 2010 p. 35). LL are a tool for learning using two different roles. The first role is the development process of a LL. In this role, time is taken in the project to reflect on the result achieved. The LL must describe actions that should be taken or avoided in similar projects. Secondly, the use of LL is a mechanism to share knowledge with others (Kotnour, 2000). LL support the dissemination of knowledge, gained from the experiences of an employee (Weber, Aha, Becerra-Fernandez, 2000). These experiences are

critical in the transfer of knowledge between people and projects and therefore critical to achieving success in projects and OL (Disterer, 2002; Newell et al, 2006).

Although LL are a popular process in OL, the process does not always reap the intended results (O'Dell & Hubert, 2011). For example, Milton (2010) shows that out of 74 organisations that have attempted to implement LL, 60% of the organisations were not content with the outcomes. The problem does not lie in identifying LL or storing knowledge. The problem lies in creating a way to implement LL or knowledge gained in an actionable way (Duffield & Whitty, 2015). Working with LL often goes wrong in companies because they assume that the process of LL is finished after the identification or gathering of the knowledge. This is a false assumption because the dissemination and application of the LL acquired is the most important part of the process (Jugdev 2012; Duffield & Whitty 2015; Disterer 2002).

Finally, many PBO's are engaged in OL to ensure that they can carry out projects more efficiently and gain competitive advantage. However, organisations find it difficult to effectively apply LL into daily operations because the dissemination and application of knowledge is ineffective (O'Dell & Hubert, 2011). As a result, mistakes are made repeatedly, and opportunities remain unexploited. Therefore, this research focuses on understanding the process of dissemination and application of LL in a PBO. To create this understanding, this research tends to answer the following research question:

"*What factors influence the dissemination and application of lessons learned in a project-based organisation?"*

To provide an answer to the research question, an inductive single case study is performed. The researcher used a questionnaire and two focus groups to collect the data for this research. The data provides empirical evidence of different factors contributing to OL and the dissemination and application of LL. This research therefore contributes to existing literature on organisational learning, knowledge management, lessons learned and project management and is therefore, valuable for PMs and leaders as OL is crucial for gaining a competitive advantage by ensuring that mistakes are not duplicated, and opportunities are exploited.

2.0. Theoretical framework

2.1. Organisational learning

Any organisation affected by a constantly changing business environment must be aware that merely processing knowledge is not enough to create a competitive advantage. In fact, it is important for an organisation to acquire knowledge itself. OL is a process used by organisations to develop a new way of recognizing and identifying new business processes from which new organisational knowledge emerges (Chiva, Ghauri, & Alegre, 2013).

2.2. Organisational learning culture

The strength of an organisation's knowledge base is increasingly seen as an underlying reason for firm's performance and the role which organisational learning culture (OLC) plays within it is strongly associated with an organisation's competitive performance (Lai & Lee, 2007). To better understand OLC, this study first provides a working definition. OLC can be defined as *"A set of norms, values and beliefs, creating principles and ways of behaving that characterise an organisation"* (Brown, 1995). According to Krefting and Frost (1985), OLC contributes to competitive advantage because OLC facilitates individual interaction and widens the scope of information processing to accessible levels. Organisations that handle OL maturely foster an OLC that serves a continuous learning process (Lai & Lee, 2007).

In this study, we distinguish between an open and closed learning culture. Open culture is a workplace environment that is characterized by transparency, collaboration, and inclusivity where employees are encouraged to share their ideas and knowledge, and communication is valued (Powell, 2015). On the other hand, a closed culture is characterized by a more formal approach to communication where there is no emphasis on transparency or collaboration. Also, in a closed culture, there is less opportunity for individual creativity and knowledge sharing (Powell, 2015). Additionally, in a closed learning culture, there are fewer sharing processes negatively impacting organisational success (Rebelo & Duarte Gomes, 2011).

In addition, there are according to Schein (1990) three levels of culture that are needed to be distinguished when analysing the culture of an organisation: (1) observable artifacts, (2) values and (3) basic underlying assumptions (see Table 1).

Artifacts	**Values**	**Underlying assumptions**
Artefacts are observable elements of an organisation that are noticeable to everyone, such as layout, dress code or colours.	These are the company's norms and values, representation norm of the organisation.	These are behaviours of employees. They determine perceptions through processes, feelings, and behaviour.

Table 1: Three levels of culture (Schein, 1990)

These three levels also have an impact on how more easily information is shared within an organisation. Hence, they are included in the assessment of whether an organisation has an open or closed learning culture. Where mainly an open organisational culture is the basis for Organisational knowledge.

2.3. Organisational knowledge

Organisational knowledge creation can be divided into two dimensions (see Figure 1). The two dimensions are Tacit and Explicit knowledge (Nonaka, 1994). Explicit knowledge is described as knowledge such as documented and ordered knowledge which is easily transferable because of their formal nature or systematic language. Think of a manual, instruction, or other written documents. This can be classified as external knowledge. On the other hand, Tacit knowledge has a more personal nature, making it difficult to formalize and communicate. It is more about knowledge which is woven into the person such as experiences which are rooted in actions, commitment, and involvement (Nonaka, 1994). The OL process consists out of the conversion of tacit knowledge to explicit knowledge and to do so there are four modes of knowledge conversion (Nonaka, 1994) as can be seen in figure 1.

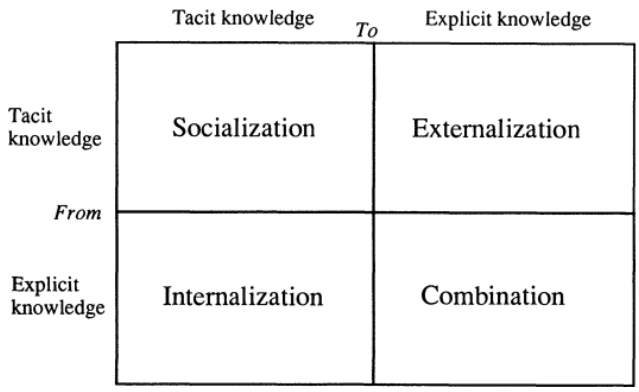

Figure 1: Modes of knowledge conversion (Nonaka,1994)

The first of the four modes of knowledge conversion is called *socialization*. It involves the shared experiences gained by acquiring knowledge together. A clear example of socialization is an apprentice and mentor learning a craft. The apprentice can learn from his mentor by observation and imitation of the mentor. The second mode is called *externalization* this mode makes use of social processes in the form of conversations to combine different bodies of explicit knowledge possessed by individuals. Individuals exchange and combine this knowledge via conversations, phone calls and meetings. Both the third and fourth modes employ certain patterns of conversion that use the idea of tacit and explicit knowledge which are complementary. To manage these processes of knowledge creation and the new created knowledge, organisations tend to look at processes managing knowledge.

2.4. Knowledge management

To conduct OL in a proper way, knowledge management (KM) is critical to organise the newly accumulated knowledge (king, 2009). Easterby-Smith and Lyles (2003) consider OL to focus on the process and KM to focus on the content of learning. In his research King, (2009 p. 4) define knowledge management as: *"The planning, organizing, motivating and controlling of people, processes and systems in the organisation to ensure that its knowledge-related assets are improved and effectively employed"*. The research of Song, van der Bij, and Weggeman, (2005 p. 432) show that KM *"consists out of three stages, namely knowledge generation, knowledge dissemination and knowledge application".*

This research focusses on dissemination and application. The KM function within an organisation carries out the processes described above, in addition they guarantee the further development of methodologies and systems to support their work. A good KM function within an organisation motivates employees to participate in knowledge sharing (king, 2009). KM processes can be performed by individuals however, KM is largely an organisational activity. Therefore, managers focus on what they can do to enable the organisations KM goals. They tent to fulfil these goals by creating social activities or processes which facilitate knowledge sharing. One of these processes is working with LL.

2.5. Lessons learned

Lessons learned (LL) refer to the knowledge and insights gained from past experiences, whether positive or negative, that can be used to inform future decision-making and improve performance (Abbas, 2022). In project management, LL are often documented and shared with the project team, stakeholders, and other relevant parties to promote learning and continuous improvement. LL are vital in the support of learning outcomes like advantages in knowledge and improvements in project performance. Therefore, they are fundamental to OL and continuous improvement (Abbas, 2022; Kotnour 2000). The purpose of LL is *"to promote the dissemination of knowledge gained from the experiences of an organisation's employees*" (Weber et al., 2000, p. 322). An individual can learn lessons from negative experiences which prevent the individual from making the same mistakes and from positive experiences to spread best practices (Yang, Brosch, Yang & Cadden 2019). However, many of this gained knowledge fades or perish because it is not properly shared with others who might benefit. Resulting in a loss for an organisation when LL disappear because LL can have a crucial impact on decision-making. By actively applying the previously acquired knowledge, a company can adjust its strategy, resulting in more efficiency in projects. This results in saving valuable time. However, the dissemination of LL is not the only solution. in fact, working with lessons learned consists of 5 different phases which are explained in the next paragraph.

2.5.1. The five phases of lessons learned

The process of working with LL consist out of five steps (see Figure 2). The first phase is the identification of LL, second the documentation phase, third the analysis phase, fourth the storage phase and finally the retrieval phase.

In the first phase, it is important that all directions and recommendations that may be of value in (future) projects are identified. The identification of these potential LL can be done in different ways, for example via project reviews or evaluations (Project Management Institute, 2021).

In the second phase it is important to document the LL correctly and distribute them to the stakeholders. This can be done in various ways and is different for each company, as a different method can be chosen for each specific audience (Rowe & Sikes, 2006). However, it is important that an organisation agrees on what will be documented, so that the LL remain consistent, understandable, and applicable for other employees (Rowe & sikes, 2006).

In the third phase, LL are analysed. The analysis is of a formal nature, additionally in the third phase the LL are classified into different categories (Project Management Institute, 2021).

The fourth phase is about storing the LL. An organisation can choose to make use of various software possibilities, for example, a database can be set up, the LL can be stored in project evaluation forms or via shared platforms for documents, such as SharePoint, Google Drive, or Office 365. The storage of LL can be done via the categorization used in the third phase.

Finally, there is the retrieval phase, where the LL collected and documented are retrieved to regain knowledge. In this phase the dissemination and application of LL play a vital role (Yang, Brosch, Yang & Cadden, 2019). This research, excludes the process of identifying and analysing the LL because the scope of this research is not on the process of gathering LL but on the dissemination and application of LL.

Figure 2: Five phases' lessons learned.

2.5.2. The dissemination of Lessons learned

Researchers show that many organisations believe to be finished after the identification of the LL however, the opposite is true because the process of working with LL starts after identification (Jugdev 2012; Duffield & Whitty, 2015). This is primarily a human commitment and understanding is needed on individual and organisational level to disseminate the LL after they have been collected. Dissemination is defined in Oxfords learners dictionary (2022) as *"the act of spreading knowledge or information so that it reaches many people".* The dissemination of LL focuses on the communication of LL from projects towards a target audience (Graham et al., 2006).

LL can be transmitted via two different methods. The first method is the push method, which is a passive way of spreading knowledge. Secondly there is the pull method, which is an active way of spreading knowledge (Andrade et al., 2008). In the push method the organisation or individual employee takes the initiative in dissemination by broadcasting LL or actively casting information via for example, a stand-up, newsletter, or plenary project review (Weber & Aha 2003). Opposed to the push method is the pull method, the pull method is based on obtaining LL which are stored at the organisation's most common systems and databases. In pull, the individual thus searches and transfers the accumulated knowledge themselves for personal use (Chirumalla, 2006).

The process of spreading LL is therefore not only a process of pushing LL to an individual or team, but it is also an active process of individuals learning through their search for information (Yuan, Zhao, Liao, & Chi, 2013). To support the dissemination of LL, the dissemination should be done via a dissemination plan. In this dissemination plan it is important that the dissemination activities, methods, and tools are carefully and thoughtfully outlined for the needs of the audience who will use the LL (Gagnon, 2011).

In his research Milton (2010) describes four different system classifications to capture and disseminate LL. The classification of Milton shown in Figure 3 on the next page, consists out of two different dimensions. The first dimension distinguishes between collect and connect. In collect the focus is on collecting and documenting the LL while in connect the focus is on disseminating LL both written and verbal. The second dimension makes the distinction between formal and informal. With formal, the focus is on operating within an established framework following certain rules. While informal refers to a bottom-up method which is the opposite of formal content. In short, this means that formal knowledge is conveyed through a structured format and in informal through conversational text.

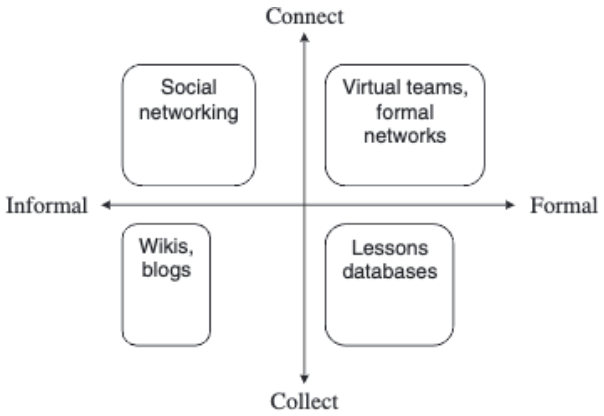

Figure 3: Classification of Milton's lessons learned approaches.

People play a vital role in the dissemination of LL. Every individual processes knowledge in a different way because knowledge is directly linked to an individual's mental model (Kingston, 2012). Knowledge stored in a repository does not have the ability to share this mental model. Therefore, knowledge transfers through specially equipped repositories are often not preferred and is in most cases described as information transfer rather than knowledge transfer (Kingston, 2012).

2.5.3. The application of lessons learned

In literature the application of lessons learned is defined by Kiziloglu (2021) as *"the process of using knowledge regarding products, services, and processes of the organisation with the objective of increasing the effectiveness of knowledge created, validated, and disseminated"* (p. 19). Applying LL in project work involves taking the knowledge gained from previous experiences and incorporating this knowledge into future project planning and execution. This helps to improve project performance and increase the likelihood of project success.

