SCHOOL OF
ECONOMICS AND
MANAGEMENT

Master's Program in International Strategic Management

Lund University, Spring 2021

May 2021

Tacit Knowledge Transfer Between Organizational Units:

Investigating How Different Knowledge-Heavy Industries Overcome Knowledge Tacitness

Karola Kremer – 970603-T920

Pauline Steudten – 961210-T601

Supervisor: Pauline Mattsson

Abstract

Organizational strategists are working on their company's ability to absorb and transfer knowledge between organizational units, their so-called absorptive capacity, to better react to environmental changes and, hence, strengthen their sustainable competitive advantage. In particular, the sharing of tacit know-how is considered to be difficult because it is contextual and experience-based, and, therefore, tends to 'stick' to the individual owning it. For industries that heavily rely on quality-type tasks in order to be competitive in the market, overcoming barriers when transferring tacit knowledge is especially relevant. Consequently, this thesis focuses on tacit knowledge transfer between organizational units in different knowledge-heavy industries.

This process has been investigated through a combination of a quantitative survey and qualitative semi-structured interviews. Throughout this mixed method approach, the findings of both investigations mostly identify similarities across knowledge-heavy industries. Firstly, a surprising result has been that the absorptive capacity of companies from different knowledge-heavy industries, as well as their perceived barriers when trying to overcome transfer difficulties, are very alike. Furthermore, the same two main strategies to overcome those barriers have been detected across the investigated industries: 1) the personalization strategy, encouraging informal networks to increase knowledge exchange and social ties between teams, departments, and hierarchies; and 2) the codification strategy, a more formal approach of making knowledge explicit, to store codified information in a database and make it accessible at any time. Those two approaches are commonly used across all investigated knowledge-heavy industries, yet emphasized differently. Which strategic focus is placed, depends on the individual company's understanding of tacit knowledge transfer, and their perceived value of organizational learning.

In general, these findings add to prior research about tacit knowledge transfer. Providing evidence of similarities between knowledge-heavy industries, this study mainly contributes to the generalization of research about absorptive capacity, as an enabler for tacit knowledge transfer, and encourages managers to pursue continuous cross-industry dialogue.

Keywords: absorptive capacity, cross-organizational communication, knowledge-heavy industries, knowledge management, networks, platforms, tacit knowledge transfer

Declaration of Authorship

We hereby declare that this thesis is completed independently by us and without outside assistance. With being the sole authors of this master thesis, it is based on our own work, unless stated otherwise. All references and verbatim extracts are quoted and acknowledged appropriately. Additionally, all data collected is obtained in the course of our own research, unless stated otherwise. This is a true copy of this thesis, which has not been published or presented to another examination committee before.

Lund, Sweden	25.05.2021
City	Date
	
Signature Karola Kremer	Signature Pauline Steudten

Table of Content

List of Tables

List of Figures

List of Abbreviations

ACAP	absorptive capacity
D-A-CH	Germany, Austria, and Switzerland region
HR	human resources
IT	information technology
MNE	multinational enterprise
PACAP	potential absorptive capacity
RACAP	realized absorptive capacity
RQ	research question
SCA	sustainable competitive advantage
USA	United States of America
VUCA	volatility, uncertainty, complexity, ambiguity
η	efficiency factor of absorptive capacity

1 Introduction and Study Background

In the 1970s, Ritter and Webber have already recognized that the world is becoming a place where there is no one explanation to so-called 'wicked problems', and "[..] no 'solutions' in the sense of definitive and objective answers" (1973, p. 155). Today's world is defined as rather volatile, uncertain, complex, and ambiguous (VUCA), whereas strategists increasingly face those wicked problems, not only in a social and political, but also in an organizational context (Rittel & Webber, 1973). Almost 40 years later, Camillus (2008) has stated that organizational strategists are still not well equipped for these circumstances.

In 2001, seventeen software developers have gathered in Utah, USA, and created a concept that would help them to better adapt to this macro trend of an increasingly complex word. Consequently, they have created the 'Agile Manifesto', describing a new mindset for their future work (Hohl, et al., 2018). This particular mindset aims to contribute to a faster understanding of rapidly changing customer demands, through absorbing knowledge from different sources and quickly putting it into practice. In the following decade, these first organizational adaptions in the software industry towards self-organized units, having more decision-making power, have resulted in the decentralization of teams in various other industries that now imitate this approach of an agile mindset (Hohl, et al., 2018). Recently, a literature review by Christofi, et al. (2021) has shown a rising interest in the topics of agility and flexibility in research, but simultaneously, a lack of exploring these concepts in-depth. With rising popularity amongst leaders, 'the 12 principles of Agile' are often misunderstood as a new buzzword in practice, rather than the initially intended mindset shift. Thus, managers exploit these principles for mainstream branding or corporate marketing matters, rather than actually implementing the mindset throughout their companies (Hohl, et al., 2018). Those firms claiming to be agile, and might even certify this through attended programs, e.g., Scrum, are not necessarily performing better than those that are not (Hohl, et al., 2018). As researchers, therewith, have already criticized this concept in academia, and due to the industry-wide spread of the agile mindset, it is relevant to promote critical dialogue between actual firms on the field, based on pre-existing research (Janssen & van der Voort, 2020).

When handling complex tasks, self-responsible organizational units have initially been introduced to put contextual knowledge better into practice than teams in a rather hierarchical organization (Hohl, et al., 2018; Baran & Woznyj, 2020; Kaufmann, et al.,

2020; Mahuha & Birollo, 2020; Janssen & van der Voort, 2020). In return, additional knowledge transfer difficulties are emerging, as those self-responsible teams tend to build 'silos', in which know-how rather 'sticks' to individuals (Li & Hsieh, 2009; Montazemi, et al., 2012). By not communicating failures, nor sharing good practices, teams have difficulties learning from each other and rather keep newly gained knowledge internally (Montazemi, et al., 2012). However, in empirical research (Mahuha & Birollo, 2020; Nazir & Pinsonneault, 2021; Kaufmann, et al., 2020), as well as in practice, it is realized that "it takes a collective sharing of power, creativity, and perspectives to become agile and nuanced enough to lead into the uncertain future" (Berger & Johnston, 2015, pp. 30-31). This is considered especially relevant for knowledge-heavy industries, as they depend intensively on know-how transfer (Hislop, et al., 2018).

Internal knowledge stickiness can result from various reasons, with one origin being the recipients' inability to exploit knowledge (Szulanski, 1996). In today's complex business arena, every employees' individual cognitive abilities, skills, and knowledge bases are different and, thus, so is their ability to absorb and internalize information. From an organizations' perspective, those individual knowledge bases are altogether adding up to the "sum of the absorptive capacities [ACAP] of its employees" (Cohen & Levinthal, 1990, p. 131). Managers are, therefore, working on their company's ability to absorb and share diverse knowledge between organizational units (Zahra & George, 2002). After all, this ability is commonly seen as the biggest strategic competitive advantage (SCA) a firm can own (Zahra & George, 2002; Johannessen, et al., 2001). Thus, knowledge transfer is a relevant topic for both, 1) companies wanting to improve their internal exchange of know-how, and 2) researchers that have analyzed the interdependencies between companies' ability to absorb and exploit gained knowledge efficiently.

At this point, it is important to differentiate between explicit and tacit knowledge. The former is codifiable and easy to transfer, whereas the latter is more task-related, contextual, and, therefore, also much stickier (Nonaka & Takeuchi, 1995). This condition, when tacit knowledge sticks to an individual or team, is called 'tacitness'. Despite this phenomenon, it is this particular tacit know-how that represents the crucial kind of knowledge for organizations to generate SCA in the market (Johannessen, et al., 2001). This, for instance, results from its transfer, enabling continuous improvements of individual employees' workflows and, therefore, leading to higher overall efficiency (Johannessen, et al., 2001).

1.1 Problem Statement and Research Question

Whereas it has been found that tacit knowledge is of SCA, knowledge tacitness represents a barrier along the way of reaching it. Considering the study background and the topic's relevance, the problem to be researched, therefore, is tacitness when transferring knowledge between organizational units. "Previous empirical results have shown the levels of tacitness, complexity and specificity […] eventually influences the success of […] knowledge transfer" (Li & Hsieh, 2009, p. 433). Another factor causing a key barrier for its transfer is the lacking centralization of tacit knowledge to make it uniformly available to all employees at any time, organized formally by one responsible function (Mahuha & Birollo, 2020; Nazir & Pinsonneault, 2021). Simultaneously, this represents a key motivator for this investigation at hand because it contradicts the previously mentioned benefit of decentralized teams' ability to flexibly respond to environmental changes.

Moreover, an organizations' ability to put knowledge into practice has been empirically studied by several researchers throughout the last decades (Cohen & Levinthal, 1990; Jansen, et al., 2005; Montazemi, et al., 2012; Kostopoulos, et al., 2011). Especially, as individuals within companies are getting more connected and are leveraging their networks and data (Iansiti & Lakhani, 2020), strategists focus on their ACAP to approach tacitness between individuals and teams. This is reasoned in the fact that the ability to realize potential knowledge, which is measured by ACAP, affects knowledge transfer significantly (Jansen, et al., 2005; Montazemi, et al., 2012). Thus, in this thesis, ACAP is used to break down and measure the knowledge transfer process.

However, most research regarding knowledge tacitness investigates ACAP, as an enabler for knowledge transfer, between headquarters and subsidiaries of single multinational enterprises (MNEs), or with external partners (Li, 2012; Grimaldi & Torrisi, 2001; Kostopoulos, et al., 2011; Sheng, 2018; Montazemi, et al., 2012; Hau, et al., 2012; Li & Hsieh, 2009). Only few sources have investigated the impact of know-how-sharing between units on its exploitation by team members in future projects, or even a firm's permanent organization (Mahuha & Birollo, 2020; Kaufmann, et al., 2020). As a positive relationship has been found here, the relevance of internal knowledge exchange is stressed. Moreover, recent research has been contextually considering single business fields (Al-Omoush, et al., 2020; Chang, et al., 2021; Grimaldi & Torrisi, 2001; Li, 2012), rather than comparing knowledge transfer processes across industries. As know-how is especially important for

knowledge-heavy industries, where a majority of SCA is reached with knowledge-intensive tasks (Hislop, et al., 2018), this thesis focuses on the tacit knowledge transfer processes of those industries. After all, the well-known construct of ACAP is rather little applied to the team level (Christofi, et al., 2021), particularly in terms of comparing processes of companies in different knowledge-heavy industries (Hislop, et al., 2018). Yet, Grimaldi & Torrisi (2001) have been acknowledging that "[…] the boundaries between tacit and codified knowledge vary across industries" (p. 1428). Herewith, differences in approaching knowledge tacitness and further transfer difficulties are expected. Subsequently, this thesis focuses on comparing knowledge-heavy industries' respective ACAP, as an enabler for tacit knowledge transfer between self-responsible organizational units. Consequently, the following research question (RQ) has been formulated:

How is tacit knowledge transferred between organizational units in different knowledge-heavy industries?

Looking at this particular RQ, the unit of analysis is the process of 'tacit knowledge transfer', possibly getting enabled as companies realize their potential ACAP. This particular unit of analysis is investigated and compared between representative companies of different knowledge-heavy industries through a quantitative survey and qualitative semi-structured interviews. As this research aims to be explanatory, the emphasis is placed on the qualitative part of this mixed methodology approach. However, the quantitative part enables the measurement of knowledge transfer through ACAP, and particularly, through an industry's ability to exploit knowledge. Therefore, it helps to understand the researched industries' current ACAP for comparable matters. Based on that, it additionally contributes to the selection of the most suitable companies within knowledge-heavy industries for the succeeding qualitative interviews. In this sense, the sources of data collection are individual managers, indicating tacit knowledge transfer processes within their particular organization, representing their industry (Yin, 2009). Here, companies of knowledge-heavy industries of one geographical area, consisting of Germany, Austria, and Switzerland (D-A-CH region) are examined regarding their ACAP. The focus on this one region contributes to not having to control country-specific differences and regulatory environments. As the information technology (IT) sector has initiated the change towards an agile mindset, it has also improved its industry-wide ACAP and is, therefore, expected to perform a pioneer role, capitalizing on its first-mover advantages (Iansiti & Lakhani, 2020; Hohl, et al., 2018). This

investigation at hand assumes that other knowledge-heavy industries, also needing a high degree of ACAP to quickly adapt to fast-changing customer demands, have followed this approach, while still having a lower ACAP.

1.2 Structure Outline

Following the introduction and study background, the literature review presents the main concepts of this thesis in-depth, further evaluating identified research gaps. This lays out the foundation for the hypothesis to be tested throughout the successive methodology.

In line with the topic's relevance examined in the study background, as well as the problem statement, a mixed method approach has been chosen to combine quantitative and qualitative findings. Firstly, through quantitative research, existing empirical studies around the construct of ACAP are aimed to get supplemented in order to increase the understanding of the topic related to the RQ. This is done by investigating ACAP across different knowledge-heavy industries at the organizational team level. Secondly, qualitative research is expected to investigate the actual tacit knowledge transfer processes behind leveraging the ACAP in the selected industries through semi-structured interviews with representative managers of companies within those knowledge-heavy industries. Hence, the third section aims to elaborate on this thesis' research design, whereas the mixed research methodology is motivated and the quantitative methodology, as well as the qualitative methodology, are explained. Chapter four is then concerned with the presentation of the results for both methods individually, whereas in chapter five, the discussion of the findings, considers both methods' results together.

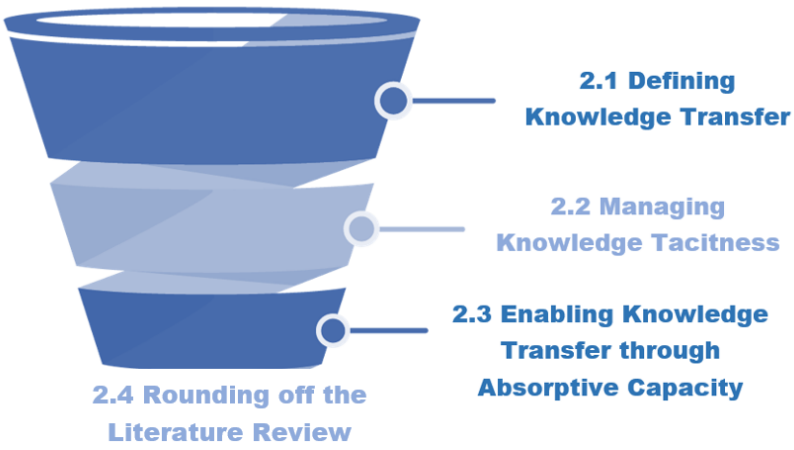
Lastly, chapter six finalizes this thesis by discussing the limitations and future research directions. In the seventh chapter, the conclusion, key findings are summarized and once again compared with and evaluated against pre-existing literature in order to stress this conducted research's theoretical and practical contributions.

2 Literature Review

The literature review has been conducted based on the following keywords and their combinations: *'absorptive capacity'*, *'agility'*, *'cross-organizational communication'*, *'decentralized teams'*, *'knowledge-heavy industries'*, *'knowledge management'*, *'networks'*, *'platforms'*, *self-organization'*, and *'tacit knowledge transfer'*. The resulting sources from this search have been evaluated against their relevancy for this thesis, as well as their reliability. With the overall literature being rather recent, only a few selected sources have been published before the Millennium change. However, a number of the more contemporary articles used are building upon those early works. They have been chosen consciously, as the '12 principles of Agile' still do not seem to be implemented sufficiently by most industries today, and the trend of the knowledge economy demanding broader skills among employees has already been detected early (Epstein, 2019). The articles have been used for the coding process, whereas a table with all open, selective, and axial codes, including their respective amount named as well as indicative quotes, can be found in the appendix (table 12). According to the evolved categories (axial codes), the subsections of this literature review have been established.

The first subsection is concerned with the basis of this thesis: defining knowledge transfer. Resulting from the literature review, a need for distinguishing different kinds of knowledge has been identified. Since the transfer of tacit knowledge is described to be especially complex, but also crucial for SCA (Johannessen, et al., 2001), the focus of this thesis is placed here. Following this train of thought, implications for managing knowledge tacitness are given in the second subsection. Enabling knowledge transfer through absorptive capacity, being the "capability to exploit new know-how […], thus effectuating its transfer" (Montazemi, et al., 2012, p. 31), is building upon both previous subsections. As visualized in figure 1, the theoretical research is funneling down when it comes to exploiting tacit knowledge, towards the hypotheses to be addressed in the quantitative research. By rounding off the literature review, the fourth subsection is then summing up the findings and ultimately laying out the foundation for the succeeding methods to tackle the evolved RQ.

Figure 1: Illustration of the Funneling Process Throughout the Literature Review



2.1 Defining Knowledge Transfer

In today's world full of wicked problems and hyper-specialization (Epstein, 2019), society has become rather knowledge-based (Johannessen, et al., 2001). Overall, knowledge is the application of content to a specific situation and, therefore, highly contextual. It is further seen as the most important asset, or key strategic resource, of firms (Johannessen, et al., 2001). Hence, knowledge transfer is an important capturing-, distributing-, and (re)-using process, finally creating SCA, and demonstrating the foundation of market power (Nonaka & Takeuchi, 1995). Szulanski (1996) has identified four stages during this iterative movement of knowledge, being 'initiation', 'implementation', 'ramp-up', and 'integration'. In the 'initiation' stage, a need for and leading to the decision to transfer knowledge is identified. This results in the second stage of 'implementation', where the resources between the source and recipient flow. In the following 'ramp-up' phase, the recipient starts using the acquired knowledge, but in a rather ineffective way. Only when reaching the fourth phase of 'integration', the recipient institutionalizes the transferred knowledge and achieves satisfactory results with it (Szulanski, 1996).

In the reviewed literature, knowledge is commonly categorized into *explicit* and *tacit*. According to Nonaka and Takeuchi (1995), the latter as 'the knowledge of the body', consisting of a cognitive element (mental maps, beliefs, paradigms, and viewpoints), and a technical component (concrete know-how, crafts, and context-specific skills). Tacit knowledge is, hence, highly personal, experience-based, and context-linked, as well as not easily visible, nor expressible. Due to resulting difficulties in formulating this kind of knowledge, its communication is also described to be complicated (Nonaka & Takeuchi,

1995). Explicit knowledge, on the other hand, is factual, can be easily articulated, stored, as well as digitalized, and is therefore codifiable, being 'the knowledge of the mind'. The boundaries between both knowledge kinds vary across industries and are impacted by the external context (Grimaldi & Torrisi, 2001). Their differentiation, thus, appears to be crucial, and the RQ is concerned with the transfer of tacit knowledge. This is further reasoned, as nowadays, many companies in various industries heavily rely on quality-type tasks that are know-how related with a high degree of complexity (Johannessen, et al., 2001; Montazemi, et al., 2012; Hislop, et al., 2018). These companies are, hence, in need of transferring tacit knowledge internally between their organizational units.

2.2 Managing Knowledge Tacitness

Nonaka and Takeuchi's (1995) work 'The Knowledge-Creating Company' has been referred to by most reviewed literature. The authors introduce a new organizational structure, called the 'hypertext organization', that is aimed to be used universally to manage companies. Nonaka and Takeuchi (1995) state how Japanese companies successfully create innovations by valuing tacit knowledge with this kind of organizational structure. Whereas tacit knowledge in itself can result in SCA, its rather difficult transfer represents a problem along the way of reaching it, once again stressing the contextuality of tacit knowledge. This inability of internal replication is referred to as 'knowledge stickiness'. The first to introduce this term has been von Hippel in the early 1990s (Szulanski, 1996). Leaning against this phenomenon, the term 'knowledge tacitness' can be described as the particular stickiness of tacit knowledge. The reviewed sources exhibit two main perspectives on knowledge composition within organizations to overcome this tacitness (Johannessen, et al., 2001; Plangger, et al., 2020; Mahuha & Birollo, 2020; Grimaldi & Torrisi, 2001; Nonaka & Takeuchi, 1995; Jansen, et al., 2005). The first one, namely the 'personalization strategy', suggests cross-organizational sharing of the full knowledge base, including both kinds, tacit and explicit, through networks. The second approach, being the 'codification strategy' is concerned with externalizing tacit knowledge to make it explicit (Montazemi, et al., 2012). Those two approaches are explained in-depth in the following subsections, therewith assessing practices of transferring tacit knowledge between self-responsible teams that have organized to conquer today's fast-past business environment and gain SCA (Hohl, et al., 2018).

2.2.1 Personalization Strategy

Taking a step back, this particular SCA is reached through continuous improvements, innovation, and performance, whereas especially tacit knowledge is seen to be key (Johannessen, et al., 2001). The economic historian Karl Polanyi has even described know-how, being tacit, to be the dominant principle of all knowledge (Hislop, et al., 2018; Johannessen, et al., 2001). However, it is argued that tacit knowledge alone cannot embrace innovation and only explicit one fails to facilitate a successful knowledge transfer (Plangger, et al., 2020). Hence, the first approach is concerned with reinforcing a combination of both knowledge kinds (Johannessen, et al., 2001). This is especially important, as the context, in which the knowledge is utilized, needs to be taken into account (Nonaka & Takeuchi, 1995). Therefore, most reviewed literature considers both kinds to be mutually complementary and dynamically interacting (Plangger, et al., 2020; Mahuha & Birollo, 2020; Nonaka & Takeuchi, 1995; Grimaldi & Torrisi, 2001). This approach indicates that individual employees', as well as collective learning, which again impacts the performance and outcomes of a firm, cannot be reached by utilizing only one kind of knowledge (Plangger, et al., 2020). Instead, it suggests understanding the specific know-how and tacit processes behind gaining factual, explicit knowledge. Only when transferring both, this particular know-how can be recombined and actually exploited in future projects of the firm, leading to long-term success (Mahuha & Birollo, 2020).

Tacit knowledge is the kind where interactions between employees at the team level are crucial. Johannessen, et al. argue that "knowledge based on personal experience […] can be made explicit at the organizational level through trust and relationship building processes, […] provided by organizing the company in teams" (2001, pp. 9-10). Those decentralized teams are suggested to consist out of a multi-skilled group of people, enabling the sharing of the interdisciplinary knowledge base and releasing the full creative potential (Sloan, 2020). Therefore, tacit knowledge can be made explicit through social enablers, as it is "embedded in people, tools and routines and related elements in the organization" (Li, 2012, p. 5399). Valuing individuals and their interactions over processes and tools, humans are involved in tacit knowledge transfer and clearly, the evolving organizational culture is to be differentiated from technological enablers for know-how-sharing. Instead, those networks can be further reinforced through encouraging open dialogues, participation in decision-making, cross-functional projects, and job rotation, leading to maintained organizational productivity (Jansen, et al., 2005). To spread knowledge throughout the company, literature

suggests formal, complemented by informal communication between different divisions, over a 'silo culture' (Mahuha & Birollo, 2020). Social capital is described as a key facilitator of knowledge creation and sharing, being the sum of all resources derived from a network of relationships (Hau, et al., 2012). It is enacted through its three dimensions: embedded social ties between units, their institutional shared vision, and inter-organizational trust (Montazemi, et al., 2012). Those intra-enterprise networks are not to be exchanged with external partnerships. Most reviewed literature on knowledge management has been concerned with the transfer between, rather than within companies (Li, 2012; Grimaldi & Torrisi, 2001; Kostopoulos, et al., 2011). Out of those sources addressing internal knowledge-sharing, most have been considering the transfer between headquarters and subsidiaries of MNE's (Hau, et al., 2012; Li & Hsieh, 2009; Montazemi, et al., 2012; Sheng, 2018).

Pursuing this first approach, knowledge management is seen as "more than data warehousing, installing intranets, developing expert systems, or refining organizational routines" (Montazemi, et al., 2012, p. 45). Networks provide flexibility and facilitate information exchange across groups (Nespeca, et al., 2020). Humans understand, reason, and interpret the received information and set it into context by considering correlations and conditional probabilities (Badimo, 2019). This makes the 'personalization strategy', based on human interaction and interdisciplinary dialogue (Sloan, 2020), advantageous compared to the 'codification strategy', where only explicit knowledge is made accessible throughout the organization (Montazemi, et al., 2012). What advantages the latter has compared to those networks, is to be addressed in the following subsection.

2.2.2 Codification Strategy

Referring back to Szulanski (1996), only when the fourth step of routinary 'integration' is reached, knowledge becomes part of the organizational identity (Li & Hsieh, 2009). However, getting stored in company-wide databases and, hence, being centralized, explicit knowledge plays an important role in proactively applying knowledge to increase a firm's potential of surviving in a faced-paced environment (Al-Omoush, et al., 2020). In fact, the lacking centralization and formalization of tacit knowledge is a key barrier for its transfer and the overall coordination responding to external trends (Mahuha & Birollo, 2020; Nazir & Pinsonneault, 2021), but simultaneously, a key motivator for the established RQ. This issue is aimed to be further investigated because, contrastingly, some literature suggests the

decentralization of department-specific know-how to simplify organizational knowledge transfer (Chang, et al., 2021), facilitating adaptations to the contextuality of tacit knowledge (Janssen & van der Voort, 2020).

However, mismanagement of information has been detected, as researchers, as well as companies, appear to lack a full understanding of tacit knowledge in the first place. Transferring this action-oriented kind of knowledge, that is including the how-to-processes through which it was gained, from one setting to another is difficult and can even hinder reaching SCA (Johannessen, et al., 2001). Hereby, "the levels of tacitness, complexity and specificity of transferred knowledge have a significant impact on the knowledge stickiness" (Li & Hsieh, 2009, p. 433). To overcome those issues, as well as acquisition costs and resulting information asymmetries, the second approach suggests transforming tacit into explicit knowledge by codifying it (Grimaldi & Torrisi, 2001; Jansen, et al., 2005). This process has been reinforced through significant improvements in IT and machine learning. With platforms and databases facilitating real-time sharing opportunities, the speed of information availability has increased (Plangger, et al., 2020), but is limited to explicit knowledge transfer, leading to the de-emphasizing of tacit know-how (Johannessen, et al., 2001). However, it has to be mentioned that such codification through technology is not possible in all business sectors. Consequently, the approach of externalizing tacit knowledge is not universally implementable. This is why the thesis at hand aims to investigate and compare practices amongst knowledge-heavy industries, motivated by the fact that those depend intensively on this tacit know-how transfer in order to reach SCA in the market (Hislop, et al., 2018).