However, the process of applying LL revolves around the correct way of offering the LL to the user (Holsapple & Joshi, 2002). The diversity and incoherence of disseminating technologies and frameworks form a barrier to the application of LL (Colquhoun, Aplin, Geary, Goodman, & Hatcher 2012). Primarily because there is a difference between LL that have been identified and LL that have been stored and then must be implemented.

Therefore, application is mostly divided into accessibility and comprehensibility (Weber, Aha & Becerra-Fernandez, 2001). The application of LL requires tremendous effort from the people within the organisation. Duffield and Whitty (2015) show that people are the biggest factor influencing the application of LL. This is because everyone has their own technique and preference for learning. Hence it is very important for an organisation to have enough cognitive psychological knowledge (Duhon & Elias, 2008). For an organisation, it is difficult to consider different cognitive preferences.

Hence, an organisation should plan to ensure the application process of LL (Carrillo, Ruikar, and Fuller, 2013). An important part of this plan is the inventory of preferences of knowledge transfer of the employees. Once the organisation can apply the right mode of knowledge transfer this increases the degree of application of LL (Carrillo, Ruikar, and Fuller, 2013).

2.5.4. The Systematic Lessons Learned Knowledge Model

The systematic lessons learned knowledge model (SYLLK) is a model created by Duffield and Whitty (2015) to support managers or organisations in disseminating and applying LL. The model defines two dimensions, and 6 elements (see figure 4). The two dimensions are people and systems and the elements learning, culture, social, technology, process, and infrastructure. These elements are based on the drivers of the organisation.

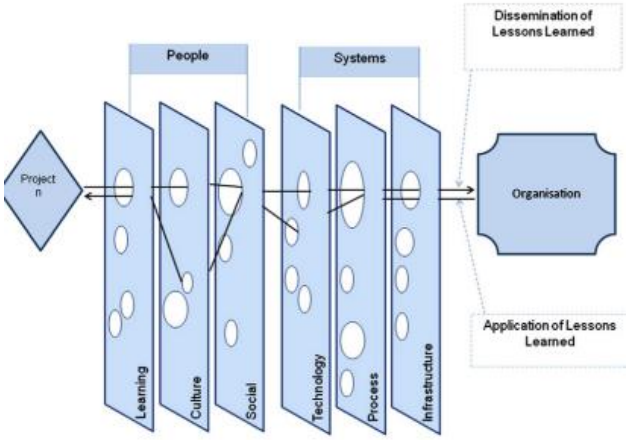

Figure 4: The systematic lessons learned knowledge model (Duffield & Whitty 2015).

The elements in the model are a representation of social and cultural learning together with all organisational processes and the technology that supports them such as infrastructure. There are gaps in the model in these elements, which represent the facilitators of learning. Three of these elements belong to people. These are learning, culture and social. The remaining three elements belong to systems these are technology, process, and infrastructure. The facilitators are shown in Table 2.

Facilitator	Associated practices
People learning	Mentoring (one-on-one coaching)
	Small workshops (inhouse), same skill level
	Willingness to share and learn from each other, others willing to listen and accept new ideas
People culture	Value and encourage people to contribute
	Providing support to that wo want to increase their knowledge
	Regular updates on organisational focus
People social	Acknowledged individual/ group/ team activities
	Reward and recognition of work achieved
Systems technology	Dashboard – knowledge capture
Systems processes	Guidelines for process to achieve an “across board consistent approach
	Drives and delivers best practices
System infrastructure	Co-location of teams and staff

Table 2: Facilitators from the SYLLK model

In most organisations, there are several elements that are open, this means they had several facilitators. These elements are: learning, culture, process, and infrastructure. On the other hand, the elements social and technology are usually closed. These latter elements therefore prevent successful dissemination and adoption of LL. The creators of the model show that in each case, people and system elements need to be aligned to create a potential positive impact on the LL process and its success and for an organisation to learn it lessons via projects.

2.6. Project-based organisation

Project-based organisations (PBO's) are discussed in literature from the mid-1960's but since the 2000's, the topic has seen an increase in scholarly interest (Prouska and Kapsali, 2020). PBO's are defined by Hobyday, (2000) as "*an organisation which uses projects as the prime business mechanism for the coordination and integration of most main business functions of the firm"* (p. 874). This does not mean that all business activities fall within the project. There may be certain functional divisions operating alongside or within the PBO. As shown by Hobday (2000) a PBO can also represent a separate organisational unit within an organisation.

This paragraph highlights the difference between a PBO and traditional organisation. Therefore, below is given a definition and explanation of what is considered a traditional organisation in this research. Schermerhorn (1993) defines a traditional organisation structure as "*a bureaucratic centrally organized, pyramid organisation, operating with several levels of management, chains of command and distributed authority" (p .745).*

Traditional organisations are often organized by division or by business function. There are many differences between a regular traditional organisation and a PBO (shown in table 3). In particular, the organisational structure, view on time management, processes and people and the geographic location differ (Wiewiora, Trigunarsyah, Murphy, Gable, & Liang, 2009).

Differences	Project-based organisation	Traditional line organisation
Management style	Temporary management	Fixed management
Organisation structure	Project-based	Hierarchical
Time management	Based on project-timeline	Based on continuity
People management	Flexible positions	Fixed positions
Process management	Flexible processes	Stable processes
Geographic location	Segregated	Incorporated

Table 3: Overview differences of a PBO and traditional organisation.

A PBO uses temporary management in the form of projects as its primary business process. Instead of fixed management in a traditional organisation (Puranam, Alexy and Reitzig 2014). In a PBO, due to its temporary nature, actors perform different tasks each time. This results in changes in the division of tasks, task allocation and information provision (Puranam, Alexy and Reitzig 2014).

In a PBO, projects are the organisational structure. Most of the resources are dedicated to the execution of the projects and PMs are independent and have the most authority. The organisational structure of a traditional organisation is hierarchical, with each employee reporting towards a superior. PM within a PBO often have significant prestige and steer the project organisation directly. They have direct control over business functions, personnel, and other resources (Hobday, 2000). The role of the PM is that of a connector between project and organisation. This role does not exist in a functional organisation and in addition the role of the regular manager is more hierarchical reporting to a senior manager, who in his turn reports to executive management (Eskerod & Skriver, 2007). Therefore, the role of the PM differs significantly due to hierarchical standards and responsibilities from a regular manager.

In addition to the different organisational structures, PBOs also deal with time differently. For this reason, project members focus primarily on activities that directly benefit the project and are less inclined to pay attention to knowledge transfer in the form of LL (Davenport & Prusak, 1998). For a traditional functional organisation, time is limited and is often referred to as “time is money”, meaning that time is available but should be used effectively (Lundin & Söderholm, 1995). However, in PBO, time is literally limited making it different from a traditional organisation, where time is seen as eternal.

Due to the differences in organisational structure, time management and the processes and people management in PBO’s. Processes are differently conducted than that in a functional organisation. A functional organisation uses continuous processes that are stable.

A stable process is recognised by the fact that the functions in the process and the work performed in it are well-defined and immutable (Mintzberg 1979). In a PBO, the processes are flexible and staged. This is the opposite of a functional organisation because in a PBO, everything is designed according to the content of the project or projects. This also applies to employees. In a functional organisation, everyone stays in place, which promotes expertise in their work. In a PBO, people change projects and thus work. As a result, when a project ends, employees move on to a new project or old work. This results in people from the disbanded team often having little time or inclination to document and disseminate LL. Followed by people going through the same process again (Brady & Davies, 2004).

The difference in geographical location between PBOs and functional organisations also affects how they operate. In a PBO, project teams are often segregated from the rest of the organisation or department. As a result, the social interaction of fellow workers among themselves is limited. Therefore, knowledge in the form of LL is not or less easily transferred organisation wide. In addition, in an enclosed project-team other systems or platforms are used to transfer LL as opposed to the entire organisation.

3.0. Research methodology

3.1. Research design

A single case study was conducted to identify the factors which influence the dissemination and the application process of lesson learned. A case study is *"an empirical inquiry which investigates a contemporary phenomenon, within its real-life context, especially when the boundaries between the phenomenon and the context are not evident"* (Yin, 2003 p. 13). Using the case study method, allowed the researcher to discover and research social processes in detail (Lindgreen, di Benedetto, Beverland, 2021). A single case study could therefore provide higher-quality theories and provided the researcher with a better understanding of the exploring subject, while creating a better understanding of the complex relationship between factors as they operatede in a social setting by providing an answered to the "what" and "why" questions (Denscombe, 2017). However, a single case study also has a drawback, which is that the researcher only got an insight from a single case so there was no material to compare which makes it difficult to generalise and therefore, the statistical power was lower because the research could only draw a conclusion about a small part of the population.

3.2. The case company

The selected case in this research was that of a project department in the transportation sector based in the Netherlands. The company is nowadays semi-government owned and employs around 19.000 employees.

This research was conducted at the case company's project department (P&T). This department is part of the company's operations business unit. The P&T department consists of six different poules (see Figure 5). A "poule" is a group of employees, managed by a MT member and can consist out of multiple project and change managers and thus has several project teams connected. The project support staff is called PMO, these employees have their own poule. The total number of employees in the P&T department is 110 at the time of writing.

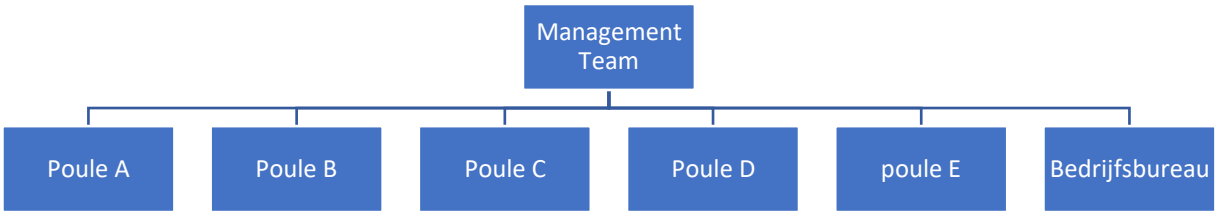

Figure 5: Organisation of poules P&T department

The P&T department carries out various projects. Examples of these projects are the implementation of a new software system or improvements on the external cleaning process (of transportation vehicles). The P&T department could be described as a PBO because it matched all the characteristics described in section 2.4.1 of this study. Its

organisational structure, time management and handling of processes and people are similar to a PBO.

The P&T department was organized to make it easier for the department to cope with the time pressure created by the temporary nature of the projects. This “flexible” set-up means that the department is organised in a way that people and resources move easily through the organisation. The PM has the authority to independently deploy available resources as required. The P&T department thus deployed its employees on various projects. Instead of employees specializing in a specific subject, the employees of the P&T department gain different experiences, due to their work on different projects. After the project period, these poules or formations are dissolved, and employees are transferred to another project.

The geographical location of the P&T was also different from that of a line organisation. The P&T department being located on one of the company’s main locations. Several projects still have their own enclosed areas. This makes the closed project teams more isolated, deteriorating communication with other staff in the departments or within the organisation. LL and other valuable information are less likely to be shared and appointed.

The P&T department noticed that margins on projects were shrinking due to lack of staff and increasing time pressure. Making it increasingly difficult for a PM to successfully complete projects within the expected timeframe. P&T was already familiar with the use of LL via the use of the database for the storage of LL. Moreover, they have a quality assurance team dealing with database development and LL within the organisation in general. However, the MT believes that these LL are not effectively disseminated and applied throughout the organisation. As a result, people often try to reinvent the wheel, mistakes are made more than once, and opportunities sometimes go unused.

3.3. Data collection methods

The researcher made use of qualitative data collection methods in this research. The advantage of using these qualitative data collection methods was that the researcher did not lose the eye for detail as he could go more in depth into the subject matter (Denscombe, 2017). In addition, data triangulation was used to increase reliability and validity. Patton (1999) defined data triangulation as "*the use of multiple sources in qualitative research to develop a comprehensive understanding of phenomena*" (p. 545).

To better understand the factors that influence the dissemination and application of LL the researcher made use of two different methods to collect data. First, a questionnaire was used, and secondly, two focus groups were conducted. Table 4 gives an overview of the data collection methods and the intended targets.

Data collection method	What do we want to know?
Questionnaire	• Which factors influence the dissemination of lessons learned? • Which factors influence the application lessons learned? • Identifying the process of working with lessons learned?
Focus group	• Why and to what extent the factors affect the dissemination of lessons learned? • Why and to what extent the factors affect the application of lessons learned? • Why the process of working with lessons learned is structured as it is? • Where is the room for improvement in working with lessons learned?

Table 4: Overview of data collection methods and required data.

3.3.1. The questionnaire

The first data collection method used was a web-based questionnaire. The use of a web-based questionnaire allowed the researcher to design the questionnaire and distribute it to a large number of participants in a short amount of time, while participants could complete the questionnaire at their own pace and from any location (Etikan, 2017). The researcher, in consultation with the case company, chose to distribute the questionnaire from an email account of a member of the management team (MT) because the researcher was convinced that there could be a better response rate when the question came from the MT instead of an intern. To provide a stable and easy to use platform for conducting the questionnaire, the researcher made use of the software Qualtrics. To ensure the reliability and validity of the questionnaire the researcher first had the questionnaire reviewed by two case company employees and two outsiders to ensure that the questionnaire was well understood. The two case company employees were not part of the target group of the study. The outsiders were acquaintances of the researcher who had no link with the organisation or experience in working with LL and therefore provided unbiased feedback.

Outline of the questionnaire

To achieve the objectives of the questionnaire, open-ended and closed-ended questions were used. As respondents answered the open questions, they directly described the process they experience working with LL. To ask the questions in a structured way, the researcher divided the questionnaire into four different sections. A format of the questionnaire can be found in Appendix A.

The first part of the questionnaire was the introduction. In the introduction, the researcher welcomed the respondent and explained the usefulness of the questionnaire and research. Additionally, it was made clear that the if the respondents continued after the first question they acknowledged and confirmed that they consented with the terms and conditions mentioned in the format (appendix A) at the introduction.