2.3 Enabling Knowledge Transfer Through Absorptive Capacity

The previous subchapter has explored and critically discussed implications that managers find useful to manage their tacit knowledge transfer processes and guide their companies strategically through today's fast-paced business arena. On behalf of the downwards funneling process of this literature review, those different implications shall not be viewed in isolation as there is no one-size-fits-all approach. No single best response strategy has been formulated, since most literature is respectively focusing on a certain study field, instead of comparing practices across different industries (Janssen & van der Voort, 2020). Although Nonaka and Takeuchi's (1995) 'hypertext organization' is proposing an industry-overarching seven-step program, recommending a team-based, task-force approach to

knowledge transfer, the contextuality of tacit know-how needs to be considered. Additionally, the wicked problems (Rittel & Webber, 1973), various companies face, are dependent on ever-changing aspects within the fast-paced business world. Thus, the environment that Nonaka and Takeuchi (1995) have been basing their theories on is different from today's. Resulting from this literature review so far, a first universally applicable step to face those issues would be managerial awareness (Berger & Johnston, 2015), recognizing that, whereas tacit knowledge can result in SCA, knowledge tacitness represents a problem along the way of reaching it. Here, "moving from denial to acceptance is important" (Camillus, 2008, p. 106). Responding to the increased complexity, many firms already have organized in decentralized, self-responsible teams to become more agile. Hence, the question is how tacit knowledge is transferred and contextualized between organizational units. This, as well as how ACAP may contribute to overcoming knowledge tacitness in different knowledge-heavy industries is addressed through this study. ACAP in this context is used to measure and break down the process of knowledge transfer (Cohen & Levinthal, 1990). Building upon the existing literature on ACAP, the hypotheses, on which the quantitative methodology is to be based on, are raised in the following.

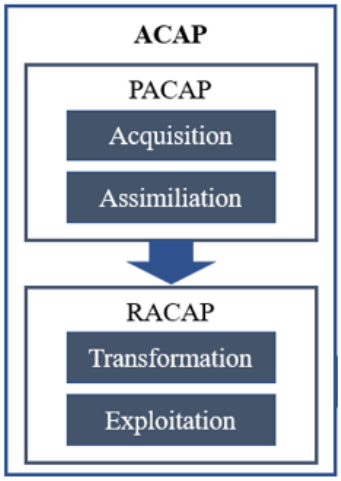
2.3.1 Realizing Potential Absorptive Capacity

Zahra and George (2002) differentiate ACAP into four combinative dimensions, with acquisition and assimilation being the potential absorptive capacity (PACAP), and transformation and exploitation being the realized absorptive capacity (RACAP). Therefore, ACAP can be used to break down the process of knowledge transfer and enable its measurement.

This thesis is mainly concerned with knowledge exploitation, which Szulanski (1996) refers to as stage four of the knowledge movement process: 'integration'. The organizations' ability to gather information that can potentially be used (PACAP) is, hence, considered as the preparation. The ability to then realize the potential with transforming information into knowledge and putting it into practice (RACAP) is considered to be the important step to overcome tacitness, and ultimately reach SCA. However, "[…] because absorptive capacity is intangible and its benefits are indirect, one can have little confidence that the appropriate level, to say nothing of the optimal level, of investment in absorptive capacity is reached" (Cohen & Levinthal, 1990, p. 149). According to Zahra and George's (2002) introduced model, PACAP is leading to RACAP through social integration mechanisms, which is

linking the construct of ACAP to the previous subsection of this thesis. This relationship of PACAP, being positively correlated with RACAP, has also been investigated by Jansen, et al. (2005) as well as Montazemi, et al. (2012), as visualized in figure 2.

Figure 2: The Four Dimensions of ACAP (Zahra & George, 2002)



Dimensions/Capabilities	Components	Role and Importance
Acquisition	• Prior investments • Prior knowledge • Intensity • Speed • Direction	• Scope of search • Perceptual schema • New connections • Speed of learning • Quality of learning
Assimilation	Understanding	• Interpretation • Comprehension • Learning
Transformation	• Internalization • Conversion	• Synergy • Recodification • Bisociation
Exploitation	• Use • Implementation	• Core competencies • Harvesting resources

The quantitative research is built on the assumption that knowledge transfer can be measured with the construct of ACAP (Montazemi, et al., 2012). Moreover, Jansen et al. (2005) have mentioned that "empirical studies in a wider variety of organizations within different industries are necessary to further generalize the findings" (p. 1011). Hence, the results have not been generalizable, like it is aimed with this rather novel cross-industry comparison at hand. Consequently, the first hypothesis is testing if the positive correlation from existing research is applicable to the data set at hand, which consists of different knowledge-heavy industries. It presupposes that a positive relationship between PACAP and RACAP can be found via a correlation analysis, which would then validate the assumptions in previous research (Jansen, et al., 2005; Montazemi, et al., 2012).

H1. PACAP is positively correlated with RACAP across knowledge-heavy industries.

2.3.2 Learning Through Internal Knowledge Exploitation

Knowledge transfer is also closely linked to organizational learning, representing an integrated process that is finally generating SCA (Johannessen, et al., 2001). This is in line with Sloan's (2020) take on learning how to think strategically, as well as Cohen and Levinthal's (1990) approach of highlighting the development of ACAP through cognitive structures underlying learning. The latter authors also stress that a firm needs pre-existing

related knowledge to assimilate and use newly gained knowledge, constantly establishing linkages between the concepts (Buchardt & Maisch, 2019). It is further differentiated as follows: “learning capabilities involve the development of the capacity to assimilate existing knowledge, while problem-solving skills represent a capacity to create new knowledge” (Cohen & Levinthal, 1990, p. 130). Nazir and Pinsonneault (2021) have found that constant interactions with external partners force business units to master diverse processes and consequently, enhance their ACAP. However, in many cases tacit knowledge is already available internally, enabling teams to learn from one another at lower costs rather than pursuing knowledge from external competitors or consultants (Montazemi, et al., 2012; Berger & Johnston, 2015). Hence, especially internal knowledge exploitation and collaborative creation can be linked to the degree of agility in business units (Nazir & Pinsonneault, 2021; Al-Omoush, et al., 2020). In that context, the internal stickiness of tacit knowledge can also be seen as a trigger to facilitate problem-solving activities (Li, 2012).

The aimed focus of this thesis on know-how transfer between organizational units becomes important at this point, as ACAP depends on the knowledge-sharing between such units, just as much as on the interaction with the previously stressed external learning environment (Cohen & Levinthal, 1990). This is especially reasonable for the RQ because the well-known construct of ACAP is rather little applied to the team level (Christofi, et al., 2021), particularly in terms of differences and similarities of how to overcome knowledge tacitness across different knowledge-heavy industries. After all, “in today's fast-changing business arena the notion of competition forces an organization to be innovative – a capability that is closely tied to its intellectual capital” (Hislop, et al., 2018, p. 79), whereas the latter is the sum of all knowledge utilized for SCA. This is also affirmed by Cohen and Levinthal (1990), as they say that knowledge diversity facilitates innovative processes.

Bringing it all together, potential long-term financial performance through continuous improvement of processes and innovation (Kostopoulos, et al., 2011), as well as organizational learning are to be considered as outcomes of ACAP. According to Cohen and Levinthal (1990), the more knowledge there is to be assimilated and exploited and the less difficult it is to learn, the greater an organization’s incentives to do so. With tacit knowledge contributing especially to contextual, long-term learning, it is embodied in thinking structures and responsively retrievable. Only a few reviewed sources paid in-depth attention to this phenomenon called ‘bounded learning by doing’ (Johannessen, et al., 2001). It

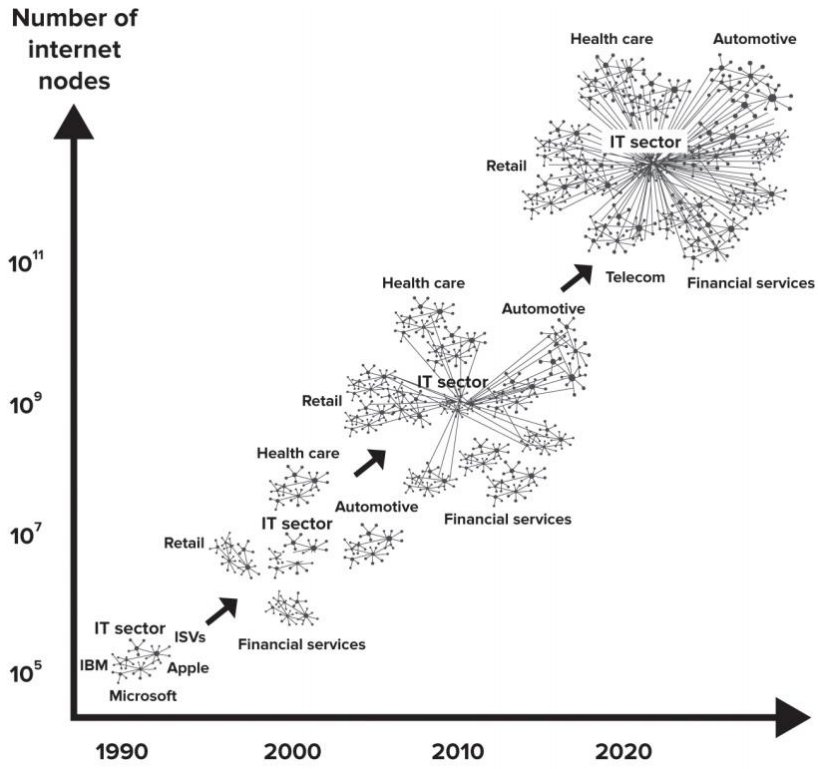
describes a threshold of tacit knowledge, through which production experience generates new knowledge to a certain level, but no innovation occurs due to limited learning capability (Sheng, 2018; Li, 2012). This particular threshold might be connected to the fact that most research is focusing on exploiting knowledge gained from previous projects (Nonaka & Takeuchi, 1995), disregarding the new context. However, innovation should rather be considered over multiple life cycles (Christensen, 1992; Utterback, 1994). Reconsidering the limited research on tacit knowledge transfer among organizational units, even fewer sources have focused on the impact of know-how-sharing between temporary teams on its exploitation in follow-up projects, and finally, a firm's permanent organization (Mahuha & Birollo, 2020; Kaufmann, et al., 2020). As demonstrated, organizational learning is an important part when discussing knowledge transfer. Therefore, the quantitative investigation is expanded with a second hypothesis, testing differences between knowledge-heavy industries, in order to elaborate to what extent cross-industry learning can take place.

Distinguishing between PACAP and RACAP explains some firms' inability to improve their performance due to inefficient leveraging their PACAP into RACAP (Zahra & George, 2002). Consequently, tacit knowledge transfer in this investigation at hand is understood as the ability to realize the potential of knowledge in order to overcome its tacitness. Reconceptualizing the ACAP construct, Zahra & George (2002) have termed "[…] the ratio of RACAP to PACAP as the efficiency factor (η), [which] suggests that firms vary in their ability to create value from their knowledge base, because of variations in their capabilities to transform and exploit knowledge. In firms with a high efficiency factor, RACAP approaches PACAP. Given that profits are created primarily through RACAP […] firms that achieve or maintain a high efficiency factor are positioned to increase their performance" (p. 191). Zahra and George (2002) have assumed that companies use their ACAP with different levels of efficiency. This study aims to elaborate whether this is also true between industries. The different knowledge-heavy industries' efficiency factors are, thus, compared.

Considering the discussed 'Agile Manifesto' and its principles having reformed the software and product development sector (Hohl, et al., 2018), the second hypothesis focuses on the IT industry. Figure 3 depicts the role of the IT sector, remaining in the center of the modern economy's evolution, as the latter is becoming more and more digitized. This is in line with Iansiti and Lakhani (2020), who have found that the concentration of other industries around the IT sector has increased and is expected to further do so in the future. Following this

sector's effort to re-architecture traditional operating models towards more decentralized structures, resulting first-mover advantages can be expected. The authors state "as digital technology increasingly collides with disparate aspects of our economy and society" (Iansiti & Lakhani, 2020, p. 195), this concentration creates opportunities as well as threats for many other industries.

Figure 3: The IT Sector's Role in the Modern Economy's Evolution (Iansiti & Lakhani, 2020)



With the sample at hand, consisting of IT service providers amongst other knowledge-heavy industries, the following hypothesis is testing whether the IT industry is capitalizing on its first-mover advantages in being agile when it comes to tacit knowledge transfer. In that case, the efficiency factor of the IT industry in comparison to other knowledge-heavy industries can demonstrate if the latter have already learned from the former's agile mindset. If this second hypothesis is to be confirmed, a focus would be placed on this particular sector when considering qualitative interview partners. Also, a better classification of the various knowledge-heavy industries enhances the selection of further interview partners for a comparative purpose.

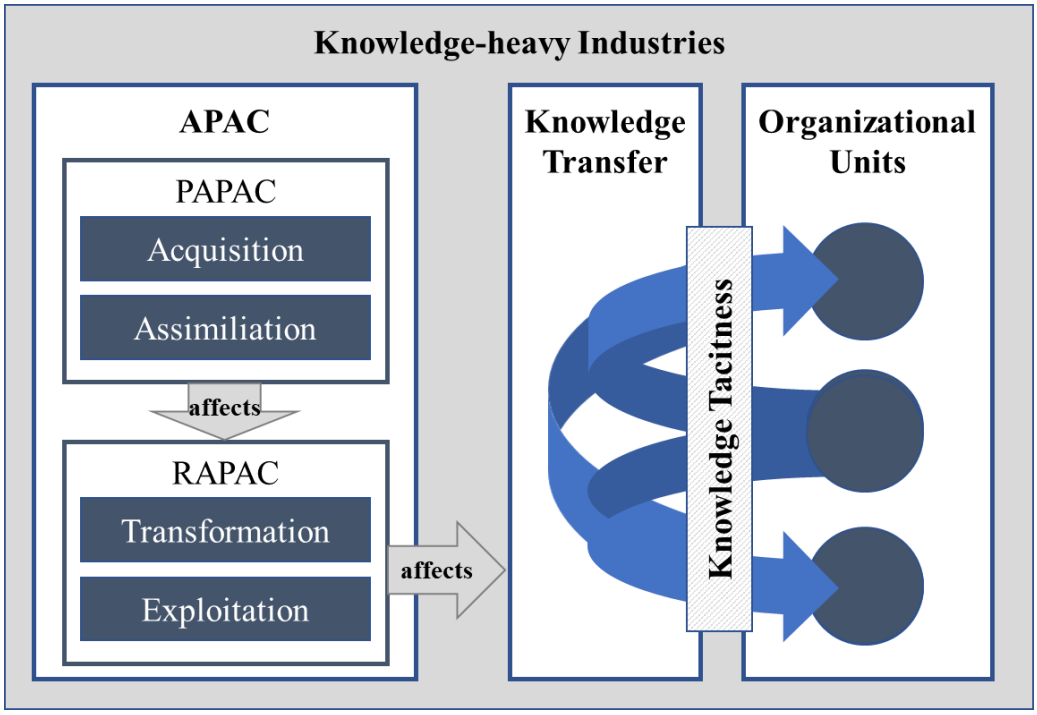
H2. Concerning its ACAP, the IT industry has a higher level of efficiency compared to other knowledge-heavy industries.