The second part of the questionnaire dealt with the dissemination of LL. The researcher asked open to identify the process of dissemination LL so that the researcher could later identify the factors that influence the dissemination of LL. The questions asked were about the push and pull methods of disseminating LL and how P&T staff deal with these methods. The researcher chose not to specify a time setting like a project because staff or the P&T department could also work with LL outside a project. The researcher had chosen to distinguish between individuals and organisations. Because an employee can also spread LL through the organisation, the push methods is therefore not only for the organisation itself.

The third part of the questionnaire dealt with the application of LL. The researcher asked open and closed questions to identify the process of applying LL so that the researcher could later identify the factors that influence the application of LL. The questions in this section dealt with the pull methods. Questions were asked about the frequency, how and where LL are looked up by employees. In addition, to map the application of lessons learned in a somewhat more structured way, the researcher chose to divide application into accessibility and comprehensibility therefore these two topics were addressed in the questionnaire.

At the fourth and final part the questionnaire ended with an expression of gratitude. Respondents were encouraged to reach out to the researcher if they had additional questions or want to contribute more to this research. In order to do so the researcher made sure his contact information was shared with the respondents.

Target audience and sampling strategy

The researcher made use of purposeful sampling, in this sampling method, the researcher considered the aim of the research and selected samples accordingly (Coyne, 1997). The criteria used in the sampling were based on the function of PM and PMO and whether an employee was already working in the department before the merger. The researcher chose to select employees that have worked for six months or longer at the P&T department, due to a merger within the case company several months ago. Multiple internal departments merged into the P&T department. Staff who joined the P&T department after the merger are still inexperienced with the department's working methods. Hence, the researcher wanted to focus on the employees who worked in the P&T department prior the merger to ensure validity in this research.

Following the selection criteria, the email containing the questionnaire was sent by the MT to 56 employees of the P&T department, stressing the urgency of the research. In addition, the response burden will be minimalized by making sure that filling out the questionnaire will not take up too much time. The questionnaire was open for 10 working days and after 5 and 10 working days a reminder to fill in the questionnaire was sent.

3.3.2. The focus groups

A focus group is " *a group of individuals selected and assembled by researchers to discuss and comment on the topic that is the subject of the research, from personal experience*" (Powel & Single, 1996 p. 499). Using a focus group has several advantages for social science researchers, such as being economical, fast, and efficient to collect data from different participants (Krueger & Casey, 2000). However, a focus group also has some disadvantages as, focus groups are harder to execute, time consuming and participants might feel less comfortable in a group setting. The researcher addressed these disadvantages by practicing the focus group and creating a comfortable setting which is more explained in the next chapter. The researchers divided the focus group in three parts, which are explained later in this chapter. The focus group interview is conducted on a semi-structured basis, allowing the researcher to ask follow-up question on answers provided by the participants (Morgan 1998). The focus groups were recorded with the consent of the participants. This allowed the researcher to transcribe the audio to text via software which is according to Onwuegbuzie et al. (2009) the most rigorous way. The researcher chose to improve the quality of the data by reviewing the entire automated transcripts by listening to and checking the transcripts for errors. Appendix B shows an overview of the format the researcher used while conducting the focus groups.

Setting of the focus group

Ensuring that the participants were not distracted and felt comfortable participating the focus group is crucial for focus group success (Morgan, 1997). Therefore, the researcher tried to create an as open and comfortable environment as possible by starting off with the notice that it was his first time, doing research like this and appreciates all the help. Additionally, the researcher made a number of preparations. The focus group took place in a reserved room with only two windows to the outside reducing influences from outside the focus group. The chairs were arranged in a semi-circle so that people could see each other when talking. The researcher made sure there were enough refreshments. The researcher sat in front of the circle, so he had a clear overview of the group of participants. Therefore, he could check if all the participants participate in the group discussion and possibly intervene to give the opportunity to speak for a participant.

Outline of the focus group

The researcher started the focus group with a practical introduction. During this introduction, the researcher welcomed and thanked the participants in the focus group. Subsequently, the researcher introduced himself and explained the research goals and objectives. Also, the structure and timespan of the focus group were discussed. Following, the researcher moved on to the substantive part of the introduction. At this part the researcher made sure the foundation of the focus group was constructed. Permission was granted to record the focus group. Following, the researcher established ground rules. Ground rules are defined as, *"Not formal rules nor disciplinary rules created by the leader, but rather guidelines that emanate from the team itself to assist the collective in articulating its challenges they emerge informally, are not necessarily written, and are negotiated at the team level"* (Cunha, Rego, & Simpson, 2022 p.3). These ground rules were conducted in cooperation of the participants. The researcher then suggested some common rules like "let everyone finish talking, only one person at a time is talking and there are no wrong answers". But also input from the group was requested. The practical introduction was concluded by the researcher with a round of questions to ensure everything was clear for the participants.

After the introduction took place and everyone fully understood what was expected the discussion took place. According to Onwuegbuzie et al (2009) an interactive nature of a focus group contributes to a good discussion. Therefore, the researcher chose to make the focus group interactive. Respondents had to write their answers on post-its and then stick them on the wall at the corresponding themes, creating an overview of the factors and topics. This approach provided a solid base for group discussion. After the discussion, the researcher scheduled a moment so that respondents could summarise the answers given and there was room for additional answers or things to be discussed. Breaks were included to alleviate stress and stimulate productivity.

Closing the focus group

At the conclusion of the focus group, the researcher took time to check that all topics were covered. The researcher then briefly summarised the answers and offered respondents a final opportunity to add additional comments to existing answers or provide new answers. The researcher then asked the respondents if there were any other topics to be discussed that were not included in the researcher's format. However, this was not the case. Finally, the researcher thanked the participants for their participation in the focus group and elaborated what would be done with the collected data. As a final step, the researcher shared his contact details so that individuals could contact him with any concerns or questions.

Target audience and sampling strategy

Good interaction is the key to a successful focus group (Mishra, 2016). Various types of employees work in the P&T department, these include PMs, change managers, and PMO, each employee in each position has their own interpretation and method of working with LL. However, in consultation with the case company, it was decided to conduct homogeneous groups. Hence, the researcher chooses to conduct 1 focus group among the PMO and 1 focus group with the PMs (see table 5). Homogeneous groups were chosen because the researcher estimated that there was a too high of a chance that an employee will be parroting his or her manager and therefore not giving sincere answers. The researcher targeted 6 to 10 participants in the focus group because 8 is the ideal number according to (Mishra, 2016). Table 5 gives an overview of the respondents and their functions.

To create the proper atmosphere for employees to feel safe, the research provided a meeting room whereby influences from outside the room are kept to a minimum. The respondents off the focus group were placed in a semicircle so that everyone could see and understand each other.

Function	**Focus group 1**	**Focus group 2**	**Total**
Project manager	1	7	8
Supporting staff (PMO)	5	0	5
Total	6	7	13

Table 5: Overview respondents and functions.

3.4 Data analysis

3.4.1. The questionnaire

The questionnaire responses provide insight into the working practices of P&T staff and describe the process of working with LL. This insight helps to identify factors that influence the dissemination and adoption of LL the questions are open-ended. The questions in the questionnaire are largely open-ended. The data was primarily coded using the method developed by Gioia, Corley, and Hamilton (2013) as shown in Figure 6 below. The answers of the questionnaire are coded in a coding scheme. Coding helps the interviewer to analyse and interpret the answers from the unstructured data (Locke, Feldman, golden-Biddle, 2020). In this research the coding method developed by Gioia was used. The Gioia method works with 3 steps (see Figure 6). Firstly, lines of text are extracted and organized based on ideas, answers, and comments from the transcripts. These are the "first order concepts". Subsequently, these concepts are collected under a "second order theme". Which provide a more comprehensive structure and overview so that patterns can be more easily recognised. Finally, these themes were merged into an overarching "aggregate dimension" (Gioia, Corley, & Hamilton, 2013).

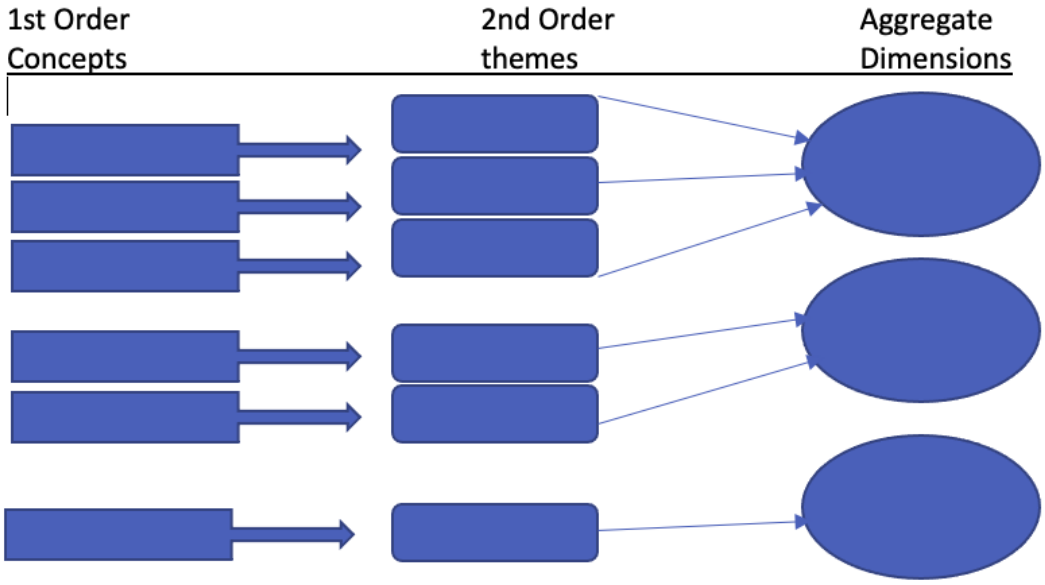

Figure 6: Gioia data structure

Since the researcher used an analysis method based on clustering data into themes, it can also be argued that the researcher also used a method called Thematic Analysis. According to Braun and Clarke (2006), Thematic analysis is as the name suggests, a method suitable for identifying and capturing particular themes in available data. It shows that Gioia's coding technique is similar to thematic analysis on a number of fronts. Both methods are about coding quotes into themes only Gioia has a deeper layer, coding the themes again in dimensions. Due to the lack of an established way in the literature to conduct Thematic analysis, Braun and Clarke (2006), described six steps which are shown in table 6 on the next page.

Phase	Description of the process
1. Familiarizing yourself with the available data	Transcribing data, reading and re-reading the data, noting down initial ideas
2. Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code
3. Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme
4. Reviewing themes	Checking if the themes work in relation to the coded extracts and the entire data set, generating a thematic map of the analysis
5. Defining and naming themes	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme
6. Producing the report	The final opportunity for analysis, selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature.

Table 6: Phases of thematic analysis (Braun and Clark, 2006)

While analysing the available data, the researcher used these 6 steps as a leitmotif. Subsequently, the researcher did choose to add a third and eventually even 4th layer in the coding process. As a result, the researcher used Gioia's way to present the findings of the research but had used the thematic analysis described by Braun and Clarke (2006), to analyse the data and create the themes.

3.4.2. The focus groups

To analyse the data from the focus groups, the researcher chose to listen to the automated transcripts in order to check them for errors or ambiguities and hereby, improving the quality of the data. When the data from the focus groups were ready to be processed, the researcher coded these data using the same coding methods as described at the data an analysis for the questionnaire described in the previous chapter. To ensure that the aggregate dimensions and second-order themes were labelled, the researcher organised several sessions with external parties to discuss the correct naming of these labels and dimensions to ensure that they are understandable and cover the right grounds. These external contributors were all not involved in the study but acquaintances of the researcher.

3.5. Validity and reliability

The research had taken several precautions to ensure the validity and reliability of the research.

In Maxwell's study (2013) there are two validity threats that the researcher needed to consider. First, there is researcher bias. To avoid this bias, the researcher must ensure that he does not consciously or unconsciously collect data that fit his expectation pattern. The second validity threat is that of the influence of the researcher on the setting and participants. It is important that the moderator adopts a neutral stance during the focus groups, so the participant(s) do not feel influenced (Baarda, 2020).

To ensure there was limited researcher bias and improve reliability the researcher had the questionnaire format and focus group format checked by two employees of the company and two persons outside the company. These reviews ensured the questionnaire and focus group questions were understandable and participants had the right interpretation of the questions. In addition, in the introduction of the questionnaire, the researcher provided an explanation for different topics that recurred in the questionnaire, so respondents had the right understanding of the researcher's interpretation of these topics.

The setting and environment of the focus group can influence respondents' reactions and opinions. A tension-filled atmosphere at the focus groups can make the participants feel unsafe and can prevent the participants from sharing their true experiences and opinions with the researcher resulting in a reduced reliability and validity. This can also arise if there is not a homogeneous group of participants (Morgan 1998). Hence to ensure there was as limited influence on the setting and environment, the focus groups were conducted with only PM or PMO. To make sure the setting is right in the focus group, the researcher booked a meeting room and blocked the windows with flipchart sheets, to prevent outside distractions and ensure privacy. In addition, the moderator draws up rules for the focus group together with the participants. This way, everyone treats each other during the focus group with mutual respect. The moderator also provides an icebreaker to loosen up the atmosphere. Finally, anonymity is difficult to guarantee because the participants can see each other. However, the data will be processed anonymously.

The data from the questionnaire and focus group are both digitally processed. This digital method helps the researcher increases objectivity by limiting the errors and biases to creep in because of personal human error, opinions, or subjectivity. Once the focus group data is analysed and coded the results are distributed to the participants. This allows the participants to give feedback if they are convinced that certain data had not been processed properly reducing researcher bias. The researcher excluded employees who started working at the P&T department after the merger, those employees have different experiences, and are not yet acquainted with the procedures at the P&T department.

4.0. Results

After analysing the questionnaire and focus group data, the researcher can conclude that there is no noticeable difference in results between the two methods of data collection. Both the questionnaire and the workshop reflect similar outcomes in coding. Hence, the researcher chose not to differentiate the data by respondent group. The focus group data collected from PM and PMO groups was analysed for major differences. However no significant or striking differences were noticed.

In both data collection methods, the researcher made use of two parts. First: dissemination and second application. Application is in turn further divided in accessibility and comprehensibility. Several quotes were equivalent to each other, e.g., the preference for oral transmission. These quotes were counted as 1 first order concept. In total 98 first order concepts were found (see Appendix C). Next, these concepts were coded into 24 second order themes, and finally were coded into a total of 8 aggregate dimensions. These 8 dimensions answer the research question "*What factors influence the dissemination and application of lessons learned in a project-based organisation*". Dissemination consisted out of 3 factors dimensions and application out of 5 factors (accessibility 1 and comprehensibility 4 as can be seen in Table 7).

The researcher chose to apply a 4th coding dimension. Therefore, all aggregate dimensions were divided into 3 overarching levels: Individual, Organisational, and Operational (see Table 7). The individual-level factors involve company employees, such as the lack of job satisfaction due to inexperience or deficient employee knowledge. The organisational level related to company-level factors such as the closed organisational culture or deficient knowledge management and the operational level involves factors related to the operation of LL such as user convenience and content quality.

During the process of coding to the deepening layer of the 4th dimension, the researcher noted deviations from the SYLLK model, described in section 2.5.4, specifically in relation to the 4th dimension called operational. Further explanation of these deviations will Be provided in this chapter. The results are presented by topic of the research question. So first follow the factors that influence dissemination these are factors with the letters A, C and F. Then the factors that influence application are shown with the letters G, H, D, E, and B. Table 7 on the next page shows a total overview of the dimensions, factors, and associate themes.

Factors influencing the dissemination and application of lessons learned.		
Second order themes	**Aggregate dimensions**	**4th dimension**
A1. Prioritization of lessons learned is lacking	(A) Closed organisational culture	Organisational level
A2. The receiving party is not admissible		
A3. Mindset of employees affects dissemination		
A4. No awareness of the value own knowledge		
A5. The lack of organisational stimulus to disseminate lessons learned		
A6. Collaboration with colleagues		
A7. Lack of motivation		
B1. Unfamiliarity of knowledge holders within organisation	(B) Deficient knowledge management	
B2. Deficiencies in documented project plans.		
C1. Experience in disseminating lessons learned is lacking	(C) No job satisfaction due to inexperience	Individual level
C2. The ability to convert knowledge into lessons learned is lacking		
C3. Inexperience with software systems		
C4. No personal stimulus to disseminate lessons learned		
D1. Commissioning process	(D) Deficient employee knowledge level	
D2. Sector-specific knowledge		
E1. Lessons learned transfer method	(E) Personal preferences	
E2. Document sizes		
F1. Mode of transfer is inadequate	(F) The inadequate presentation of lessons learned	Operational level
F2. Dissemination platforms are lacking		
G1. Absence of a knowledge centre	(G) User Convenience of knowledge databases and dissemination methods	
G2. Obscurity of systems		
H1. Lessons learned are documented to controlling	(H) Inadequate content quality	
H2. Unclear writing style		
H3. Lessons learned introduction		
H4. The usability of lessons learned		

Table 7: Coding scheme of influencing factors

4.1 What factors influence the dissemination of lessons learned?

The first part of the research question deals with the factors which influence the dissemination of LL. These factors refer to the aggregate dimensions retrieved from the available data which are the closed organisational culture, the lack of job satisfaction due to inexperience and the inadequate presentation of LL.

4.1.1. The closed organisational culture

In the questionnaire and both workshops, the same themes about organisational culture emerged. In the section on dissemination, 5 themes relating to culture were identified in the dissemination section of this research. However, an additional 2 themes emerging in accessibility. Since accessibility is subsequent to dissemination, the researcher chose to combine all culture themes into this paragraph under the title Closed organisational culture (A). So below are first 5 themes influencing dissemination followed by 2 themes influencing accessibility.

The first theme of dissemination is: **a lack of prioritization of lessons learned (A1).** This refers to employees not allocating sufficient time to work with LL, which is often dropped from agenda's due to its inability to produce immediate results. Hence, people do not prioritise it. For instance, one respondent stated that: *"The overall workload plays an important role in disseminating lessons learned. People do not have enough time to process and then share lessons learned. Therefore, some knowledge is not stored and making it inaccessible to others."* Another respondent stated: *"I notice that the topic of lessons learned is put on the agenda but then quickly scraped off, it is always at the end of the agenda of a meeting or session. When the meeting runs out, the topic falls away and people say: we'll do it next time. that's how it keeps moving up".* This theme, therefore, points towards a closed OLC because people do not value knowledge sharing because time is not made available which means LL are not shared. The P&T department risks reinventing the wheel, which costs extra time, mistakes being duplicated, and opportunities remaining unexploited. Employees also may experience frustration with the lack of progress and may feel that their efforts are not valued. This can lead to a decrease in motivation and engagement, which in turn can lead to negative impacts on organisational performance due to poor decision making.

The second theme is: **the admissibility of the receiving *party (A2)*** which can influence the dissemination of LL. In order for LL to be effectively disseminated, it is important they are communicated to individuals or groups who are willing and able to receive and act on that information. One respondent said the following about this: *"The culture is different, previously I would walk around on our department and then I would meet other people who I could ask questions to if I didn't understand something, now I have to go and plan an appointment in a targeted way and sometimes I drop out because of this."* In addition, other respondents stated: "*If the recipient of the lesson learned is not accessible then there is no point in sharing lessons learned."* and "*If you want to share lessons learned with someone who has no time or need for them it's never going to work."* The admissibility

of the receiving party influences the open OLC necessary for the successful dissemination of LL. The values of the company tend to shift, resulting in a more closed OLC.

The third theme is: **the mindset of employees affects dissemination (A3),** which refers to previous experiences in working with LL having an impact on the dissemination of LL. For instance, a respondent states: *"Having previously had a negative experience sharing lessons learned, I am now a lot more reluctant to disseminate lessons learned again".* Additionally, another respondent says: "*My personal experience influences how I pass on the knowledge or information".* The mindset of employees can play a significant role in the dissemination of LL within an organisation. Therefore, it is important for organisations to foster a OLC and growth, and to encourage employees to adopt a growth mindset. This theme also highlights the presence of a closed OLC. As negative experiences cause employees to share less which therefore means less transparency, collaborations and fewer sharing processes are present at the P&T department.

The fourth theme is: **no awareness of the value of own knowledge (A4).**
Individuals who are aware of the value of their own knowledge and experiences are more likely to actively seek out opportunities to share information with others. They may be more willing to collaborate and disseminate their insights and expertise. Thereby fostering better communication and a more effective dissemination of LL. However, one respondent pointed out: *"My knowledge about relevance and or benefits of lessons learned is absent, therefore, I am not actively sharing my lessons learned."* While another respondent states that: *"Often I am not aware of what I know or have done and whether that is an interesting lesson learned for another person."* This lack of awareness regarding the value of one's own accumulated knowledge may lead to closed culture, due to a negative impact on sharing process, communication and collaboration within the organisation and can make it difficult to disseminate LL effectively. Therefore, this theme has implications for the performance employees and the overall organisation. Furthermore, the findings in this theme contribute to the literature since the awareness of the value of knowledge was not prior described in literature.

The fifth and final theme about the closed organisational culture for dissemination is **the lack of organisational stimulus to disseminate lessons learned (A5).** This indicates the lack organisational support perceived in the process of disseminating LL. This is evident from the fact that several respondents have the following quotes: *"There is a lack of follow-up due to lack of support from organisation".* In addition, another respondent pointed out: *"There is no active support in dissemination from the organisation".* If an organisation fails to provide a formal process for sharing LL, individuals struggle to find the time and resources to do so resulting in the creation of a closed culture.

Following, the two themes about culture and accessibility. This part of culture is influenced by **the collaboration with colleagues (A6)**. The data shows respondents perceive an inadequate level of cooperation between different departments or teams. As a result, in some cases, access to LL is blocked due to a lack of authorization. For example, the data

shows that *"There is an inaccessibility of SharePoints from other departments or teams."* But also, that there is *"Insufficient cooperation between different departments or teams."*

Finally, the second theme about culture in accessibility shows that there is **a lack of motivation (A7)** because *"The attractiveness of working with lessons learned is lacking"*, resulting in *"There is no internal motivation in working with lessons learned".* As a consequence, it is clear for the researcher to conclude that organisational culture has a negative impact on the accessibility of LL. Collaboration between teams and departments is in short supply, making knowledge unavailable. These deficiencies in cooperation make working with LL unattractive. Meaning there is no intrinsic motivation to work with LL.

In final, the above themes reflect a closed organisational culture on dissemination and accessibility. This closed culture (as described in chapter 2.2) has an impact on employees and organisational performance. For instance, the closed culture affects employee motivation and engagement, which may cause a decline in productivity and performance. Employees are less likely to make extra efforts or take initiative if they do not feel supported or undervalued. The data demonstrates that the P&T department does not contribute positively to the dissemination of LL. This is evidenced by the lack of support from the organisation, additionally, the employees are not aware of the value of knowledge at their disposal, but also the internal motivation is lacking among employees, resulting in LL not being actively disseminated independently and accessibility is lacking. Organisational culture is classified by the researcher in the 4th dimension "Organisation".

4.1.3. No job satisfaction due to inexperience

The lack of job satisfaction due to inexperience (C) among employees is the second aggregate dimension, in other words the second factor affecting the dissemination of LL. The questionnaire and focus group data did not reveal any differences in response.

The first theme influencing the dissemination of LL, is **the experience in disseminating lessons learned is lacking (C1)** which can play a significant role in the effectiveness of the dissemination process. Employees who have experience in sharing and implementing LL are more effective in communicating their insights and expertise to others within the organisation. From the data, it appears that there is a lack of experience in disseminating LL, for example, people do not know where, how and to whom they should disseminate, it is stated: "*The habituation of working with lessons learned is lacking because I have little experience with it."* Another answer from the data was*: "I am willing to distribute lessons learned, but I do not know to whom."* The experience of employees in disseminating LL is a valuable asset in ensuring the successful dissemination and implementation of LL within an organisation. By providing opportunities for employees to gain experience in this area, they stay motivated to be transparent and collaborate with other employees. Organisations can build a culture of continuous improvement and learning and improve the overall performance of the organisation.

In addition, in the second theme it appears that **the ability to convert knowledge into lessons learned is lacking (C2)** which is a critical step in the dissemination process falls short, and if it falls short because this mostly the cause due to a lack of experience. The effectiveness of the dissemination process can be hindered. The process involves transforming raw data and information into actionable insights that can be shared and implemented by others within the organisation. Data indicated a need for standardization through the use of procedures or a format. To this a respondent stated: *"The use of a standard operating procedure or format is unknown*." Also, distilling knowledge into LL with the right context appears to be a challenge. For example, several respondents stated that *"People have difficulty distilling knowledge into lessons learned and experience difficulties writing down the context of a lessons learned".* If the conversion process falls short, the LL gained from previous projects may not be effectively communicated or implemented. This can lead into a lack of learning and improvement within the organisation and may result to the repetition of the same mistakes in future projects influencing organisational performance. This topic is an extension of the literature on OL. Distilling knowledge and in special the transformation from tacit to explicit has been described priorly in literature before. However, not yet in the context of a transport company.

An explanation for the inexperience and difficulty in distilling knowledge to LL, could be attributed to employees' **inexperience with the supporting software systems (C3)**, these systems being SharePoint and the database which is accessible via SharePoint. Respondents point out "*The ease of use of the database which is lacking"* and that *"People are not familiar with working with the database".* The absence of experience with the software systems results in employees struggle to effectively use it to share their LL. They may be less efficient and effective in their use of the system and may be less likely to engage in the dissemination process as a result.

This makes it easy to imagine employees experiencing: **no job satisfaction due to inexperience (C4)** which is the fifth theme. The lack of job satisfaction due to inexperience in the dissemination of LL can be a barrier to the dissemination process. If employees do not feel motivated or incentivized to share their LL, they may be less likely to engage in the dissemination process, which can hinder the overall effectiveness of the process. The data shows that presumably due to the lack of knowledge and experience, there is no motivation to share LL corresponding quotes are: "*Motivation to share from within is lacking."* But also, that "*The right trigger to share lessons learned is missing."*

The researcher therefore concludes that the skill level of employees is a limiting factor on the dissemination of LL. The organisation P&T needs to address this by improving the experience and knowledge of employees in disseminating LL so that relevance and motivation is created to share intrinsically. The aggregate dimension "lack of Job satisfaction due to inexperience" can be placed under the new 4th dimensions, individual level.

4.1.4. The inadequate presentation of lessons learned

The final factor influencing the dissemination of LL is the aggregate dimension of the inadequate presentation of LL (F). In both data collection methods, the respondents pointed out that the presentation of LL is deficient in several areas. Thus, **the mode of transfer is not adequate (F1),** the data pointed out that respondents *"Disapprove of big excel documents as lessons learned transfer method"* also, *"One on one conversations are the preferred dissemination method due to follow up possibilities in conversation".*

Finally, there is disagreement about **the platforms on which the lessons learned are disseminated (F2)**. Centrality is often mentioned here for instance: *"No central point to disseminate lessons learned is a dealbreaker*". or "*The lack of central dissemination point for lessons learned causes my disengagement".* As a result, the researcher concludes the way LL are offered to P&T employees does not meet their requirements of employees. moreover, the inadequate presentation of LL is a limiting factor to the dissemination of LL. The way the LL are presented to employees is lacking, since multiple employees point out that the mode of transfer and the platforms on which LL are offered are insufficient for their needs. The inadequate presentation is placed under the new 4th dimension of operational level.

In summary, the answer to the first part of the research question *"What factors affect the dissemination of lessons learned"* is that the closed organisational culture, the lack of job satisfaction due to inexperience and the inadequate presentation of LL all have an impact on the process of working with LL.

4.2 What factors influence the application of lessons learned

The second part of the research question "What factors influence the application of LL." The researcher divided application into two parts, accessibility (paragraph 4.2.1) and comprehensibility (remaining paragraphs) which are further detailed below in this chapter. No differences in the data collection methods were found.