2.4 Rounding off the Literature Review

Establishing a connection between all three subsections of this literature review, Szulanski (1996) has found that the most important origins of internal knowledge stickiness (see 2.1) are the 'causal ambiguity' of the context (see 2.2), an 'arduous relationship between source and recipient' (see 2.2), and the 'lacking ACAP of the recipient' (see 2.3). Consequently, firms need to foster social ties and relationships between teams, in order to improve communication, and deepen the understanding of know-how. The exploration of this tacit knowledge can be further supported through source-recipient knowledge absorption platforms. Due to established trust among teams and the reinforcing value of sharing for the organization as a whole, the fear to lose knowledge ownership is minimized (Sheng, 2018). Altogether, this further has a positive impact on employee's motivation, learning capacities of organizational units, their ability to exploit the received knowledge, and finally SCA (Jansen, et al., 2005; Szulanski, 1996) through superior innovation and financial results over time (Kostopoulos, et al., 2011). The self-responsible coordination and control of new know-how-sharing between agile units need to be supported by the management to enable seizing opportunities and, consequently, innovation (Montazemi, et al., 2012). Again, the focus within the scope of this thesis is placed on the final step of knowledge exploitation (Jansen, et al., 2005), or as Szulanski (1996) refers to it: the 'integration' stage.

After all, it is to be investigated whether ACAP, and particularly its component of knowledge exploitation, can overcome knowledge tacitness across various knowledge-heavy industries. This comparison is of particular relevance, as "today, many businesses ignore network and data dynamics, focus on specific industry segments, and behave as if they were largely separate from the rest of the economy" (Iansiti & Lakhani, 2020, p. 140). Figure 4 aims to sum up this final subsection, bringing together the implications introduced throughout the literature review. This framework visualizes the relationship between the main constructs of the problem *'knowledge tacitness'*, being addressed in this thesis: *'absorptive capacity'*, as an enabler for internal *'knowledge transfer'* between self-responsible *'organizational units'* in the context of different *'knowledge-heavy industries'*. After reviewing pre-existent literature, the question remains "why organizations do not know what they know" (Szulanski, 1996, p. 38). How the chosen approach of mixed methods, including quantitative as well as qualitative research, addresses this issue, is introduced in the following section.

Figure 4: The Concepts Behind the Problem Statement and Literature Review



3 Mixed Research Methodology

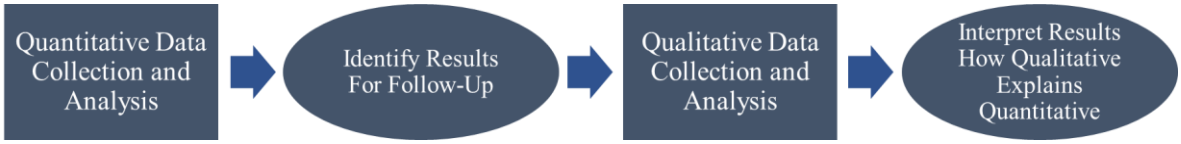
As indicated in the preceding section, several lacks in existing literature have been detected. Firstly, research in internal knowledge transfer does not cover the processes between self-responsible teams extensively because most research has considered the sharing between headquarters and subsidiaries of MNEs, or that with external partners. Consequently, in this research at hand, managers of companies operating in different knowledge-heavy industries are asked about their internal sharing processes, and how newly gained know-how can get contextualized between organizational units. Already Michael Porter has noted that "the mere hope that one business unit might learn something useful from another is frequently a hope not realized" (Szulanski, 1996, p. 37). Therefore, the literature review has established the link to look deeper into ACAP in order to make this knowledge-sharing process measurable. Here, a focus is placed on the actual knowledge exploitation (Jansen, et al., 2005), or as Szulanski has phrased this final stage: 'integration' (1996). Subsequently, these lacks in literature, as well as the stressed relevance of transferring tacit knowledge throughout the company have led to the targeted RQ:

How is tacit knowledge transferred between organizational units in different knowledge-heavy industries?

Resulting from the literature review, there is a relatively strong, pre-existent quantitative background on knowledge transfer (Jansen, et al., 2005; Montazemi, et al., 2012). Yet, as the authors of this thesis have defined the ability to realize the potential of gained knowledge, hence its exploitation, to enable tacit knowledge transfer, the process becomes measurable through ACAP. An own quantitative investigation on this particular issue, hence, additionally contributes to an understanding of the researched knowledge-heavy industries' current ACAP. It further allows investigating assumptions made in previous research through quantitative surveys, in order to apply its results to the RQ at hand. Successively, a qualitative questionnaire, as well as an interview protocol is set up, and suitable interview partners are chosen to explain their strategies for tacit knowledge transfer in-depth. This qualitative research appears to be well suited, as well as needed to present and compare the strategies of representative companies in the knowledge-heavy industries, to ultimately explain the preceding results (Christofi, et al., 2021). Hence, an *explanatory sequential mixed methods* approach, as visualized in figure 5, has been chosen to answer the stated RQ. Ultimately, this "mixed methods research can permit investigators to address more

complicated research questions and collect a richer and stronger array of evidence than can be accomplished by any single method alone" (Yin, 2009, p. 63).

Figure 5: Explanatory Sequential Mixed Method (Creswell & Creswell, 2018, p. 300)



This method choice is based on different reasons, starting with the possibility to understand the knowledge transfer processes behind different representative companies and include perspectives from both data sets integrated into one another. Precisely, the results of the quantitative method are expected to demonstrate possible differences between the knowledge-heavy industries, which can then be further explained through qualitative interviews. Therefore, the emphasis is rather placed on the qualitative data analysis, as it is used to ultimately add value to the pre-existent academic literature and provide practical implications for companies operating in today's fast-paced business environment. However, the quantitative analysis, presenting a typical design in this field of research, is needed to elaborate on the hypotheses, that have evolved after reviewing current literature. Further, this has been found to be a sufficient way of identifying the suitable interview partners for the succeeding qualitative research. Due to limited availability of time for the data collection, the raw data for the quantitative research is obtained from a survey that has previously been conducted by one of the authors, initiated for a different purpose. This further significantly contributes to gaining access to interview partners because those have been in contact before with both, the topic of ACAP through the quantitative survey, and one of the researchers, as she has conducted it. Consequently, more time can get allocated for the emphasized qualitative methodology. Another main factor motivating the mixed method design for this research is that the two authors bring different expertise into this thesis (Creswell & Creswell, 2018). Whereas one has worked with quantitative methods before, the other has experience conducting qualitative research. Thus, tasks can be allocated and processed simultaneously. In the following subsections, more details are given about the two respective research methods, as well as the motivation behind those. Ultimately, each respective methodology section is finalized assessing its reliability, validity, and ethical considerations.

3.1 Quantitative Methodology

As previously mentioned, knowledge transfer in this thesis is understood as the ability to realize the potential of knowledge, in order to overcome its tacitness. Consequently, the unit of analysis, being 'tacit knowledge transfer', is made measurable through the ability to transform information into knowledge and putting it into practice (RACAP). Within the scope of this thesis, the authors, hence, measure knowledge transfer to overcome transfer difficulties with how well PACAP is turned into RACAP (Jansen, et al., 2005). To find aspects on how companies of different knowledge-heavy industries can utilize their ACAP to overcome knowledge tacitness, the quantitative research states the status quo of the respective sample. This is important because results from previous literature have not been made generalizable for different knowledge-heavy industries. Thus, it is of relevance to demonstrate the differences or similarities between those industries' ACAP. Additionally, based on those results, qualitative interviews are to be held to further explain the results. Rising from the literature review, two hypotheses have evolved to be assessed with the quantitative data analysis:

H1. PACAP is positively correlated with RACAP across knowledge-heavy industries.

H2. Concerning its ACAP, the IT industry has a higher level of efficiency compared to other knowledge-heavy industries.

3.1.1 Quantitative Research Design and Methods

Regarding the research design, secondary data from a *cross-sectional online management study* is used to analyze the current ACAP of companies in the D-A-CH region. In more detail, the survey design evaluates the relationship between the two variables PACAP and RACAP (to address H1), as well as descriptive results (to address H2), both for different knowledge-heavy industries. Thus, the results of previous studies on whether PACAP is associated with RACAP is going to be evaluated with a correlation analysis on this database at hand, in order to address their correlational hypothesis among different industries between the independent and dependent variable (see 3.1.2; table 1; Jansen, et al., 2005; Montazemi, et al., 2012). The rationale for the research design is elaborated on in the following.

The reason to choose this *quantitative cross-sectional study* approach is twofold: 1) it is an established approach when analyzing the companies' ACAP (e.g., Cohen & Levinthal, 1990, have looked for interindustry differences in 318 firms; Jansen, et al., 2005, have asked 462

managers of a European company to test their scale; Montazemi, et al., 2012, have used cross-sectional secondary data to validate a set of hypotheses in a structural model), and 2) due to a tight time schedule, more elaborated results can be expected than from a longitudinal study that would need more time to be interpreted in-depth. Looking at literature from the last decade, longitudinal studies have been conducted and empirically proved the construct of ACAP, as well as its direct and indirect contributions to innovation and financial performance (Kostopoulos, et al., 2011). Building upon these studies, a cross-sectional study is considered to be sufficient for this investigation purpose at hand. Nevertheless, like Jansen, et al. (2005) point out, "further longitudinal research should empirically establish the causal claim" (p. 1011). Consequently, future research building upon this investigation is suggested to consider a longitudinal study, as it can further control reversed causality by investigating several time periods (Bell, et al., 2019).

Furthermore, due to the already mentioned tight time schedule, the use of *secondary, pre-collected data* provides a high-quality data set without having to collect the data in a rush and therefore, adds higher generalizability to this thesis, compared to an exclusively qualitative study (Bell, et al., 2019). The data has been collected through an *online study*, distributed among participants by e-mail invitations, and the responses have also been administrated online (Sue & Ritter, 2012). Like other methods, online surveys come with benefits and drawbacks. The administration costs are low, the convenience for respondents and administrators high. Further, nowadays managers usually have access to the Internet, but are short in time. The online study has given them the ability to start the survey whenever they have been wanting to do so. As the respondents should be honest about the company's status, the online survey provides anonymity to the individual. The answers can, further, be compared objectively and the data quality is high. As anonymous links per company have been used and the participated companies have been tracked, it is not possible that the same company has participated twice. Moreover, the response rate, which can be a challenge for average online surveys, has been 100% because only highly interested participants have been invited and the participants have been self-selected (for more information see 4.3).

Only one *manager* of each company has been asked to assess the organizational ACAP as it depends "[…] on the absorptive capacities of its individual member [and can therefore be described as the] sum of the absorptive capacities of its employees" (Cohen & Levinthal, 1990, p. 131). Nevertheless, it needs to be considered that no manager understands all the

organizational processes and might, hence, not be able to answer questions correctly. However, their opinion can be taken as a direction and is interpreted further in the qualitative interviews.

Previous research on ACAP has focused on one or few European countries to test models (Cohen & Levinthal, 1990; Jansen, et al., 2005). "Such a focus helped to account for corporate-, industry- and country-specific differences that might have otherwise masked significant effects. Empirical studies in a wider variety of organizations within different industries are necessary to further generalize the findings" (Jansen, et al., 2005, p. 1011). Although this study now focuses on different industries, it has been decided to also *focus on one region* (D-A-CH region) when looking for suitable data, in order to not having to control country-specific differences and regulatory environments when already dealing with various industries (a concrete description of the data sample's origin can be found in 4.3). Further, having one author working at the consultancy that has gathered data amongst companies in this region, secures easy access to the raw data and contact information of later interview partners. Lastly, the D-A-CH market is considered to be innovative, with all three countries being in the top 20 of the most innovative ones (Ranking: Switzerland 1, Germany 9, Austria 19, Wood, 2021). This might be mirrored in a high ACAP (Kostopoulos, et al., 2011).

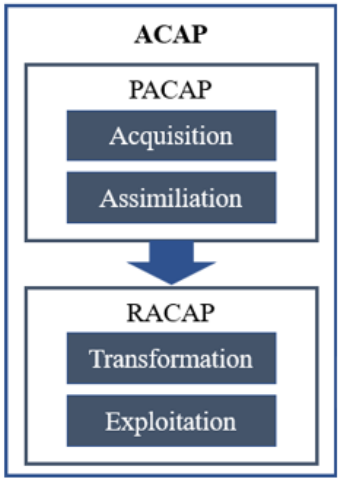
Regarding the data analysis and the used *analysis methods*, the computer program IBM SPSS Statistics 26 for Windows is used. The data from the two collection rounds is merged into one data set that contains the following: company name, industry, answers to the 21 questions, the index averages for the four subcategories (acquisition, assimilation, transformation, exploitation), and the two constructs PAPAC and RACAP. The index averages are stretched to a scale from 0 to 100 for better visualization. Before the analysis process, the data set is checked for consistency. Missing responses could not be detected, but missing industry assignments have been corrected (Malhotra, 2010).