4.2.1. User Convenience of knowledge databases and dissemination methods

The aggregate dimension user convenience of knowledge databases and dissemination methods (G). Shows that the ease of use of platforms and working with LL is deficient. First **the absence of a central information point (G1).** This lack was also approached in the dissemination factors. However, that was from a data push perspective and is now about the data pull perspective. One respondent expressed the following: *"In my work, I miss a central point where I can go for knowledge, that department or person should then point me in the right direction then I find it myself."* Next, a respondent states, *"I experience a lack of a central point where you can go to verbally explain your knowledge question."* In combination with the second theme **obscurity of systems (G2)** where respondents point out that: *"Unclear SharePoint pages make lessons learned unfindable"* and *"The lack of categorization of lessons learned creates a lack of clarity"*, but also, *"Excessive variety of platforms creates confusion when looking for lessons learned".* Consequently, the accessibility of LL is limited by the obscurity of the systems used which affects user convenience.

4.2.2. Inadequate content quality.

The data indicates dissatisfaction due to inadequate content quality (H) of the documented LL. With the main pillar that people criticize the writing style of LL. For instance, it appears that **lessons learned are documented to controlling (H1).** People want to draw their own conclusions but fail to do so because: "*Structure of a lesson is often too directive, you have to do this or not. I prefer a heads-up from which I then draw my own lesson".* But also, the quote. *"I don't want someone to tell me something that I have to do it a certain way. I want to read and conclude that myself".* demonstrate the respondent's disapproval of the documentation method. Aside from an overly direct writing style, LL also seem vague, due to an **unclear writing style (H2).** The data shows that several respondents felt that lessons learnt should be more to the point, for example from the following quote, *"Due to the immense amounts of detail some lessons learnt contain, there is too much information to process. This creates an overkill."* also, *"We excel at abbreviations within P&T. Every department and sometimes even every team has its own abbreviations. This sometimes makes it unclear (especially to newcomers) what is meant."* indicate that LL are documented in an unclear manner.

Subsequently, the data shows that there is a need for a **brief introduction of the lesson learned (H3)**. People want an abstract describing in a few lines the core of the lesson learned evidenced by the following quote: *"I would like to read an abstract of a lesson learned, then I can quickly decide, is this LL worth reading or not"* another respondent states: *" I want a short and clear description of the contents of a lesson learned, prior to reading the whole document".*

Finally, **the usability of a lesson learned (H4)** appears to be crucial as the following quote points out: *"We are not a production company, with standard processes. Lessons learned written down can very quickly become irrelevant. Due to changes in processes or operating ways."* Another respondent commented: *"Sometimes, I read a lesson learned, which subjects a lower version of a project plan or software that we are currently working with. This makes the lessons learned unusable for me".* This demonstrates again, the significance of the need for LL that are up to date

In conclusion, the researcher can state that the way LL are documented does not meet respondents' wishes and requirements. This is evident from the documents being too large and containing an unclear, over-directive writing style. Additionally, there is a lack of a proper abstract or introduction of the lesson learned. Lastly, shelf-life also appears to play an important role in the comprehensibility of LL.

4.2.3. Deficient employee knowledge level

The deficient employee knowledge level (D) is lacking as the **Commissioning process (D1)** is lacking since it is not stimulated to mentor junior employees. Therefore, new employees have difficulty completing their tasks. A respondent states: *"it would be handy, for the somewhat younger project managers that you always have a coach who shows you around a bit"*. Another respondent states: *"Very little to no new external knowledge comes in through new colleagues because they all move on internally".* Data also shows that the **Sector-specific knowledge (D2)** is lacking Respondents state: *"Colleagues new to a department or within a team sometimes lack content knowledge to apply lessons learned immediately."* Also, a respondent states *"I notice, I find that young colleagues, misunderstand information because of inexperience"*. The researcher concludes that the level of knowledge of new employees is sometimes insufficient to comprehend and implement LL immediately.

4.2.4. Personal preferences

The second to last factor is personal preferences (E), **the transfer method of lessons learned (E1)** is no less important, data reveals that the method of transfer falls short. Thus, it appears that oral transmission is preferred: *"My preference is for oral transmission, that way I understand the context better because I can then ask further questions."* In addition, people feel the need for a voice-over: *"Written lessons learnt are not bad, but I often miss the voice-over, explaining exactly how the lesson was put together verbally."* Verbal transmission allows the employee to ask follow-up questions, thus the context of the lesson learned is better understood.

In addition, data also shows that there is a dissatisfaction with **document sizes (E2)**. A respondent states: *"Lessons learned are now hard to understand because they consist of too long texts."* In addition, another respondent states: *"To much text or information makes lessons learned no longer manageable".* because the document sizes are too large the need for oral transmission is strengthened. The researcher therefore concludes that the current transfer method falls short.

4.2.5. Deficient knowledge management

Finally, **the unfamiliarity of knowledge holders within the organisation (B1)** appears to be a major problem in the comprehensibility of LL. As described above, the need for oral transmission to be able to ask follow-up questions is high. However, the unfamiliarity of knowledge holders results in fellow workers not knowing where or to whom to go with their questions. This is also evident from the data based on the following quotes: *"It is not clear to me where or to whom I should look if I have a question about a lesson learned."* Or *"It is not clear to me where or to whom I should look if I have a question about a lesson learned."* But also *"It is unknown to me who has what knowledge therefore no follow-up is possible for me."* Lastly, *"I would like a list showing all the knowledge holders or experts so that I can contact them if necessary."* Hence the researcher concludes that the lack of identification of knowledge holders is a major shortcoming in working with LL.

In addition, there are **<u>often deficiencies in documented project plans (B2).</u>** Project managers themselves should therefore first identify the requirements of the project to be implemented. Often it is also not known who all stakeholders are so retrieving previous knowledge is not sufficient because it is simply not available a respondent states: *"I was just thrown in because the previous project manager couldn't figure it out, therefore I had to find out myself what was relevant or irrelevant"*. Whilst another respondent states: *"I had to retrieve all the standards myself, there was no knowledge of what knowledge already existed or which stakeholders were involved".* This shows that documentation of prior projects fall short and for that reason there is deficient knowledge management

The researcher can conclude that, in order to improve the application of LL, the P&T department should look at the way LL are offered. The user convenience of the systems and methods falls short among users. It also appears that cooperation between departments and teams leaves much to be desired. Both findings contribute negatively to staff motivation in working with LL. In addition, the current way LL are processed is lacking, content quality leaves much to be desired, personal needs are not addressed and it appears that (mainly younger) employees often do not have the right knowledge and skills to work correctly with LL. Tt can also be concluded that when looking at documentation from previous projects, there are many shortcomings. For instance, stakeholders, agreements, and standards are not documented which contributes negatively to the organisation's knowledge management.

5.0. Discussion and Conclusion

The aim of this single case research was to identify the factors that influence the dissemination and application of LL by asking the following research question: *"What factors influence the dissemination and application of lessons learned in a project-based organisation".* Based on a questionnaire and two focus groups it can be concluded that there are in total 8 factors influencing the dissemination and application of LL.

The first part of the research question about the dissemination process of LL revealed three aggregate dimensions namely: (1) the closed organisational culture, (2) the lack of job satisfaction due to inexperience and (3) the inadequate presentation of lesson learned. Additionally, data revealed 5 factors influencing the application of LL. These are: (1) the user convenience of knowledge databases and dissemination methods, (2) the inadequate content quality, (3) the deficient employee knowledge level, (4) personal preferences and (5) the deficient knowledge management.

Furthermore, the results of the research have provided a comprehensive understanding of the preferences of the employees working with LL. It has become apparent that there is a strong need for a central knowledge centre has a strong presence. This is also evident from the need for the possibility of receiving an oral transmission or voice-over. However, this is currently absent because it is not widely known who the knowledge holders of LL are. Lastly employees are experiencing a changing organisational culture, transitioning from an open culture where people talked and saw each other to a more closed culture, making collaborations more difficult. The primary cause of this shift is the hybrid way of working. As a result, physical interaction between them is becoming less and less possible.

5.1. Theoretical implications

There are several theoretical implications in this research mainly in the fields of organisational learning, knowledge management and project-based organisations. In addition, the researcher extended the SYLLK model created by Duffield and Whitty (2015) by adding a new level. Besides confirming existing literature to be also valid for the little-described transport sector, this research expands existing literature by providing new insights that are valuable for managers and organisations.

During the data analysis, it quickly became apparent that the human aspect which is also mentioned in the SYLLK model of Duffield and Whitty (2015) as the people factor, is critical in working with LL. For instance, it shows that people strongly feel the need to co-operate with other colleagues. This cooperation is preferably enjoyed verbally and face-to-face. For example, the data showed that people work more remotely, which in turn has its effects on collegiality and cooperation, because the barrier to connect is greater digitally than physically. Therefore, social interaction among colleagues has become a lot less, according to the data. This decrease in social interaction reflects negatively on knowledge sharing due to the reduced motivation to gather LL from other colleagues.

Working with LL is part of the learning process of a department or employee and therefore covered by OL, which is a process used by organisations to develop a new way of recognising and identifying new business processes from which new organisational knowledge emerges (Chiva, Ghauri, & Alegre, 2013). However, to achieve OL, an organisation needs to concentrate on the knowledge that circulates within an organisation. According to the data collected in both the questionnaire and the focus groups it seemed to be very difficult to distil tacit knowledge into explicit knowledge. This is partly due to a lack of experience, but motivation again plays a big role in this problem, as the lack of motivation causes employees to drop out of working with LL, thus not gaining the necessary experience. The preference in the case company is overwhelmingly in the externalisation mode of knowledge transfer (see figure 1 in chapter 2.3). This again highlights that there is a strong preference for social processes in the form of conversations among employees.

To successfully facilitate OL, the OLC must be right. However, the OLC of the P&T department can be seen as a closed learning culture. According to Powell (2015) there are several indicators for a culture to be labelled as closed. Transparency, collaboration, and inclusivity are mentioned as key. Because the P&T department functions in teams each with their own protected SharePoints, resulting in limited transparency within the organisation. Additionally, the data reveals that physical interaction is more difficult due to the increase in remote working and the threshold to make an appointment or approach someone digitally is much higher. Hence, cooperation between departments is difficult. Additionally, Schein (1990) proposed three levels for analysing the culture of an organisation (see Table 1 in chapter 2.2). The first level is about artifacts and include the layout which consists out of several enclosed areas at the office floor of the P&T department. In addition, different departments work on different (protected) SharePoints which does not benefit transparency and cooperation what characterises a closed culture. Second the values play a significant role. The data suggests that a number of employees place little value on working with LL. This is caused by a lack of knowledge, motivation, and time. LL are therefore not considered relevant. This disadvantages possibilities for knowledge sharing, which is typical of a closed learning culture. The third level, the underlying assumptions do not contribute to the P&T department to an open culture. People are used to working on projects where efficiency and results are self-explanatory, causing activities that do not produce immediate results are quickly dismissed. Because of this, the learning culture also appears to be closed.

In addition, human factors having a major impact on working with LL. It is critical according to Williams (2007) to maintain a relevant infrastructure and corresponding systems to operate with KM. LL systems are utilized to protect the existing knowledge when employees change jobs or retire (Weber, Aha, & Beccerra-Fernandez, 2001). In the SYLLK model these subjects are described as system factors. The researcher therefore looked at the systems and infrastructure of the various systems on which LL are offered in the P&T department. What has not previously emerged in existing literature is that centrality appears to play an important issue in the dissemination and accessibility of LL.

People experience difficulties in finding the right lessons and therefore are unsure where to disseminate them because the LL are documented in different locations. Examples of this are different (closed off) SharePoints, but also the database for LL.

Additionally, in the existing literature, systems and infrastructure are described as crucial (Duffield & Whitty 2015). However, from the data gathered in this research, it emerges that the preferred method of data transfer is not through systems but verbally. Therefore, the researcher questions the appropriateness of relying on the database as the primary mean of disseminating LL. According to the researcher, systems and their infrastructure are certainly not unimportant, but only applicable when usable or findable. Because the data has shown that there are so many barriers while working with systems and oral transmission is preferred. The researcher is convinced that systems and infrastructure should act as support for dissemination rather than main focus.

Furthermore, the data broadly aligns with the SYLLK model. The individual level described in this study, largely corresponds to the people factors while the organisational level corresponds to the system factors of the SYLLK model. However, the researcher believes that the SYLLK model falls short, at the system factors. Here the model does not place enough emphasis on the wants and needs regarding dissemination and application of LL by employees. The SYLLK model does not address certain key factors that emerged repeatedly in the data of this research such as the like for oral dissemination, the voice over of a knowledge holder lack preferences in dissemination methods or writing styles are not further addressed. These factors emerged with regularity in the data of this research. Moreover, this research includes the mode of transfer, but also the mode of documentation. Data shows the quality of the content of LL is seriously lacking. LL that are outdated, unclear and over-directed writing style and oversized document sizes are examples of these operational factors. These factors discourage employees from working with LL. These operational factors are left out in the SYLLK model. Therefore, the researcher created an extension the SYLLK model. As can be seen as the blue operational part in figure 7.

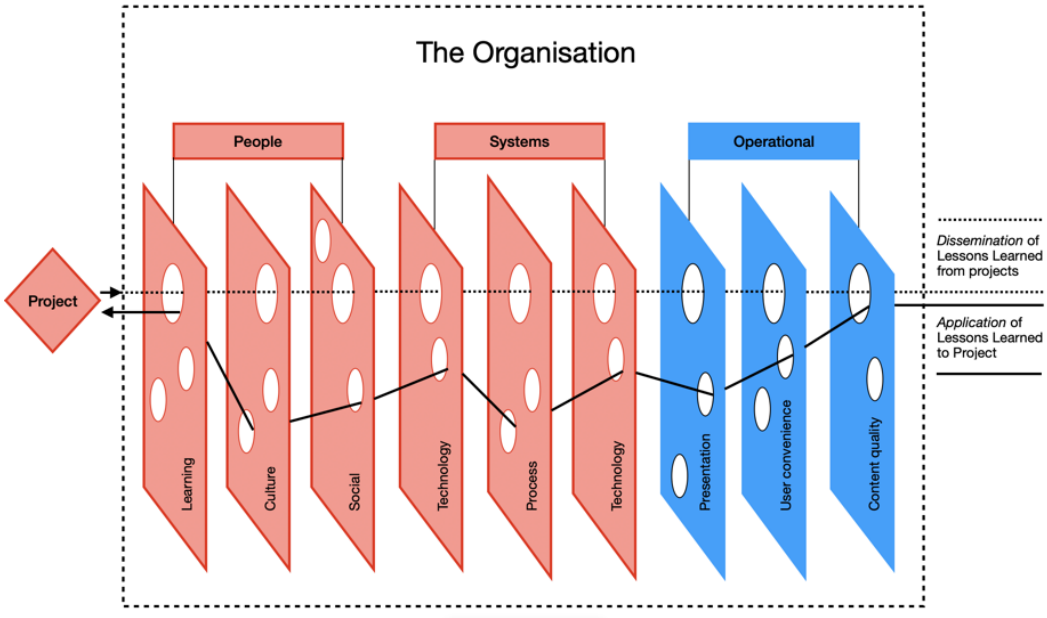

Figure 7: The extension of the SYLLK model.

This extension contains the new operational level containing three new themes': the presentation of LL, the user convenience of knowledge databases and dissemination methods and, the content quality of LL. In another study conducted by Abbas, Martinetti, Houghton and Majunmdar (2022), In which the SYLLK model is also discussed, only the factors human and systems are also discussed. Hence, the researcher is convinced that the addition of the operational dimension is a good addition to the existing literature.

The concept of a PBO has been discussed in the literature and the associated characteristics of a PBO and differences with a traditional organisation are elaborated (Wiewiora, Trigunarsyah, Murphy, Gable, & Liang, 2009). This shows that the main differences lie in management style, organisational structure, time management the way people and processes are managed and, finally, geographical location. The process of working with LL is not tied to a specific industry or type of company.

However, a PBO does have some characteristics that do not directly fit well in working with LL. Therefore, it appears that PBO's are strong due to their flexibility and innovativeness but at the same time PBO's are weaker at the coordination of cross-project resources and the facilitation of companywide learning (Hobday, 2000). This was also reflected in the data where several respondents indicated that organization-wide sharing of LL or other forms of knowledge is a challenge.

To conclude, this research besides confirming some findings from existing literature, also broadens to a new field, namely the transport sector. This research additionally contributes to OL literature by revealing new findings such as the need for verbal communication versus systems and platforms in knowledge sharing, the strong need for centrality of documents and knowledge. Moreover, this research contributes to KM literature because this research shows that the most desirable and appropriate way for sharing LL includes Milton's externalization method. Furthermore, this research contributes to literature on PBOs since the characteristics of a PBO are not initially suitable for working with LL but through the findings of this research, management can use tools to overcome these barriers.

Finally, this research provides an updated version of the SYLLK model with the new dimension operationalization because, according to the researcher, it is not dealt with concretely in the former model.

5.2. Practical implications

Besides the theoretical implications of this research, there are several practical implications. These practical implications are based on the single case study of the case organisation. Moreover, managers form various organisations can benefit from this research and the identified factors influencing the dissemination and application of LL.

At first it is crucial for managers and organisations to recognize that dissemination is closely linked with motivation. When an employee is not stimulated or triggered to share their knowledge the learning processes in the case company comes to a grind. Coherent, is the importance of centrality in the accessibility of LL, participants and respondents

continuously mentioned the lack of motivation by an overly cumbersome search. In the case company LL are stored on multiple platforms like SharePoint, the database, via manuals, and emails. Employees struggle to find the right LL because they are overwhelmed with locations to search. Therefore, the researcher emphasizes the importance of creating a central knowledge centre in the case company. This could be achieved through a designated team or individual who manages all incoming LL and directs employees requesting information to appropriate sources. If an employee comes up with a question about knowledge, a past project or LL, this person or team can connect the person requesting the specific information to the knowledge holder and get a voice-over of the LL.

The second practical implication that can be drawn from this study is that the content quality off LL and in specific the way LL are written down is not sufficient with the needs and requirements of employees at the case company. Current documentation methods like big Excel or Word documents are not desired. Also, the directive way of writing LL is not something employees prefer in the documentation. It seems that employees crave a bigger need for oral transmission than via documents. The researcher suggests that a central knowledge centre is found as described at the previous practical implication. The pros of oral transmission are the ability to get a clear understanding of the LL due to the opportunity of asking questions. Oral transmission also stimulates the process of working together and improving the company culture towards a more open learning culture. Managers can support this by creating more transparency and collaborations among different employees from different departments and projects. Also, managers should identify the wishes and needs of employees regarding the way of documenting and content of the lesson learned This will boost the motivation to share and supports a more open culture of employees sharing knowledge.

The third practical implication is that the researcher doubts if the database should be the primary platform for the dissemination of LL instead a support measure at the case company. Currently, the performance of the database is insufficient, accessibility, the extent to which it is up to date and general usage leave a lot to be desired. Consequently, employees indicate in the data that they do not use this database more often than they do.
For the case company again, the researcher stresses the importance to create a knowledge centre where LL are stored. In this central knowledge centre, employees can address their questions regarding LL or other knowledge. Knowledge holders are known here. Therefore, if employees need a voice-over of an LL, they can contact the knowledge holder through the knowledge centre. Workshops, plenary meetings, and knowledge-sharing activities can also be organised from the knowledge centre. Tackling both prior practical implications and reducing knowledge gaps because currently document are stored at closed of SharePoints creating knowledge gaps throughout the organisation.

The fourth practical implication demonstrated by this study is how important it is to have a good introductory period. Data shows that there is a deficient employee knowledge level at the case company which in turn contributes to the lack of job satisfaction due to inexperience. The case company should therefore consider looking at better onboarding of

new employees. This can be done in collaboration with the central knowledge centre and during focus groups respondents indicated they were open to a coaching role. The case organisation could consider accommodating this coaching system.

5.3 Limitations and further research

No research is perfect, and it is human to make mistakes. Similarly, in this research, things did not go as expected beforehand. For instance, the researcher tried to get as many statements to answers as possible in the questionnaires. The researcher tried to do this by adding “explain your answer" to the question. Unfortunately, it turned out that for many answers no additional explanations were given. Several answers could therefore not be included in the conclusion because they were not sufficiently explained, and the researcher did not want to make assumptions about what exactly was meant by the respondent which resulted in a lot of unusable data.

In addition, the external validity or rather generalizability of this research is low as the research was conducted at a particular case company, in a department with 56 people in a very specific industry. It is important for the reader to realize that this research is only representative of the case organisation and may therefore not be representative of all PBOs.

Also, there had just been a merger of departments, so it was decided to select only employees for the study who were working before the merger. This resulted in 56 people instead of the entire department consisting of over 110 people at the time of writing. The researcher therefore suggests future research within a bigger population. This will give more data to process, and therefore, better reflecting the sample to the whole population. The researcher would also then recommend opting for individual interviews instead of focus groups. This would make it easier to plan the interviews and collect qualitatively better data because the interviews are easier to direct, and follow-through questions are easier asked (Gill, Stewart, Treasure, & Chadwick 2008).

Moreover, the researcher tried to conduct the focus groups homogeneously in order to ensure validity (Freeman 2006). The first with only PMO and the second with only PM. However, a manager was present during the focus group with PMO. The researcher tried to counter this by asking permission from all respondents beforehand. They in turn assured the researcher that attendance would not influence their answers. The researcher cannot guarantee any socially desired answers in the data which are gathered from the PMO focus group.

Next, the literature indicates that the perfect number of participants of a focus group is between 6 and 10 people (Mishra, 2016). Therefore, with 6 and 7 people, the attendance was valid however, it was small representation of the entire population. In future research, it would be very interesting to do individual user-case studies on employees working with LL. To specifically map how employees work with LL during their work activities

Furthermore, a single case study has its strengths, although there are also some limitations to this method of research. The advantage was that this research method allowed the researcher to focus specifically on the factors of dissemination and application.

Furthermore, this research focused on the factors that influence dissemination and application in a specific PBO which is a unique environment, there are enough other PBOs in which this research can be conducted in future research. For example, future researchers could conduct this other case studies in other countries, branches, or companies. The organisational culture was seen as big influence, possibly in other countries there are other organisational cultures which are interesting to explore.

Finally, LL are part of KM, KM in turn is part of OL. Future research can focus on what organisational characteristics an organisation should exploit to respond to the factors that influence LL diffusion and adoption. An interesting research question will be: "*How can OL contribute to the dissemination and application of LL?*" or *"How can dissemination and application of LL contribute to OL?"* which is the other way around.

6. Conclusion

With this study, the researcher aimed to gain insights into the process of dissemination and application of LL in a PBO. Because little research had been done on the dissemination and application of LL and companies are convinced that the work ends after the identification of LL. The researcher chose to conduct his research in a qualitative approach and therefore, conducted intensive literature research on the topic of OL, LL and PBO's to understand all aspects of these topics and find a model to use as a guideline in this research. This resulted in the selection of the SYLLK model. Wherein a number of facilitators that an organisation must master to achieve successful dissemination and application of LL are covered.

In addition, all activities associated with these facilitators were described in order to question them in the questionnaire and focus group conducted. In this way a clear picture of the process of working with LL by employees of the P&T department was formed.

When answering the research question *"What factors influence the dissemination and application of lessons learned in a project-based organisation."* The answer can be divided into three parts. Because the data from the questionnaire and focus groups has shown that a total of 9 factors are influential. At first there are 3 factors influencing dissemination these are (1) the closed organisational culture for dissemination, (2) the lack of job satisfaction due to inexperience and (3) the inadequate presentation of lesson learned.

Moreover, at the second part of the answer the factors influencing the application of LL are addressed. There are 5 factors which are: (1) the user convenience of knowledge databases and dissemination methods, (2) the inadequate content quality, (3) the deficient employee knowledge level, (4) personal preferences, and (5) the deficient knowledge management. These dimensions are covered in detail in chapter 4.

At the third and final part of the answer the research wants to stress that key factors in a successful dissemination and application are centrality in documenting LL, the mode of dissemination used for LL and requirements for application of LL.

In final, the researcher created a new model which is based on the SYLLK model chosen from the literature. As an addition to this model, the researcher added a new 3rd level called operational. Operational mainly focusses on the content of LL because it appears that personal preferences, user convenience and content quality play a major role in the dissemination and application of LL in the case company. However, these results were missing in the SYLLK model. At the P&T department the operational factors are not sufficient to meet the wants and needs of P&T employees. Therefore, LL dissemination and application remains very difficult. It is therefore important for management and the current leadership to focus on improving these operational factors. This, in turn, will contribute to overall organisational performance and individual employee satisfaction. The dissemination and application of LL is still a challenging journey. The contribution of this research to existing literature, the extension to the SYLLK model and the new insights gained, give managers and organisations new handles in their search, and may improve their work with LL.

8.0 References

Abbas, Y. (2022). Advancing knowledge management for system integration: Improving the management of lessons learned to enhance organisational learning and railway system performance. (PhD Thesis). University of Twente, Enschede. https://doi.org/10.3990/1.9789036554237

Abbas, Y., Martinetti, A., Frunt, L., Klinkers, J., Rajabalinejad, M., & van Dongen, L. A. M. (2022). Investigating interdependencies between key features of lessons learned: An integral approach for knowledge sharing. *Journal of Information & Knowledge Management*, *21*(02). https://doi.org/10.1142/s0219649222500198

Abbas, Y., Martinetti, A., Houghton, R., & Majumdar, A. (2022). Disentangling large scale technological projects: Learning from ERTMS roll-out case study in the Netherlands. *Research in Transportation Business & Management*, *45*(3), 100856. https://doi.org/10.1016/j.rtbm.2022.100856

Alavi, M., & Leidner, D. (1999). Knowledge Management Systems: Issues, Challenges, and Benefits. *Communications of the Association for Information Systems*, *1*(7), 1-38 https://doi.org/10.17705/1cais.00107

Andrade, J., Ares, J., García, R., Pazos, J., Rodríguez, S., & Silva, A. (2008). Formal conceptualization as a basis for a more procedural knowledge management. *Decision Support Systems*, *45*(1), 164–179. https://doi.org/10.1016/j.dss.2007.12.015

Antony, J., & Gupta, S. (2019). Top ten reasons for process improvement project failures. *International Journal of Lean Six Sigma*, *10*(1), 367–374. https://doi.org/10.1108/ijlss-11-2017-0130

Anumba, C. J., Baugh, C., & Khalfan, M. M. A. (2002). Organisational structures to support concurrent engineering in construction. *Industrial Management & Data Systems*, *102*(5), 260–270. https://doi.org/10.1108/02635570210428294

Argyris, Ch., & Schön, D. A. (1977). *Organizational learning: A theory of action perspective*. Addison-Wesley.

Baarda, B. (2020). *Basisboek interviewen: handleiding voor het voorbereiden en afnemen van interviews* (5th ed.). Noordhoff.

Bell, L., van Waveren, C., & Steyn, H. (2016). Knowledge-sharing within the project-based organisation: A knowledge-pull framework. *South African Journal of Industrial Engineering*, *27*(4), 18-33. https://doi.org/10.7166/27-4-1580

Brady, T., & Davies, A. (2004). Building project capabilities: from exploratory to exploitative learning. *Organisation Studies*, *25*(9), 1601–1621. https://doi.org/10.1177/0170840604048002

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Brown, A. 1995, *Organizational Culture*, Pitman Publishing, London

Casey, M. A., & Krueger, R. A. (1994). *Focus group interviewing*. In *Measurement of Food Preferences* (pp. 77–96). Springer New York.