Further, the data is analyzed with descriptive statistics, to describe the basic patterns, and with a Pearson correlation. The calculated Pearson product moment correlation coefficient, or 'r', is the most widely used correlation index and indicates if an association between two variables exists, and if so, what strength this association has (Burns & Burns, 2008).

3.1.2 Survey Instrument and Variables

Even though it is rather difficult to measure the *survey instrument* (ACAP), it has been scientifically established by Cohen & Levinthal (1990), and then expanded and validated by e.g., Zahra & George (2002) and by Jansen, et al. (2005), who have developed specific questions for the four subconstructs. Those (acquisition, assimilation, transformation, exploitation) have then been combined into the two constructs of PACAP and RACAP as specified in table 1 (for items see appendix; table 13).

Table 1: Specification of Variables
*With using the mean of the subcategories, those are weighted the same and it does not depend on the number of questions; hence, it makes no difference that the subcategory assimilation contains fewer questions than the other subcategories.



Variables	**Description** (see Quantitative Study Questionnaire)
PACAP *independent variable*	arithmetic mean of the sub-categories* acquisition (items 1-6) & assimilation (items 7-9)
RACAP *dependent variable*	arithmetic mean of the sub-categories* transformation (items 10-15) & exploitation (items 16-21)

Jansen, et al. (2005) have already proven the content, predictive/concurrent, and construct validity of their ACAP scale, as well as the construct's reliability (Creswell & Creswell, 2018). Thus, they "[…] judged the four dimensions underlying potential and realized absorptive capacity to be not only theoretically, but also empirically distinguish" (Jansen, et al., 2005, p. 1005). In more depth, they conducted a confirmatory factor analysis "[…] in order to check for construct independence." (Jansen, et al., 2005, p. 1005). The relation between the subconstructs and the connection to knowledge transfer has also been identified by Montazemi, et al. (content and predictive validity, 2012). They have tested the reliability with Cronbach's alpha that lies in their study between 0.71 and 0.79 (Jansen, et al., 2005) and, therefore, in the optimal range, 0.7 - 0.9 (Creswell & Creswell, 2018). In detail, Jansen, et al. suggest 21 items; six each to measure acquisition, transformation, and exploitation as well as another three to measure assimilation. The scale's reliability is presented by following Cronbach's alpha and the scales are, hence, considered, reliable: acquisition, a = .79; assimilation, a = .76; transformation, a = .72; exploitation, a = .71 (Jansen, et al., 2005).

In this study, the 21 questions have been translated into German to make them easily understandable for the participants, and then asked on a 5-point scale, '1 – complete disapproval' to '5 – complete approval' based on Cohen & Levinthal (1990) and Jansen, et al. (2005). Improving the simplicity for the participants, it has been ensured that all questions are pooled positively (see appendix; table 13). A sample item would be the following: "Our unit periodically organizes special meetings with customers or third parties to acquire new knowledge" (see appendix; table 13).

As mentioned in the literature review (see 2.3), Zahra & George (2002) have introduced the efficiency factor as "the ratio of RACAP to PACAP" (p. 191), which is used to make it measurable how the potential of knowledge is realized, in order to overcome its tacitness. The efficiency factor demonstrates which firms are more or less efficient in transferring knowledge (Zahra & George, 2002) and is used, regarding the RQ, in the following analysis to elaborate on the differences between knowledge-heavy industries in the same region, facing similar external environments and conditions.

3.1.3 Data Collection and Sample

The *data collection process* has been part of a larger study from the German consultancy ServiceRating GmbH for their yearly TOP SERVICE study to measure companies' customer-centricity in the D-A-CH region (ServiceRating GmbH, 2021). The ACAP questions have been added as an additional construct for further research, like this thesis. The questionnaire consists of 120-130 questions (closed and open), out of those the 21 questions about ACAP are of interest for this thesis at hand. The online survey has been conducted together with the Austrian franchise partner emotion banking® GesmbH and supervised by Prof. Dr. Dr. h.c. mult. Christian Homburg, Universität Mannheim, Germany. After the first round of data collection, a pilot test has been run and the data used for academic purposes by Prof. Homburg (ServiceRating GmbH, 2021).

Regarding the *sample*, the participating companies have self-selected themselves, based on their wish of being part of the TOP SERVICE study to compare themselves with other companies and to get a market report (ServiceRating GmbH, 2021). They differ in size, financial performance, and other company-specific variables, as those have not been part of the selection criteria. As TOP SERVICE has been measuring the companies' overall customer centricity, only customer centric companies have self-selected themselves for this

study. Even though the self-selection affects the representativeness, it is a determinant for the companies' dependency on (tacit) knowledge, as they see customer centricity to be more of a SCA than product features. Further, the participating companies have paid to receive the study results, which has influenced the sample itself and might also be influencing the results when companies want to demonstrate their success rather than their actual performance. Moreover, the respondents work in different departments and mostly have a CEO or Director position, therefore, having a holistic view of the company and being able to predict the organizational ACAP as being the "sum of the absorptive capacities of its employees" (Cohen & Levinthal, 1990, p. 131). Summarized, the sample consists of 1) lower to higher-level managers of 2) companies that operate in the D-A-CH region, and 3) are self-selected based on their interest in customer centricity as well as, hence, knowledge-intensity in reaching SCA. Table 2 lists the different knowledge-heavy industries that have been part of this sample, including their respective sample size.

Table 2: Quantitative Sample

Industry	Sample Size
Energy provider	10
Finance services	16
Building services	8
IT service provider	6
Logistics	5
Mobility	3
Insurance	9
Telecommunication	7
Device maintenance services	7
Other	21
Total	92

The *time frame* of the cross-sectional online survey has been October 2018 to March 2020 with two data collection rounds (first round October 2018 – March 2019, second round October 2019 – March 2020). Thus, the data is still current, but it is to be mentioned that it has mainly been collected before the Covid-19 pandemic (European Centre for Disease Prevention and Control, 2021). Ever since then, the pandemic might have led to changes in the company's ACAP due to e.g., more difficult access to information and possibilities for internal exchange of knowledge, but it might also have increased the understanding of ACAP as a competitive advantage, as Covid-19 has clarified how exceedingly people are connected. However, as the pandemic is still impacting society, those changes' impact

cannot be analyzed in-depth. Consequently, there might be an inconsistency between the quantitative research and the succeeding qualitative one. Whereas the former has been conducted before the pandemic, the authors of this thesis are aware of the environmental changes due to Covid-19 and that this might affect the results of the latter. After all, this fact mirrors the complexity of the world, in which the to be interviewed companies are doing business in.

Finally, the study has resulted in a sample of 92 management responses from various industries (e.g., finance, energy, and IT sector), all being heavily dependent on internal tacit knowledge transfer. Normally, the right *sample size* is predicted depending on the population size. According to Sue and Ritter (2012), "because the sample [here] is based on those who self-selected for participation rather than a probability sample, no estimates of sampling error can be calculated" (p. 46). Regarding general sample sizes, several authors state that the number of observations should be minimum >30, rather >300, to detect significant patterns and relationships (Sue & Ritter, 2012). "As sample size increases, margin of error decreases" (Sue & Ritter, 2012, p. 42). Having a sample of n = 92 is considered to enable drawing conclusions with statistical power. However, a sample that better represents the number of knowledge-heavy companies in the D-A-CH region would have been stronger, especially for the cross-comparisons between industries. Therefore, the analysis is to be conducted carefully, and this study can be understood as a basis for 1) the succeeding qualitative investigation at hand, and 2) future cross-industry research. Sue & Ritter (2012) are citing "a method for checking the adequacy of one's sample […] [and introduce] the split-half analysis for consistency", also called split-half reliability method (Burns & Burns, 2008). A random split of the sample is tested and when the separate analyses are consistent, enough data has been collected (Sue & Ritter, 2012). Therefore, in the result section, the correlation analysis is conducted on two split samples (n = 46).

3.1.4 Reliability, Validity, and Ethical Considerations

A reliable study results in consistent and stable findings that can easily be replicated (Burns & Burns, 2008). Therefore, the used questionnaire can be found in the appendix (see table 13) and the scale's *reliability* calculated with Cronbach's alpha has been presented in the previous section 3.1.2 (Jansen, et al., 2005). Moreover, the use of an online survey without an intermediary has increased the study's stability. Only the self-selected sample might cause reliability challenges, as they are not representative of all companies in the D-A-CH

region. The correlation analysis, however, should be reliable, only the descriptive results have to be interpreted carefully, which is a reason why more in-depth qualitative interviews are to be scheduled.

To further ensure the reliability of the results, the conductors of the survey have carried out personal interviews with every participating company, asking critical questions about the reasons behind the chosen response. This reliability testing has been of a different purpose than the qualitative semi-structured interviews conducted throughout this investigation, and they are, therefore, separated timewise as well as independent content-wise. This enables the interviewees to solely focus on the research problem at hand.

On the other hand, *validity* "[…] relates to the appropriateness of the measure to assess the construct it purports to measure" (Burns & Burns, 2008). It can be separated into external (population, ecological validity) and internal (construct, face, content, predictive, concurrent validity) criteria (Burns & Burns, 2008). The *external* validity refers to the generalizability of the data sample and the environmental context. Even though a non-random sample has been used, the study can be used to represent companies in the D-A-CH region that consider themselves customer centric and, therefore, have the willingness to absorb and transform knowledge. Regarding the environmental context, the fact that different industries and managers with different job positions have been asked, can be seen as proof that the results are valid in different ecological contexts. The *internal* construct validity has been proven by Jansen, et al. (2005), after it had been reconceptualized by Zahra & George (2002). The face and content validity have been approached by the robustness testing, explained in a later section (4.1.3) Predictive and concurrent validity cannot be assessed within this cross-sectional study. Nevertheless, longitudinal studies like the one of Kostopoulos, et al. (2011) have also empirically proven the construct of ACAP, and even their direct and indirect contributions to innovation and financial performance.

When analyzing the data, a possible bias is that one of the authors works at the consultancy that conducted the TOP SERVICE survey and has collected a lot of the data herself during the last years. Thus, she is in contact with the participants, which again helps to get the interview appointments. The fact that she works collaboratively with the other author of this thesis, however, is bringing more objectivity into the process.

Ethical considerations are normally taken into account when conducting qualitative research (Bell, et al., 2019). However, they are touched upon in this section addressing the quantitative investigation as well because the survey has been answered by individual managers. As the surveys' results are only presented on the industry level, the responding managers and their companies remain anonymous and, therefore, are not to be harmed based on their answers. Further, the single answers to every respective question are not stated throughout this thesis, but only the dimensional means. This is making it even more difficult to trace answers back to individuals. To ensure that the managers have agreed to take part in this survey, they have signed a contract with the organization primarily conducting it. This particular contract indicates that the established results can be used for research purposes.

3.2 Qualitative Methodology

As this comparative investigation across industries is rather novel in this field of study, a qualitative approach is of importance to further explain how companies of different knowledge-heavy industries transfer tacit knowledge at the team level. The quantitative research alone, in form of a survey questionnaire, does not provide the in-depth information required, in order to explain the tacit knowledge transfer processes and hence, make valid as well as reliable cross-industry comparisons. The complementing qualitative interviews, on the other hand, are outweighing the shortcomings of this quantitative research. It allows interviewees more space to express their practices as well as perceptions and gives the researchers more room to understand patterns flexibly. Still, quantitative studies have dominated the field and qualitative studies are rather rare in the reviewed literature (Christofi, et al., 2021). Even less frequently, a mixed method approach has been taken to investigate this issue of knowledge transfer between organizational units. As of this thesis' authors' awareness, no previous research has compared practices to overcome internal knowledge tacitness across different knowledge-heavy industries, while making use of a mixed methodology.

3.2.1 Qualitative Research Design and Methods

Within the scope of this primarily investigated qualitative research, semi-structured interviews are to be conducted with companies that seem of interest after having analyzed the quantitative data. Building upon the latter, this is needed to answer the stated RQ in more depth and detect emerging interrelations. Looking at this particular RQ, the unit of analysis

is ‘tacit knowledge transfer’, possibly getting enabled through companies realizing their ACAP. With this process being centered and the form of RQ starting with the indicative question ‘how’, the qualitative research design aims to be explanatory. By gathering multiple in-depth interviews with representative companies from different industries, participants are given more space to express their practices based on experiences and perceptions, allowing the researchers to further detect upcoming patterns and issues that might not have been considered before. The herewith collected data gets linked iteratively to the previously stated propositions by understanding those patterns throughout the cross-industry syntheses in the results of the qualitative data analysis section (Yin, 2009). According to Baškarada (2013), “explanation building is a special type of pattern matching” (p. 12), which lays out the foundation for a high-quality data analysis in social sciences (Yin, 2009). In particular, this aims to understand the complex phenomena of knowledge tacitness, and decisions made in connection to that within today’s fast-paced business environment (Yin, 2009). This way, the researchers further get to learn about the meaning that the interviewees hold about the organizational processes and difficulties in tacit knowledge transfer (Creswell & Creswell, 2018).

In semi-structured interviews, the researchers can, thus, refocus the questions in order to prompt for more information (Baškarada, 2013). Therefore, all participants are encouraged to tell their own stories, as the bigger picture around the interview context emerges according to their answers and without being influenced by biased questions. This is possibly enabling an approach where the interviewees themselves come up with a solution to their problem. Consequently, this qualitative method aims to contribute to existing research and gives implications of illustrative, or inspirational, purpose for managers in a wider range of economic sectors (Christofi, et al., 2021). However, a set of open-ended questions serves as a guideline, in case interviewees do not feel comfortable with talking freely themselves about the respective individual company. This set is supposed to consist exclusively out of ‘how’-questions, asking for a condition and, hence, aiming to be explanatory. For a complete questionnaire guideline of the semi-structured interviews with indicative sub questions, see appendix (table 17). This guideline further ensures that all original propositions, which have emerged in the form of labels throughout the literature review, are addressed during the interviews. As visible in the appendix (see table 12), those labels are classifying the keywords that have repetitively evolved when reviewing the literature. When further forcing

the data, those labels have been able to get categorized. It is intended to again bring up the same categories, as used in the literature review, in the qualitative data analysis.

All questions of the qualitative questionnaire guideline are to be based on assumptions that derive from the results of the quantitative data analysis, after the two hypotheses have been evaluated against the detected gaps in the literature review. Therewith, also theoretical propositions are provided to better guide the successive data collection (Yin, 2009). As indicated in the literature review, Christofi, et al. (2021) have recently detected a gap in research on agile practices at the team level. According to these authors, qualitative research is clearly under-emphasized in recent investigations on this topic, although it would add significant value and trustworthiness to the academia through establishing relationships and interdependencies between various contextual dimensions. Therefore, questions about the company's team composition are to be asked in the interview. Moreover, also the items in the quantitative survey are to be broken down and included in the qualitative questionnaire, in order to more thoroughly understand organizational practices across different knowledge-heavy industries when it comes to knowledge transfer at the team level. Resulting from the literature review, distinguishing between tacit knowledge, being the task-related know-how that this research is concerned with, and explicit knowledge, is crucial for the discussion of the fndings (Johannessen, et al., 2001; Grimaldi & Torrisi, 2001). Consequently, the emphasis on tacit knowledge transfer in this investigation is to be thoroughly explained to the interviewees in the introductory text, together with the construct of ACAP, as those are the main concepts of this study (see appendix; table 16; table 17).

3.2.2 Data Collection and Sample

As part of the mixed method research design, this qualitative research has consequently an interpretive orientation and aims to be explanatory, making it possible to compare the different approaches, but also to carefully examine good practices that are unique for single companies. Interviews are to be conducted until *data saturation* is reached, representing the point when no more new findings are obtained and hence, enough confirmatory evidence has been collected (Baškarada, 2013). Yet, it is to be mentioned that a bigger sample size could reveal a greater quantity of robust data for a broader overview of the different industries' tacit knowledge transfer processes. According to Yin (2009), the described approach of interviewing multiple representative managers of companies that are selected carefully already enables analytically generalizable statements through a replication logic.

Hence, with only a few in-depth interviews that are aimed to be comparable, similar, or contrasting patterns can get explained. As the focus is placed on the gathering process of those, as well as its ongoing interpretive analysis, and this respective process itself is interestingly utilizing the interviewees' tacit knowledge, collected data is expected to be less quantifiable and objective (Creswell & Creswell, 2018). Within the scope of this qualitative research, a greater emphasis is therefore placed on the detailedness and quality of the emerging, higher level interviews, rather than the quantity. However, the preceding quantitative research is expected to contribute to the overall, statistical generalizability of this mixed method approach, making it a strong analytic research strategy (Yin, 2009). With the interviews being combined with the quantitative survey, rich and complementary data is collected, in order to answer the shared RQ holistically (Yin, 2009).

After screening possible candidate participants, interviews are to be held with representatives from companies in the D-A-CH region of chosen knowledge-heavy industries. The selection of these industries is to be based on the results from the quantitative data analysis for a purposeful, non-random sampling approach. Further crucial to the reliability of the data is that all interview partners have to have an *executive position*, thus representing an expert status. This also ensures a solid overview of the company, and hence the sum of its individuals' ACAP (Cohen & Levinthal, 1990), as well as a comparable examination of the standpoints. Consequently, an individual manager indicating procedures within a particular individual organization is the source of data collection (Yin, 2009). Here, it is further of advantage that the interviewees are representative managers of those particular companies the quantitative survey has been conducted amongst. However, as the researchers guarantee to respect every interviewee's values and protect their identities confidentially, no personal names, nor the companies' names are mentioned in this thesis. Only the industry is of interest for this comparative investigation, as those companies are only representing the respective knowledge-heavy industries. After all, no participant has wished to refuse an answer or to change a statement, as they have felt secure enough due to this anonymity and discretion. Table 3 gives an overview of the ultimately selected interview partners. Next to the date and interview duration of the conduction, it further indicates the respective position of the expert interviewees in their firms, with all of them having an executive status. Here, managers of different departments are selected consciously, in order to check whether their overview of the respective organization's knowledge transfer processes is impacted by their position. Some interviewees, although having an executive position themselves, have asked

higher level managers for their permission to participate in the investigation. As those have agreed as well, all interviews could be scheduled and conducted accordingly after the first inquiry.

Table 3: Representative Interview Partners for the Qualitative Research

#	Knowledge-heavy Industry	Position of Expert Interviewee	Date	Interview Duration
1	IT service provider	Service Operations-and HR Managers	03.05.2021	00:50 h
2	Insurance	Marketing Manager	30.04.2021	00:58 h
3	Logistics	Customer Experience Manager	10.05.2021	00:54 h
4	Energy provider	Customer Service Manager	11.05.2021	00:47 h
5	Mobility	HR Manager	11.05.2021	00:45 h

To ensure a certain comfort, all interviews are scheduled well in advance before being held individually in the *time frame* of April and May 2021 via a video conferencing tool of 'Microsoft Teams'. However, the interviewees are not to be provided with the questionnaire beforehand to avoid biased answers. Further, all interviews are to be held in the mother tongue of the participants, being German. This is expected to increase the comfortability of the interviewees, as well as the quality of their expressions. On the other hand, possible misunderstandings based on language barriers are avoided. All participants are asked whether the interviews can get recorded, in order to allow its transcription in consistent *interview protocols* later on. During the translation process, repetitive as well as filler words are to be excluded for an improved reading flow, without causing alterations in the indicated meaning. The interview protocol form, containing the instrument itself, field procedures, general rules on the evaluation of data, and a basic outline of the interview report (Yin, 2009), can be found in the appendix (see table 16). In those, the researchers are writing individual reports after each interview (see appendix; documentation of the semi-structured interviews), enabling to draw cross-industry conclusions in the discussion of the findings (Yin, 2009).

Literature on qualitative research suggests that two researchers participate in the interviews (Baškarada, 2013). Ideally, this thesis is written, and its research investigated by two authors. Therefore, one researcher is mainly responsible for actually holding the interview (active), whereas the other takes notes, also capturing the interviewee's body language and

emphasis (passive). Furthermore, as this thesis' researchers are a key instrument for the data collection themselves (Creswell & Creswell, 2018), also notes on own self-reflecting learnings are taken to remain aware of possible biases in their assumptions. The researchers' role throughout the interviews is primarily that of a good listener asking unbiased questions (Yin, 2009). Impressions and potential misunderstandings are to be discussed as soon as possible after the completion of each interview (Baškarada, 2013). The resulting interpretations and perceived meanings given to the main issues studied are to be elaborated on with further interviews, until plausible and causal explanations are reached. This indicates the flexible iteration cycles in the data collection and analysis process (Baškarada, 2013). Finally, secondary data on the companies interviewed is collected. Consequently, three forms of data are combined holistically throughout the subsequent data analysis, as the documented *interview reports*, additionally relevant *observations*, and gathered *secondary data* are interpreted.

3.2.3 Reliability, Validity, and Ethical Considerations

Although the steps to ensure reliability and validity are less concrete for qualitative research (Creswell & Creswell, 2018), it is important to ensure a constantly reliable and valid research method. Also, this subsection addresses ethical considerations that are especially critical when conducting this qualitative part of the mixed method research (Bell, et al., 2019).

Foremost, the previously defined interview protocol helps to increase the *reliability* of qualitative research and "[…] is intended to guide the investigator in carrying out the data collection […]" (Yin, 2009, p. 79). Therefore, the blank interview protocol form and each individual interview report are provided in the appendix (see documentation of the semi-structured interviews). As a result of the uniform interview protocol, all interviews are to follow the same semi-structure, and all participants shall be asked the same core questions. Therefore, all participants are to be asked the same five core questions that each enable open ended answers. However, due to the semi-structured nature of the conducted interviews, answers to possibly asked sub questions do not appear in the same combination or order. Consequently, the concrete structure of every single interview cannot be rebuilt. Overall, qualitative reliability is enhanced through documenting as many steps and procedures while conducting the interviews as possible (Creswell & Creswell, 2018). Next to the documented interview reports, additionally relevant observations during their conduction, and the

gathered secondary data on each company, and its broader industry's background, are to be interpreted. Those multiple sources for data evidence are combined holistically throughout the subsequent data analysis and allow for data triangulation (Baškarada, 2013). Repeatedly observed behavior and statements are expected to contribute to the quality of the discussion of the findings. Due to this triangulation, the findings in the iterative analysis can be justified coherently. This, hence, adds to the validity of the study (Creswell & Creswell, 2018), which is addressed in the following.

Besides the above assessed reliability, Yin (2009) classifies construct-, external- and internal validity as relevant for qualitative research in all social sciences. Regarding the *construct validity*, the core questions have been derived from two sources. The first is the literature review, whereas the questionnaire guideline is designed to include all themes, which have initially emerged in the form of labels (see appendix; table 12). Based on those, it is ensured that all themes are again addressed throughout the semi-structured interviews. Secondly, the quantitative data analysis, and especially the ACAP construct, is used to make knowledge transfer measurable. Here, also the items in the quantitative survey are broken down and included in the qualitative questionnaire, in order to more thoroughly understand organizational practices across different knowledge-heavy industries when it comes to tacit knowledge transfer at the team level. To clarify the used constructs of ACAP and tacit knowledge transfer for the interviewees, those need to be defined at the beginning of each interview, and the questions formulated in a less scientific language.

Regarding the *external validity*, the interpretative orientation of this explanatory study poses a risk for biases. Here, it is of importance to keep the level of subjectivity low when attaching meaning to the results in the final discussion of the findings. A key issue at this point is that one of the researchers has worked with many of the interviewed managers before. On the one hand, this personal connection to the sites enables easier access to gain entry and possibly deeper insights due to the pre-existent trust, but on the other hand, might cause additional biases. However, the cooperation of the thesis' two authors ensures the detection of those by analyzing the interviews from two perspectives. Coming from different backgrounds, both researchers include their previous expert knowledge and experiences throughout the interpretation process. Therefore, both need to be present during every step, starting with their participation in all interviews, which enables possible biases to get captured. Those self-reflections can be found together with 'further relevant observations'

made during the interviews at the end of each individual interview report (see appendix; documentation of the semi-structured interviews).

Also, the fact that the interview partners are informed that all given information is used anonymously, excluding the possibility to retrace the representative manager or company, is expected to have a positive impact on the perceived security. In this regard, all participants are informed, not only at the beginning of the interview, but also beforehand in a written form about the discretion. Furthermore, the interviews are recorded to enhance the correctness of the mediation process for the interview reports, as well as the used quotes throughout the results of the qualitative data analysis. The managers receive a copy of the recording as well, in order to be able to change or exclude statements afterward. For data protection and anonymity purposes, these recordings are, however, not included in this thesis' appendix, whereas all relevant information can be found in the provided documentation of the semi-structured interviews. When relating findings across multiple interviews, it is of importance to justify drawn conclusions and to include all relevant data (Baškarada, 2013). Here, it becomes crucial to also include so-called 'rival explanations' within each individual interview (Yin, 2009). By also considering contradicting arguments (Creswell & Creswell, 2018), the potential bias based on the outcomes that are expected by the researchers is minimized (Baškarada, 2013). After all, the greater the difference in rival patterns, the more convincing the analysis of the results can be (Baškarada, 2013). Contributing to this critical thinking is inviting external feedback, which in this case is received through the supervision of a professor, as well as peer debriefing through fellow students. To further ensure a common understanding of the answers, those are additionally summarized by the researchers during the interview and, thus, mirrored back to the interviewee for confirmation. Creswell and Creswell (2018) refer to this process as 'member checking'. However, the fact that the interviews are held in German language, the participant's mother tongue, might cause a loss of expressions during the translation process, which the researchers are aware of when discussing the results. This is tried to be weighted out, as the translation is being checked and approved by both authors.

Finally, *internal validity* is only applicable for cause-and-effect studies (Yin, 2009). Although this thesis at hand aims to understand and explain the emerged patterns between the representative companies, no causal model is intended to get developed. Setting up such a model through testing the relationships between the variables could be done by future

research, building upon the herewith provided results. However, the consideration of the method's internal validity is not needed at this point.

Nevertheless, what needs to be taken into account when conducting this qualitative research among managers in a cooperative environment are *ethical considerations* (Bell, et al., 2019). Guaranteeing the anonymity of the interview partners and their companies ensures that they do not experience harm from others about their responses in any form. Due to the provided anonymity, the privacy of the interviewees is not able to be invaded based on their answers or overall participation.

Other ethical issues could arise due to a possible lack of information. Thus, all participants are contacted and informed in an initial call, as well as in a written form per e-mail, indicating the study's topic and the interviews' purpose. Furthermore, they are to be actively asked before and after the interview if they have any further questions. Also, during the interview, they are always able to opt-out of the interview or refuse to give particular answers.