Carrillo, P., Ruikar, K., & Fuller, P. (2013). When will we learn? Improving lessons learned practice in construction. *International Journal of Project Management*, *31*(4), 567–578. https://doi.org/10.1016/j.ijproman.2012.10.005

Chirumalla, K. (2016). Organizing lessons learned practice for product–service innovation. *Journal of Business Research*, *69*(11), 4986–4991. https://doi.org/10.1016/j.jbusres.2016.04.065

Chiva, R., Ghauri, P., & Alegre, J. (2013). Organisational learning, innovation, and internationalization: A complex system model. *British Journal of Management*, *25*(4), 687–705. https://doi.org/10.1111/1467-8551.12026

Colquhoun, A., Aplin, L., Geary, J., Goodman, K. J., & Hatcher, J. (2012). Challenges created by data dissemination and access restrictions when attempting to address community concerns: individual privacy versus public wellbeing. *International Journal of Circumpolar Health*, *71*(1), 18-41. https://doi.org/10.3402/ijch.v71i0.18414

Coyne, I. (1997). Sampling in qualitative research. Purposeful and theoretical sampling; merging or clear boundaries? *Journal of Advanced Nursing*, *26*(3), 623–630. https://doi.org/10.1046/j.1365-2648.1997.t01-25-00999.x

Crossan, M. M., Lane, H. W., & White, R. E. (1999). An organisational learning framework: From intuition to institution. *The Academy of Management Review*, *24*(3), 522-537. https://doi.org/10.2307/259140

Cunha, M. P., Rego, A., & Simpson, A. V. (2022). Team ground rules: Their nature and functions. *Organisational Dynamics*, *51*(4), 100–109. https://doi.org/10.1016/j.orgdyn.2022.100933

Davenport, T. H., & Prusak, L. (1998). *Working knowledge: how organizations manage what they know*. Harvard Business School Press.

Disterer, G. (2002). Management of project knowledge and experiences. *Journal of Knowledge Management*, *6*(5), 512–520. https://doi.org/10.1108/13673270210450450

Duffield, S. M., & Whitty, S. J. (2016). Application of the systemic lessons learned knowledge model for organisational learning through projects. *International Journal of Project Management*, *34*(7), 1280–1293. https://doi.org/10.1016/j.ijproman.2016.07.001

Duffield, S., & Whitty, S. J. (2015). Developing a systemic lesson learned knowledge model for organisational learning through projects. *International Journal of Project Management*, *33*(2), 311–324. https://doi.org/10.1016/j.ijproman.2014.07.004

Duhon, H. J., & Elias, J. S. (2008). Why it is difficult to learn lessons: Insights from decision theory and cognitive science. *SPE Projects, Facilities & Construction*, *3*(03), 1–7. https://doi.org/10.2118/110211-pa

Easterby-Smith, M., & Lyles, M. A. (2005). T*he Blackwell handbook of organisational learning and knowledge management.* Wiley-Blackwell.

Eskerod, P. E., & Skriver, H. J. (2007). Organisational culture restraining in-house knowledge transfer between project managers a case study. *Project Management Journal*, *38*(1), 110–122. https://doi.org/https://doi.org/10.1177%2F875697280703800111

Etikan, I. (2017). Developing questionnaire base on selection and designing. *Biometrics & Biostatistics International Journal*, *5*(6). 219-221 https://doi.org/10.15406/bbij.2017.05.00150

Freeman, T. (2006). "Best practice" in focus group research: making sense of different views. *Journal of Advanced Nursing*, *56*(5), 491–497. https://doi.org/10.1111/j.1365-2648.2006.04043.

Gagnon, M. L. (2011). Moving knowledge to action through dissemination and exchange. *Journal of Clinical Epidemiology*, *64*(1), 25–31. https://doi.org/10.1016/j.jclinepi.2009.08.013

Geraldi, J. G. (2008). The balance between order and chaos in multi-project firms: A conceptual model. *International Journal of Project Management*, *26*(4), 348–356. https://doi.org/10.1016/j.ijproman.2007.08.013

Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Methods of Data Collection in Qualitative research: Interviews and Focus Groups. *British Dental Journal*, *204*(6), 291–295. https://doi.org/10.1038/bdj.2008.192

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research. *Organisational Research Methods*, *16*(1), 15–31. https://doi.org/10.1177/1094428112452151

Graham, I. D., Logan, J., Harrison, M. B., Straus, S. E., Tetroe, J., Caswell, W., & Robinson, N. (2006). Lost in knowledge translation: time for a map? *The Journal of Continuing Education in the Health Professions*, *26*(1), 13–24. https://doi.org/10.1002/chp.47

Hobday, M. (2000). The project-based organisation: an ideal form for managing complex products and systems? *Research Policy*, *29*(7-8), 871–893. https://doi.org/10.1016/s0048-7333(00)00110-4

Holsapple, C. W., & Joshi, K. D. (2002). Knowledge Management: A threefold framework. *The Information Society*, *18*(1), 47–64. https://doi.org/10.1080/01972240252818225

Huber, G. P. (1991). Organisational learning: The contributing processes and the literatures. *Organisation Science*, *2*(1), 88–115. https://doi.org/10.1287/orsc.2.1.88

Jugdev, K. (2012). Learning from lessons learned: Project management research program. *American Journal of Economics and Business Administration*, *4*(1), 13–22. https://doi.org/10.3844/ajebasp.2012.13.22

King, W. R. (2009). *Knowledge management and organisational learning*. Springer Us.

Kingston, J. (2012). Choosing a Knowledge dissemination approach. *Knowledge and process management*, *19*(3), 160–170. https://doi.org/10.1002/kpm.1391

Kiziloglu, M. (2021). Impact of adhocracy organisational culture on effective knowledge management. *Handbook of research on organisational culture strategies for effective knowledge management and performance*, *1*(1), 96–114. https://doi.org/10.4018/978-1-7998-7422-5.ch006

Koskinen, K., & P. Pihlanto. (2008). *Knowledge Management in Project-Based Companies* (1st ed.). Palgrave Macmillan London.

Kotnour, T. (2000). Organisational learning practices in the project management environment. *International Journal of Quality & Reliability Management*, *17*(4/5), 393–406. https://doi.org/10.1108/02656710010298418

Krefting, L.A. and Frost, P.J. (1985), *Untangling webs, surfing waves, and wildcatting: a multiple-metaphor perspective on managing culture,* in Frost, P.J. et al. Organisational Culture, Sage, Beverly Hills, CA.

Lai, M., & Lee, G. (2007). Relationships of organisational culture toward knowledge activities. Business Process Management Journal, 13(2), 306–322. https://doi.org/10.1108/14637150710740518

Lehnert, M., Linhart, A., & Roeglinger, M. (2017). Exploring the intersection of business process improvement and BPM capability development. *Business Process Management Journal*, *23*(2), 275–292. https://doi.org/10.1108/bpmj-05-2016-0095

Lindgreen, A., Di Benedetto, C. A., & Beverland, M. B. (2020). How to write up case-study methodology sections. *Industrial Marketing Management*, *96*(1) 7-10. https://doi.org/10.1016/j.indmarman.2020.04.012

Locke, K., Feldman, M., & Golden-Biddle, K. (2020). Coding Practices and Iterativity: Beyond Templates for Analyzing Qualitative Data. *Organisational Research Methods*, *25*(2), 262-284. 109442812094860. https://doi.org/10.1177/1094428120948600

Lundin, R. A., & Söderholm, A. (1995). A theory of the temporary organisation. *Scandinavian Journal of Management*, *11*(4), 437–455. https://doi.org/10.1016/0956-5221(95)00036-u

Maqsood, T., & Finegan, A. D. (2009). A knowledge management approach to innovation and learning in the construction industry. *International Journal of Managing Projects in Business*, *2*(2), 297–307. https://doi.org/10.1108/17538370910949310

Maxwell, J. A. (2012). *A realist approach for qualitative research*. Thousand Oaks, Sage Publications.

Milton, N. J. (2010). *The lessons learned handbook: practical approaches to learning from experience.* Oxford, Chandos Publishing.

Mintzberg, H. (1979). *The structuring of organisations*. Englewood Cliffs, N.J. Prentice-Hall.

Mishra, L. (2016). Focus group discussion on qualitative research. *TechnoLearn: An International Journal of Educational Technology*, *6*(1), 1-5. https://doi.org/10.5958/2249-5223.2016.00001.2

Miterev, M., Mancini, M., & Turner, R. (2017). Towards a design for the project-based organisation. *International Journal of Project Management*, *35*(3), 479–491. https://doi.org/10.1016/j.ijproman.2016.12.007

Morgan, D. (1997). *Focus groups as qualitative research* (2nd ed.). Thousand Oaks, Sage Publications

Morgan, D. (1998) *Planning Focus Groups. The Focus Group Kit Vol 2.* Thousand Oaks, Sage Publications

Newell, S., Bresnen, M., Edelman, L., Scarbrough, H., & Swan, J. (2006). Sharing Knowledge Across Projects. *Management Learning*, *37*(2), 167–185. https://doi.org/10.1177/1350507606063441

Nonaka, I. (1994). A Dynamic Theory of Organisational Knowledge Creation. *Organisation Science*, *5*(1), 14–37. https://doi.org/10.1287/orsc.5.1.14

Nonaka, I., & Takeuchi, H. (1996). The knowledge-creating company: How Japanese companies create the dynamics of innovation. *Long Range Planning*, *29*(4), 592. https://doi.org/10.1016/0024-6301(96)81509-3

O'Dell, C. S., & Hubert, C. (2011). *The new edge in knowledge: how knowledge management is changing the way we do business*. Wiley.

Onwuegbuzie, A. J., Dickinson, W. B., Leech, N. L., & Zoran, A. G. (2009). A Qualitative Framework for Collecting and Analyzing Data in Focus Group Research. *International Journal of Qualitative Methods*, *8*(3), 1–21. https://doi.org/10.1177/160940690900800301

Sydney Hornby, A., & Crowther, J. (2022). Dissemination. In *Oxfords learner dictionary*. Oxford University Press.

Patton, M.Q. (1999). Enhancing the quality and credibility of qualitative analysis. Health Sciences Research, 34, 1189–1208.

Pemsel, S., & Wiewiora, A. (2013). Project management office a knowledge broker in project-based organisations. *International Journal of Project Management*, *31*(1), 31–42. https://doi.org/10.1016/j.ijproman.2012.03.004

Powel, R. A., & single, H. M. (1996). Focus Groups. *International Journal for Quality in Health Care*, *8*(5), 499–504. https://doi.org/10.1093/intqhc/8.5.499

Powell, A. B. (2015). Open culture and innovation: integrating knowledge across boundaries. Media, Culture & Society, 37(3), 376–393. https://doi.org/10.1177/0163443714567169

Project Management Institute. (2021). *A guide to the Project Management Body of Knowledge: (PMBOK® guide)* (7th ed.). Project Management Institute.

Puranam, P., Alexy, O., & Reitzig, M. (2014). What's new about new forms of organizing? *Academy of Management Review*, *39*(2), 162–180. https://doi.org/10.5465/amr.2011.0436

Prouska, R., & Kapsali, M. (2020). The determinants of project worker voice in project-based organisations: An initial conceptualisation and research agenda. *Human Resource Management Journal*, *31*(2). 375-391. https://doi.org/10.1111/1748-8583.12312

Rebelo, T. M., & Duarte Gomes, A. (2011). Conditioning factors of an organisational learning culture. Journal of Workplace Learning, 23(3), 173–194. https://doi.org/10.1108/13665621111117215

Rowe, S. F., & Sikes, S. (2006). Lessons learned: taking it to the next level. *Quality, Management, and Innovation*. PMI Global Congress, Seattle, WA. New Town Square.

Schermerhorn, J. R. (1993). *Management for productivity*. New York. Wiley.

Song, M., van der Bij, H., & Weggeman, M. (2005). Determinants of the level of knowledge application: A knowledge-based and information-processing perspective. *Journal of Product Innovation Management*, *22*(5), 430–444. https://doi.org/10.1111/j.1540-5885.2005.00139.

Söderlund, J., & Bredin, K. (2006). HRM in project-intensive firms: Changes and challenges. *Human Resource Management*, *45*(2), 249–265. https://doi.org/10.1002/hrm.20107

Turner, J. R., & Keegan, A. (2000). The management of operations in the project-based organisation. *Journal of Change Management*, *1*(2), 131–148. https://doi.org/10.1080/714042464

Turner, J. Rodney., & Keegan, A. (2001). Mechanisms of governance in the project-based organisation: *European Management Journal*, *19*(3), 254–267. https://doi.org/10.1016/s0263-2373(01)00022-6

Walczak, S. (2005). Organisational knowledge management structure. *The Learning Organisation*, *12*(4), 330–339. https://doi.org/10.1108/09696470510599118

Weber, R. O., & Aha, D. W. (2003). Intelligent delivery of military lessons learned. *Decision Support Systems*, *34*(3), 287–304. https://doi.org/10.1016/s0167-9236(02)00122-7

Weber, R., Aha, D. W., & Becerra-Fernandez, I. (2001). Intelligent lessons learned systems. *Expert Systems with Applications*, *20*(1), 17–34. https://doi.org/10.1016/s0957-4174(00)00046-4

Weber, R., Aha, D. W., Muñoz-Ávila, H., & Breslow, L. A. (2000). Active delivery for Lessons learned systems. *Lecture Notes in Computer Science*, *5*(1), 322–334. https://doi.org/10.1007/3-540-44527-7_28

Wiewiora, A., Smidt, M., & Chang, A. (2018). The "how" of multilevel learning dynamics: A systematic literature review exploring how mechanisms bridge learning between individuals, teams/projects, and the organisation. *European Management Review*, *16*(1), 93–115. https://doi.org/10.1111/emre.12179

Wiewiora, A., Trigunarsyah, B., Murphy, G., Gable, G., & Liang, C. (2009). The impact of unique characteristics of projects and project-based organisations on knowledge transfer. *CRC for Integrated Engineering Asset Management*. 10th European Conference on Knowledge Management, Vicenza, Italy. https://eprints.qut.edu.au/25857/3/25857.pdf

Williams, T. (2007). Post-project reviews to Gain Effective Lessons Learned. Project Management Institute.

Williams, T. (2008). How Do Organisations Learn Lessons from Projects—And Do They? *IEEE Transactions on Engineering Management*, *55*(2), 248–266. https://doi.org/10.1109/tem.2007.912920

Yang, Y., Brosch, G., Yang, B., & Cadden, T. (2019). Dissemination and communication of lessons learned for a project-based business with the application of information technology: a case study with Siemens. *Production Planning & Control*, *31*(4), 273–286. https://doi.org/10.1080/09537287.2019.1630682

Yin, R. K. (2003). Case study research and applications: Design and methods (3rd ed.). Sage Publications,

Yuan, Y. C., Zhao, X., Liao, Q., & Chi, C. (2013). The use of different information and communication technologies to support knowledge sharing in organisations: From e-mail to micro-blogging. *Journal of the American Society for Information Science and Technology*, *64*(8), 1659–1670. https://doi.org/10.1002/asi.22863

9.0 Appendices

Appendix A: Format questionnaire.