Due to the Covid-19 pandemic restrictions, all interviews are conducted online, using a video conferencing tool of 'Microsoft Teams'. Regarding the current global health issues, the virtual interview takes away personal health-related discomfort. With the help of the used video conferencing platform, the interview partners also have the chance to voluntarily switch on or off their video, which again enables the interviewees to choose themselves how to create a comfortable atmosphere. These ethical considerations concerning the participants are also the reason why the interviews are conducted in their mother tongue. To further decrease the situational stress, the interviewees are informed that the recordings are not included in this thesis, nor are they distributed to any other third person. The interviewees' reaction to being recorded is to be observed and taken notes on as well. Those notes can also be found under 'further relevant observations' in the documentation of the semi-structured interviews. If the recording exposes them to too much stress, resulting in visible discomfort, the recording would be stopped.

Based on the here assessed reliability, validity, and ethical considerations, the methods to collect the results of the qualitative research are to be seen of sufficient accuracy, trustworthiness, authenticity, and credibility. Hence, the stage is ultimately set for the presentation of the results in the following section.

4 Presentation of the Results

This section is concerned with the analysis of the data gathered and is, thus, divided into the results of the quantitative data analysis and results of the qualitative data analysis, whereby the latter is emphasized.

4.1 Results of the Quantitative Data Analysis

The results of the quantitative data analysis are presented throughout this subsection, which is divided into the correlation analysis and the descriptive analysis, before a final robustness check is made.

4.1.1 Correlation Analysis

In table 4, the results from the Pearson correlation and the split sample testing are presented. This aids to determine whether there is any significant relationship between PACAP and RACAP (Burns & Burns, 2008). Due to the rather small sample size, a random split of the sample is tested (n = 46).

Table 4: Correlation Matrix
*** Correlation is significant at the 0.01 level (2-tailed)

		Total Sample		Split Sample 1		Split Sample 2	
		PACAP	RACAP	PACAP	RACAP	PACAP	RACAP
PACAP	Pearson Correlation	1	.856***	1	.872***	1	.829***
	Significance (2-tailed)		.000		.000		.000
	N	92	92	46	46	46	46
RACAP	Pearson Correlation	.856***	1	.872***	1	.829***	1
	Significance (2-tailed)	.000		.000		.000	
	N	92	92	46	46	46	46

To be able to conduct a Pearson correlation, four assumptions have to be tested. Firstly, the two used variables have to be both on an interval or ratio level (Burns & Burns, 2008). PACAP and RACAP are both metric variables measured from 0 to 100 and, therefore, on a ratio level. The other three assumptions, a normal distribution, linearity, and homoscedasticity are also tested and assured (Burns & Burns, 2008). Therefore, an additional simple linear regression analysis has been made to explore the results of the correlation analysis further. This regression analysis can be found in the appendix, as it is not relevant for the succeeding discussion of the findings (see additional information for the correlation and regression analysis).

Analyzing the total sample first, a correlation coefficient 'r' of +0.856 between the participants' PACAP and RACAP, which is significant at a p = 0,01 level (two-tailors), is considered as a strong positive correlation. Cohen (1988) has indicated a correlation r > 0.50 as strong, and this indication is widely accepted (Burns & Burns, 2008). The p-value states the significance where p = 0.10 is often indicated by one star (*), 0.05 by two (**), and 0.01 by three stars (***). A p = 0.01 for instance demonstrates a p-value of 0.01, meaning that there is a one percent risk of stating a wrong relationship. Having a p = 0,01, in this case, indicates a very low risk that the correlation between PACAP and RACAP is significant. Thus, however, the null hypothesis can be rejected (PACAP is not the only variable correlated to RACAP), but PACAP appears to predict around 73% (r2) of RACAP (Burns & Burns, 2008). The remaining parts of the unexplained variance are analyzed in other studies e.g., Montazemi, et al. (2012). Moreover, significant positive correlations are detected in the split samples (r = +0.872 and +0.829), as well underlining the overall result of a strong positive correlation between PACAP and RACAP in this study. Having found a strong positive correlation across knowledge-heavy industries between the participants' PACAP and RACAP, H1 is accepted. Before discussing these results in a later section, it has, nevertheless, to be mentioned that correlations do not analyze the direction of the causality or test for multicollinearity, but only claim whether a relation between the variables exists (Bell, et al., 2019; Burns & Burns, 2008). Thus, these results have detected a relation between the two variables but do not necessarily demonstrate that PACAP affects RACAP, or the other way around.

4.1.2 Descriptive Analysis

The descriptive results are presented in table 5 and 6. Due to the small sample size, the scores are rounded up without decimal places to not encourage a too detailed comparison that might not be significant. Starting with the total sample results, the several subconstructs' averages are similar, being rather high with scores between 84 and 89. This implies that, despite having minimums of about 30, the sample consists of companies with a rather high degree of ACAP, resulting in these high means. Even though the differences between the subconstructs are just marginal, the results present the lowest scores for exploitation, which then results in a slightly lower RACAP than PACAP (with an overall efficiency factor η = 98%, see table 5 for the total).

Table 5: Descriptive Statistics Total Sample

	N	Minimum	Maximum	Mean	Standard deviation
Acquisition	92	38	100	86	15
Assimilation	92	33	100	89	15
Transformation	92	38	100	87	13
Exploitation	92	29	100	84	17
PACAP	92	35	100	87	14
RACAP	92	40	100	85	14

Continuing with the industry differences (see table 6), the PACAP average scores range from 78 to 95, and the RACAP from 72 to 92. The efficiency factor ranges from 91% to 106% and, thus, only slight differences can be detected. Examining those further, the financial service sector has reached the best PACAP and RACAP score average. However, the overall efficiency factor is highest for the IT service providers that have participated in this study (106%). Even though their mean scores are around average, they seem to transform the PACAP into realized RACAP best. Further, the insurance companies and device maintenance service providers are able to efficiently use their ACAP (η = 101% / 100%). On the other hand, the mobility sector does not only have the lowest averages in both constructs (78 and 72), but also the lowest efficiency factor (η = 91%). All in all, however, the industry sample validates the previous assumption that the differences between industries are rather low, with an efficiency factor range of just 15%, and that the sample consists of companies with a rather high degree of ACAP, resulting in high means and efficiency factors. Regarding H2, although the participants in the IT sector have proven to use their ACAP very efficiently (η = 106%), the other industries are at a similar level. Therefore, it cannot be claimed that the IT industry is transferring knowledge more efficiently than the other knowledge-heavy industries and, hence, H2 is rejected.

Table 6: Descriptive Statistics Industry Sample
(Min = Minimum; Max = Maximum; the numbers in bold are highlighted in the text above)

Industry	**PACAP**				**RACAP**				
	N	Min	Max	Mean	N	Min	Max	Mean	η
Energy provider	10	54	100	82	10	48	96	79	97%
Finance services	16	77	100	**95**	16	67	100	**92**	97%
Building services	8	71	100	90	8	63	96	86	95%
IT service provider	6	73	100	81	6	77	100	86	**106%**
Logistics	5	63	98	80	5	58	100	79	98%
Mobility	3	63	100	**78**	3	65	85	**72**	91%
Insurance	9	65	100	91	9	60	100	92	**101%**
Telecommunication	7	68	100	90	7	50	100	85	95%

Device maintenance services	7	65	100	84	7	65	96	83	**100%**
Other	21	35	100	87	21	40	100	84	97%
Total	92	35	100	87	92	40	100	85	98%

As a summary of the quantitative results, table 7 shows the outcomes of the two hypotheses after having tested them through a correlation and descriptive analysis.

Table 7: Summary of the Hypotheses' Outcomes

Hypotheses	**Examination**	**Outcome**
H1. PACAP is positively correlated with RACAP across knowledge-heavy industries.	Correlational hypothesis addressed with a correlation analysis	**Accepted**: High positive correlation ($r = +0.856$; $p = 0,01$)
H2. Concerning its ACAP, the IT industry has a higher level of efficiency compared to other knowledge-heavy industries.	Comparison of the different values from the IT industry to other industries: means of PACAP and RACAP as well as the efficiency factor (η)	**Rejected**: Some industries have an especially high η (> 100), but all industries are particularly good in this sample; the IT industry has the highest η of the examined industries, but not the highest means and the differences are just slightly

4.1.3 Robustness Check

To test the robustness of the quantitative data analysis, a random split test has been conducted, as part of the correlation analysis, due to the rather small sample size. Thus, the sample has been randomly split into two samples with $n = 46$. This method states, when the main correlation and the two separate analyses are consistent, enough data has been collected to make conclusions (Sue & Ritter, 2012). As the results of the two split samples are similar to the results of the total sample, the results' robustness is proven, and enough data has been collected regarding Sue and Ritter's testing method (2012).

Additionally, the participants have been asked whether the questions have been relevant for their field of activity and whether they have felt competent enough to answer them (see table 8). With the high amount of 'complete approval' responses and none in the lower categories of the scale, the participants seem to have understood the questions, despite little existing knowledge on the measurement construct. This, in return, further increases the results' robustness. It also confirms the study's face and content validity as the responses demonstrate that the survey's content has been understood (Burns & Burns, 2008).

Table 8: Validity Descriptive Analysis

	The questions have been relevant for my field of activity.		**I felt competent answering the questions.**	
	N	%	N	%
5 – complete approval	57	62.0	63	68.5
4	23	25.0	21	22.8
3	7	7.6	3	3.3
2	0	0	0	0
1 – complete disapproval	0	0	0	0
Missing	5	5.4	5	5.4
Total	92	100	92	100

With this robustness check, the overall validity of the quantitative results increases. In return, even though the sample size is not representative of all knowledge-heavy companies in the D-A-CH region, the results can still be claimed to contribute to the generalization of previous research's findings about ACAP, as an enabler for tacit knowledge transfer.

4.2 Results of the Qualitative Data Analysis

This section is concerned with the analysis of the data gathered throughout the qualitative interviews. Thereby, the results sections "seek to identify and describe patterns and themes from the perspective of the participant(s), then attempt to understand and explain these patterns and themes" (Creswell & Creswell, 2018, p. 289). Herewith, the unit of analysis, being the process of 'tacit knowledge transfer', is being explained in-depth and later on compared between the responses of the five representative managers in the discussion of the findings. Conveying the multiple perspectives of those managers, the following overarching themes have developed and are, thus, turned into subsections throughout the results of the qualitative data analysis: defining tacit knowledge transfer within knowledge-heavy industries, managing knowledge tacitness, and enabling tacit knowledge transfer through absorptive capacity. Those categories evolved through a combination of the predetermined codes from the literature review (see appendix; table 12), as well as the patterns emerging from the qualitative methodology (Creswell & Creswell, 2018). Throughout those subsections, the results seemingly most important for the succeeding discussion of the findings are presented. For the full documentation of the semi-structured interviews, see appendix.

4.2.1 Defining Tacit Knowledge Transfer Within Knowledge-Heavy Industries

This subsection aims to present the results of how the role of this know-how is perceived within different knowledge-heavy industries. Further, it describes how the representative companies in those industries are organized, and what shortcomings in tacit knowledge transfer they have detected respectively. As mentioned in the preceding qualitative methodology, the researchers have written an individual interview report after each held interview. In total, five semi-structured interviews have been conducted, indicating that all contacted managers have agreed to participate in this study. Especially, as the IT service providers and insurance companies have performed very well throughout the conducted quantitative survey ($\eta > 100\%$), those companies have been contacted first to schedule in-depth interviews about their practices to overcome tacit knowledge transfer difficulties. Additionally, a representative company within the mobility sector, a logistics firm, as well as an energy provider have been requested for an interview. Those three sectors have reached an efficiency level of $\eta < 100\%$ and, hence, the qualitative interviews are expected to explain in-depth what is causing this difference in their tacit knowledge transfer processes. Table 9 gives an overview of the representative managers' position within the selected knowledge-heavy industries, sorted according to the respectively achieved efficiency factors.

Table 9: Efficiency Factors of the Representative Interview Partners' Industries

#	Knowledge-heavy Industry	Position of Expert Interviewee	ACAP Efficiency Factor (η)
1	IT service provider	Service Operations and HR Managers	**106 %**
2	Insurance	Marketing Manager	**101 %**
3	Logistics	Customer Experience Manager	**98 %**
4	Energy provider	Customer Service Manager	**97 %**
5	Mobility	HR Manager	**91 %**

When defining the process of 'knowledge transfer', all interviewees have needed little explanation as an introduction to the research. Having an executive position, no matter in which particular department, they have been familiar with the issue, and have further seen it as an important topic. The manager of the energy provider, for instance, has claimed that "the acquisition, provision and processing of information is an interesting and exciting topic.

[…] Especially, during the Covid-19 crisis, it is important to keep communicating with each other". Also, when it comes to 'tacit knowledge' in particular, the interviewees have understood the term similarly. Overall, it has been preferred to refer to tacit knowledge as 'know-how', 'expertise', or 'implicit information'. However, due to the different industries, companies, and departments of the interviewed managers, this know-how in itself has been contextual. Some interviewees have formulated their answers around knowledge about operational processes to meet daily customer demands. Others have rather addressed how different databases, or platforms, to store this particular know-how work, in order to proactively provide employees with new company-related insights. Further, the perceived value of tacit knowledge has varied. For instance, the IT service and energy provider, as well as the mobility firm have been more advanced in codifying internal knowledge than the insurance and logistics company. As a result, not only the allocated value to tacit knowledge has been perceived differently, but also its utilization and role within the respective companies.