Beste Collega,

Hartelijk dank voor jouw deelname aan mijn onderzoek. De afdeling T&P zit momenteel in zwaar weer en kan alle hulp gebruiken. Lessons learned dragen bij aan het efficiënt werken in een projectomgeving. Daarom wil de onderzoeker met deze vragenlijst de factoren die invloed hebben op de verspreiding en toepassing van lessons learned in kaart brengen zodat lessons learned beter in de dagelijkse bedrijfsvoering opgenomen kunnen worden.

Lessons learned: gedocumenteerde kennis en ervaringen opgedaan in eerder projectwerk. Lessons learned worden toegepast om kennis en expertise snel door een organisatie te verspreiden. Daarnaast worden collega's behoed voor het maken van dezelfde fouten en gewezen op mogelijk kansen.

De vragenlijst bestaat uit 18 vragen en duurt ongeveer 30 minuten. De vragenlijst is anoniem, de verzamelde data wordt alleen in dit onderzoek gebruikt.

Deel 1: Algemeen.

Vraag 1: Hoe lang was jij werkzaam bij de **oude** afdeling "P&T" voor de fusie van 1 juni? (In jaren en maanden)

Vraag 2: Hoe vaak werk jij met lessons learned?
- Heel vaak
- Vaak
- Soms
- Zelden
- Nooit → door naar vraag 3

Vraag 3: Waarom werk jij niet met lessons learned? Licht je antwoord toe.

Vraag 4: Geef in elk van de vijf fasen aan wanneer jij werkt met lessons learned. Verdeel in het totaal 100%.

- Fase 1 … %
- Fase 2 … %
- Fase 3 … %
- Fase 4 … %
- Fase 5 … %

Deel 2: Verspreiding van Lessons learned.

Verspreiding: Met verspreiding worden alle activiteiten, tools en methoden bedoeld die een collega als individu of welke de afdeling "P&T" onderneemt om lessons learned over te dragen aan derden.

Vraag 5: Hoe vaak verspreid jij als individu lessons learned?
- Heel vaak
- Vaak
- Soms
- Zelden
- Nooit → Ga door naar vraag 6

Vraag 6: Waarom verspreid jij geen lessons learned? Licht je antwoord toe.

Vraag 7: Welke factoren beïnvloeden het verspreiden van lessons learned voor jou?

Vraag 8: Van wie of wat ontvang jij lessons learned? Er zijn meerdere antwoorden mogelijk
- Individuele collega's
- Projectteam
- Afdeling P&T
- Anders, namelijk …….
- Ik ontvang geen lessons learned → door naar vraag 10

Vraag 9: Hoe ontvang jij lessons learned? Licht je antwoord toe.

Vraag 10: Hoe vaak zoek jij naar lessons learned?
- Heel vaak
- Vaak
- Soms
- Zelden
- Nooit. → Door naar vraag 11

Vraag 11: Waarom zoek jij niet naar lessons learned? Licht je antwoord toe.

Vraag 12: Welke factoren beïnvloeden het zoeken naar lessons learned voor jou?

Deel 3: toepasbaarheid van Lessons learned.

Toepasbaarheid: toepasbaarheid bestaat uit:

1) Bereikbaarheid dit is het gemak waarmee jij lessons learned kan vinden.
2) Begrijpelijkheid = de manier waarop lessons learned gedocumenteerd zijn en de mate waarin jij lessons learned direct kan toepassen in jouw werkzaamheden.

Vraag 13: in hoeverre weet jij lessons learned te vinden?

- Heel vaak
- Vaak
- Soms
- Zelden
- Nooit

Vraag 14: Welke factoren beïnvloeden voor jou de bereikbaarheid van lessons learned? Licht je antwoord toe.

Vraag 15: In hoeverre kan jij gevonden lessons learned toepassen in jouw werkzaamheden?

- Heel vaak
- Vaak
- Soms
- Zelden
- Nooit

Vraag 16: Welke factoren beïnvloeden voor jou de begrijpelijkheid van lessons learned? Licht je antwoord toe.

Deel 4: Afsluiting

Hartelijk dan voor het invullen van deze enquête, je hebt me enorm geholpen! Met jouw hulp kunnen wij nu de factoren welke invloed hebben op de verspreiding en toepassing van lessons learned gaan identificeren en kunnen we handvatten bieden aan collega's om projecten nog efficiënter te laten verlopen.

Als vervolg op deze vragenlijst worden **twee focusgroepen** (groepsdiscussies) over dit onderwerp gehouden. Vind je het interessant om mee te praten in deze discussie dan ben je van harte welkom. Noteer dan hier je naam en dan neem ik contact met je op.

Appendix B: Format Focus group

Time	Core	Goal	
5 Minutes **13:00-13:05**	Practical introduction	Making clear what the focus group entails. This includes stating what the purpose is of the focus group, discussing the expectation of the respondents and making practical arrangements for conducting the focus group	- Welcoming participants - Word of thanks - Introducing moderator and researcher - Discuss the objective of the focus group - Discuss duration of focus group - Ask permission for recording - Discuss anonymity - Establishing common rules. - express that there are no right or wrong answer - Discuss structure of the focus group - Answering questions
5 Minutes **13:05-13:10**	Starting conversation	creation of a pleasant atmosphere	- - Icebreaker: What are your most important lessons learned? And who did you learn it from?
5 Minutes **13:10 – 13:15**	Introduction theme 1	Defining the common phases of the project timeline	- Conceptualising timeline - What phases do you go through when working on a project. - Reflection time - Have phases written down
10 Minutes **13:15-13:25**	Discussion theme 1	Interactively establish a joint timeline with corresponding phases.	- Have people get involved in answering question. - Discuss salient differences and similarities. - Establish joint timeline
5 Minutes 13:25-13:30	Run-out time theme 1	Run-out time to ensure timetable.	
5 Minutes **13:30-13:35**	Mid-term evaluation	Discuss whether this method of discussion suits everyone, or whether changes should be made to the arrangements made beforehand in the interim.	- Probing whether everyone is happy with this way of working - Ask whether any changes are needed - Possibly set new rules
5 Minutes **13:35-13:40**	Introduction theme 2	Understanding expectations when answering the questions.	- Conceptualising dissemination lessons learned - appoint questions: *How do you disseminate lessons learned?* o *Which activities* *o Which tools* *o Which methods* - What goes well and what goes less

			well? - What improvement(s) would you recommend - What factors play a role in this? - Reflection time
10 Minutes **13:40–13:50**	Discussion theme 2	Mapping process of lessons learned dissemination Discuss differences and similarities Identify areas for improvement Identify influencing factors	- Addressing people to answer - Discuss differences and similarities, methods techniques, and tools - Discuss influencing factors - Possibly ask further questions: *How do you deal with the influencing factors?*
5 Minutes **13:50-13:55**	Run-out time theme 2	Run-out time to ensure timetable.	
5 Minutes **13:55-14:00**	Introduction theme 3	Understanding expectations when answering the questions.	- Conceptualising application of lessons learned *How do you applicate lessons learned?* o *Which activities* *o Which tools* *o Which methods* - What goes well and what goes less well?
10 Minutes **14:00-14:10**	Discussion theme 3	Mapping process of lessons learned application Discuss differences and similarities Identify areas for improvement Identify influencing factors	- Addressing people to answer - Discuss differences and similarities, methods techniques, and tools - Discuss influencing factors - Possibly ask further questions: *How do you deal with the influencing factors?*
5 Minutes **15:00 15:05**	Closure	Closing the focus group, here participants are thanked, and told how the focus group will be processed, and contact details of the researcher are shared.	- Check that everything has been dealt with/ last chance for comments - Check that everything has been dealt with/ last opportunity for comments - Thank you to participants - Explanation on processing of results - Sharing contact details

Appendix C: list of first order concepts.

First order concept of dissemination	#
Time pressure makes sharing lessons learned be forgotten	A1.1
due to prioritising, lessons learned do not get attention	A1.2
not enough time is taken to distribute lessons learned	A1.3
the priority of working with lessons learned is low	A1.4
Lessons learned are removed from meeting agenda with some regularity	A1.5
project managers have a low priority regarding lessons learned	A1.6
Due to the high workload, lessons learned are not shared and are therefore not available	A1.7
Lack of time affects dissemination of lessons learned	A1.8
Prioritizing lessons learned is an important factor influencing the dissemination of lessons learned	A1.9
Lessons learned receive low priority on meeting agenda's	A1.10
If there is the space and time to calmly explain the LL, I am more inclined to share.	A1.11
The receiving party must be open to being willing to receive lessons learned	A2.1
Open culture is preferred to stimulate human interaction between colleagues	A2.2
sharing information when someone is accessible to it that is of great importance	A2.3
Knowledge transfer to target group only successful when interested	A2.4
Readiness to approach is important among colleagues for proper application of lessons learned	A2.5
Personal experiences influence how knowledge/information is passed on	A2.6
Negative experiences with sharing lessons learned influence how willing people are to share them	A3.1
Personal interests influence dissemination of lessons learned	A3.2
an open-minded personality promotes sharing lessons learned	A3.3
There is a mental barrier to participating in knowledge sessions	A3.4
Knowledge about relevance and or benefits of lessons learned is absent	A4.1
No awareness of the possession and/or usefulness of own knowledge	A4.2
Thinks Knowledge is not gained from reading a report	A4.3
Not sure of the relevance of lessons learned too other	A4.4
organisation is not focused on working with lessons learned	A5.1
There is no active support in dissemination from the organisation	A5.2
No organisational attention about working with lessons learned	A5.3
Distribution of lessons learned is preferred via the organisation	A5.4
There is no organisation support	A5.5
Lack of follow-up due to lack of support from organisation	A5.6
Follow-up form organisation perspective is missing	A5.7
Unclear when and how lessons learned can be shared	C1.1
Not knowing to whom to share knowledge outside project team	C1.2
The habituation of working with lessons learned is lacking because there is little experience with it	C1.3
People are not familiar with disseminating lessons learned	C1.4
mastering lessons learned is perceived as difficult	C1.5
People have difficulty distilling knowledge into lessons learned	C2.1
the use of a standard operating procedure or format is unknown	C2.2
People experience difficulties to write down the right context of a lessons learned	C2.3

Good soft skills contribute positively to the dissemination of lessons learned	C2.4
The existence of the database is unknown.	C3.1
People are not familiar with working with the database	C3.2
The ease of use of the database is lacking	C3.3
Physical interaction is a trigger and helps share lessons learned	C4.1
The right trigger to share lessons learned is missing	C4.2
Motivation to share from within is lacking.	C4.4
Not knowing if you have new knowledge hence lacking motivation to share	C4.5
Knowledge about relevance and or benefits of lessons learned is absent	C4.6
Lack of benefits of sharing lessons learned missing	C4.7
Oral sharing of lessons learned is preferred via knowledge sessions	F1.1
One on one conversations are preferred dissemination method	F1.2
Disapproves of big excel documents as lessons learned transfer method	F1.3
Prefers an oral way of disseminating lessons learned	F1.4
There is no concise distribution method for lessons learned	F1.5
Lack of central dissemination point for lessons learned	F2.1
No central point to disseminate lessons learned is a dealbreaker	F2.2
Stand-up or soapbox sessions are proffered as distribution method	F2.3
People tend to store lessons learned in a PMO manual	F2.4
PMO presentations as sharing method for lessons learned	F2.5

First order concept application	**#**
The accessibility of lessons learned is weak due to lack of a central distribution point	G1.1
There is a lack of a central information point where knowledge holders of certain lessons learned are known	G1.2
Unclear SharePoints concerns make lessons learned unfindable	G.2.1
lack of categorisation of lessons learned creates a lack of clarity	G.2.3
Excessive variety of platforms creates confusion when looking for lessons learned	G.2.3
Inaccessibility of SharePoints from other departments/teams.	A6.1
Insufficient cooperation between different departments or teams	A6.2
Collaboration is being reshaped as colleagues work from home.	A6.3
There is no internal motivation in working with lessons learned	A7.1
The attractiveness of working with lessons learned is lacking	A7.2

First order concept comprehensibility	**#**
Lessons learned are not briefly and concisely written down	E2.1
Long texts cause people to drop out	E2.2
Lessons learned consist out of too long texts	E2.3
Too much text or information makes lessons learned no longer manageable	E2.4
A directive way of documenting is not appreciated, people need to experience the space to draw their own conclusions	H1.1
Lessons learned should not be documented too mechanically or instrumentally.	H1.2
A directive way of documenting lessons learned is not preferred	H1.3

Lessons learned are documented too guiding. People want to draw their own conclusions from the lesson	H1.4
The method of documentation is too cumbersome, it should be short and to the point	H2.1
lessons learned are too well recorded, therefore creating an overkill on information	H2.2
Lessons learned are documented too cumbersomely	H2.3
The layering of information in lessons learned is important	H2.4
The number of abbreviations is too high	H2.4
There is a need for a concrete description of what the lessons learned offer rather than a whole piece of text	H3.1
An abstract is missing explaining the lessons learned in short	H3.2
It is important to keep lessons learned up to date	H4.1
lessons learned must be continuously updated, otherwise they are no longer relevant	H4.1
Too little subject knowledge to process some information	D1.1
Inexperience causes misinterpretation lessons learned	D1.2
Too little subject knowledge to process information	D2.1
Inexperience causes misinterpretations while working with lessons learned	D2.2
need for oral transmission so questions can be asked	E1.1
Lack of a voice-over ensures context is not understood	E1.2
Lessons learned are not briefly and concisely written down	E2.1
Long texts cause people to drop out	E2.2
Lessons learned consist out of too long texts	E2.3
To much text or information makes lessons learned no longer manageable	E2.4
There is a need for the identification of knowledge holders for follow-up questions	B1.1
Having a list of experts would be very useful to contact if there is further information required	B1.2
A knowledge safekeeper is required pointing out relevant information	B1.3
Knowledge holders are not known to employees so there is no follow-up possible	B1.4
There was no prior knowledge about agreements, standards or stakeholders involved	B2.1
No delineation of relevance within the project plan	B2.2