4.2.1.1 Organization of the Representative Companies

The knowledge-heavy industry with the highest efficiency factor has been the IT service provider ($\eta = 106\%$). This interview has been held with two representative managers of the firm, as the initially contacted service operations manager has requested a colleague from the HR department to join as well. They have mentioned that within the IT industry, the hierarchies are rather flat, and the employees are, therefore, flexible in making decisions. Within the representative insurance company ($\eta = 101\%$), the employees' freedom of choice, flexibility, as well their responsibilities vary and depend on the leadership style of the respective manager. "I also try to ensure a certain degree of flexibility", the interviewed manager of the insurance firm has said. Due to Covid-19 and the resulting home office situation, a trend in employees inevitably becoming more trusted has been named. However, the interviewee has pointed out that the insurance sector, in particular, is traditionally structured more hierarchical, and an agile mindset is not yet fully anchored within the firm.

Like the insurance representative, also the manager within the logistics sector ($\eta = 98\%$) has talked about industry-specific historical facts, therewith reasoning the various locations across Germany for improved customer service. The few hundred employees are able to visit the other locations to gain better insights. "[The firm's distribution in different locations] has grown historically, but it has the charming side effect that, on the one hand,

we can centralize topics, but on the other hand, we also stay in contact and up-to-date concerning local issues" (logistics manager). As for the energy provider (η = 97%), all colleagues, regardless of their many locations, understand themselves as employees of the holding. Therefore, there are cross-company activities and knowledge, but also technical know-how limited to a respective business field and department. Consequently, the activities of the individual departments and employees within are clearly defined. Besides the daily business activities, where responsibility and freedom of choice also vary according to the department, there are agile, overarching projects. Also, the locations of the representative mobility sector (η = 91%) are spread all over Germany. Additionally, sales positions are also present in other European countries, in order to be close to the customers there. The team sizes vary depending on the department but are rather small with approximately five employees being led by a team manager. However, the logistics firm has had the smallest team sizes among the interviewed companies, since all employees have their own responsibilities and form so-called 'one-man teams'. Although the logistics and mobility companies are both international, they are rather difficult to compare because overall, the mobility firm is the largest out of this sample, with over 2000 national and international employees in the company that are partially new to the company.

Whereas the customer experience manager of the logistics firm has constantly spoken positively about the firm, reinsuring to be proud to work for it, the interviewed HR manager of the mobility firm appeared a bit nervous and less professional. The former has responded in a detailed way, using many rhetorical mediums (e.g., examples, metaphors, storytelling), while the latter has kept all answers rather broad, and has not been able to say exactly where the employees have freedom in their decision making: "Is this okay? Should I go into more detail here? […] But again, there is no guarantee". In both cases, the HR department, in particular, takes care of knowledge management, while being set up with mostly very young, new colleagues. Similarly, the organization of the IT service provider is characterized by the fact that many employees start as trainees and get qualified within the firm itself. It, thus, also consciously consists of many young employees.

In contrast to the representative manager of the mobility firm, the interviewed energy provider manager has worked for the respective company for a long time and has had the highest executive status out of this sample. The interviewed manager has described the company within this knowledge-heavy industry to be especially complex, and the

knowledge to be dependent on some colleagues' specific expertise. Similarly, within the IT firm, the sub teams under the interviewed manager's control are categorized in the first level customer service, technicians for remedying technical faults, and IT specialists. However, support can be gained between those teams, and even between different departments. "Every single employee actually has a lot of freedom. This then also leads to them having a corresponding responsibility" (IT service provider). Goals are only set roughly, and the team members define their own work routine. This can be compared to the following statement of the manager in the logistics sector: "Employees have a lot of flexibility and responsibility. The manager says: I have my experts for expert topics in the team for a reason". As feedback does not have to be obtained for everything, a lot of time is saved during processes. "The short decision-making paths and the great freedom of choice suits us because we don't have to talk to each other for three hours for every tiny issue" (logistics manager). Similar to the insurance representative, also the managers within the energy provider, as well as the logistics sector, have said, however, that the employees' flexibility to some extent depends on the respective manager and the department. Since it is an international logistics company, some tasks are also highly process-dependent and therefore associated with less freedom. The representative company of the energy provider industry approaches this issue with guided processes, which are supposed to relieve all employees to some extent. "We try to relieve the employees with the guided processes, so that one does not have to know the entire process. [...] It has gotten so complex that this is necessary. The employee cannot be expected to have all the know-how" (energy provider manager). This barrier to knowledge transfer, as well as all the others that have been addressed throughout the five interviews, are to be described in the following.

4.2.1.2 Detected Shortcomings in Knowledge Transfer

When being asked for shortcomings, or barriers, during the process of transferring tacit knowledge internally, all interview partners have been able to freely enumerate various ones, at least five each. Those shortcomings have been forced to get sorted into the following categories, totaling eleven:

- Codifying tacit knowledge
- Diminishing informal knowledge exchange due to Covid-19
- Employee turnover
- Employees' frustration

- Employees' usage of knowledge databases
- Information overload
- Knowledge complexity and contextuality
- Missing control over knowledge exploitation
- Structuring the database
- Technological issues
- Time delay between knowledge acquisition and exploitation

When referring to those categorized shortcomings, the interview partners have named specific examples. For instance, 'codifying tacit knowledge' has been further explained by the employee's struggle of articulating tacit knowledge, or possible individual knowledge gaps. "Most of the time, the reason for knowledge being tacit is that it is difficult to code. It takes the individual employee, who realizes that there is a knowledge gap, and then asks the right question" (logistics manager). Moreover, the 'diminishing informal knowledge exchange due to Covid-19' has been named, reasoned in the current home office situation. 'Employee turnover' has also be seen as a barrier. On the one hand, employees leaving the company take uncodified knowledge with them. On the other hand, new employees need time to get familiar with the systems in which knowledge is stored, and to be integrated into the company's knowledge network. "Human knowledge and social skills are extremely important. We have few employees in the department that have been with the company for a long time. When it comes to organizational learning and progress, it is important to know whom I can address for this. This [tacit] background knowledge is difficult to pass on because it has grown over the years" (mobility manager).

Also, the condition of individual employees affects knowledge transfer: "It is super depressing for employees when [...] newly gained knowledge does not work as learned because the processes for it do not yet work or other employees, who do not yet understand it, would have to adapt also" (mobility manager). In the scope of their open-ended answers, 'employees' frustration' has been freely named by four of the five interview partners and, hence, it is one of the most recognized barriers that can arise during different stages of the knowledge transfer process. Employees might get frustrated due to several reasons: when their (externally) acquired knowledge cannot be exploited because existing tools or processes do not allow it; when external consultation is paid for even though know-how is internally available; when process changes are not communicated sufficiently; when they

need to get familiar with new or several systems or have technical (understanding) issues, which is both promoted by the ongoing digitalization in all companies. This is interlinked with the barrier of 'employees' usage of knowledge databases' being inconsistent. Employees lack awareness of the added value through those platforms, where codified knowledge is stored. "The greatest barrier has been to get into the employees' minds that this knowledge platform exists and that it can be used. [… The platform's] utilization has improved because the employees realized that an added value can be extracted from the database" (IT service provider manager). When platforms are then switched, this barrier grows: "The transition phase from old to new structures is always difficult". However, when those platforms are not used an 'information overload' can occur because not every employee can know everything while still being able to internalize more knowledge. Then, "[…] one can no longer process knowledge at all [… because] you simply cannot own all the knowledge in the entire company" (energy provider manager).

Tacitness can further be a barrier for knowledge transfer due to 'knowledge complexity and contextuality'. Due to several factors that enhance the heterogeneity of a company (e.g., demographics, departments, individual expertise of employees), tacit knowledge is complex, sticky, and difficult to contextualize. Having been named freely by four out of five interviewees, this belongs to the two most recognized barriers. "On the one hand, we have academics in abstract central functions that do complex forecast calculations, and, on the other hand, there are employees with lower qualifications that are responsible for a clearly defined area. We have young employees in their 20s, who are currently in training, and older employees, who cannot easily find their way into the digital setting" (logistics manager). In line with this statement of the manager within the logistics sector, also the manager of the mobility firm has detected that "it is a challenge to make the exploitation of knowledge as homogeneous as possible for the different groups" (mobility manager).

For experts holding knowledge, it has been stated as a barrier that they have 'no influence on the exploitation of knowledge', meaning no control whether it gets understood correctly or is prioritized similarly. "Sometimes it can be that I have something great, but it then gets silted up" (insurance manager). The manager of the energy provider has mentioned: "Having read something is the one thing, actually understanding knowledge and then really exploiting it is another".

Moreover, the ‘time delay’ between knowledge getting acquired, and finally exploited, has been mentioned as a shortcoming when transferring know-how. “The times when I receive information and when it is needed, never coincide” (IT service provider manager). Therefore, it needs to be stored somewhere and employees need to know where to find it once it becomes relevant. In the meantime, however, it can already become outdated. An option is to store this codified knowledge on platforms. However, also coherently ‘structuring the database’ has been described as difficult. “It is always most troublesome to put knowledge in written form and structure it accordingly. […] You have to be able to absorb the amount of knowledge. If you have an infinite amount of knowledge in a database, that doesn’t mean that [...] the learning works automatically. Somebody still has to structure and work on it. Not everyone is capable of doing that either” (IT service provider manager). Finally, these databases get affected significantly by ‘technological issues’, like server failures.

4.2.2 Managing Knowledge Tacitness

In order to address the stated barriers, the interviewed managers have been asked to talk about their respective strategies to overcome those. Here, the team spirit builds the foundation for all companies. For the representative company in the IT industry, the feeling of belonging, together with an organizational learning culture, is the basis for good knowledge transfer. The representative of the insurance company has also stated that communication is most important, in order to create an open team spirit, and ultimately overcome barriers that prevent tacit knowledge transfer. A strong corporate culture with a common goal, as well as teams of a ‘manageable’ size and regular check-ins have been named by the logistics company to help to strengthen the team cohesion. The mobility firm’s knowledge transfer has been identified as a significant part of the corporate culture, which is supported by cross-functional exchange formats. Open and transparent communication has especially been highlighted: “It is not good for the culture when a team changes a process but does not take into account that it has an effect on another department as well […]. That is why we try to be transparent and make the teams work openly and interface-oriented with one another” (mobility manager). With an integrated team spirit, the interviewed managers have seen the following strategies getting reinforced, while less frustration should arise among employees.

4.2.2.1 Normalizing Learning

Normalizing the participation in trainings has been mentioned by all interview partners to enable organizational learning. Already early on, even trainees in the IT firm are encouraged to share and present knowledge on a topic of their choice: “In our academy, 70-80% are our own speakers. This is the key to normalize knowledge-sharing”. The energy provider is even certifying internal trainers to lastingly hold lectures in the locations. This is similar to the logistics firm, which also tries to increase employees’ familiarity and comfort of using the existing tool kit and actively taking part in discussions. “The knowledge is disseminated by internal employees. We don’t fly in external consultants. Anyone of our employees who wants to inspire others, can take part. […] As a result, the knowledge is not lost. Employees teach employees and that creates a great spirit” (logistics manager). The managers of the IT service provider have termed this phenomenon ‘normalizing knowledge transfer’: “Employees worry less about sharing knowledge. [...] It is much more normal for us that knowledge transfer takes place. You have to cross this inhibition threshold first. The academy functions as a door opener and is now part of the mindset”. Only the international mobility company is additionally offering many coaching with external trainers. Nonetheless, also the representative manager of the mobility firm has detected that during the Covid-19 pandemic, internal exchange programs have advanced and particularly help employees to build networks across teams. “Through the internal network, employees also get to know other employees who have core competencies in certain areas and learn whom to address best” (mobility manager). Similarly, in the IT company “the employees automatically know whom to approach for which knowledge, this comes through the informal exchange”. Also, the insurance company has meeting series where employees can present their projects cross-functionally. However, those are rather for the employees to get an overview of the colleagues’ individual expertise and worth. Those are then contacted when needed, although the tacit know-how behind the explicit facts is of little interest here. Consequently, organizational learning receives less systematic attention in the representative insurance company.

4.2.2.2 Combining Top-Down with Bottom-Up Activities

Freely responding to the open-ended questions, all companies have mentioned several methods being either top-down or bottom-up formats, in order to improve internal knowledge transfer. The IT manager has stated that it is important to drive knowledge-sharing with top-down activities from the higher-level managers like providing the right

systems. As suggested by the logistics representative, "[…] it is important that managers actively encourage employees. To do this, they have to provide the exchange platforms, and actively invite all employees to participate, in order to create space for open questions". Those can be, for instance, regular team meetings or 1:1 conversations with the team leader. Further, the insurance firm's interviewee has added that top managers should enable e.g., mobile working, flexible working hours, and open workspaces, to increase the employees' flexibility and to possibly encourage their knowledge exchange more proactively. Regarding the bottom-up actions, it has particularly been mentioned by all interviewed managers that employees need the freedom to create and use their own exchange formats and have room for self-initiated informal communication. For instance, in the logistics company, the expert knowledge is clearly defined depending on the departments, which enables their autonomy in selecting the preferred exchange formats. The energy provider representative has highlighted this as follows: "The structure is one side; we can provide the tools, but they are useless if the managers and employees in the locations do not work together, support each other accordingly, keep knowledge present, and also make sure that knowledge is understood and exploited". This manager has also detected the following trend regarding top-down communication: "Lately, I think, managers have become much more sensitive and pass on knowledge at an earlier stage now".

Top-down and bottom-up activities are combined within the energy provider, as well as the logistics and mobility firm, where employees can develop individually based on their respective training plans and interests. Additionally, in the logistics company, they have access to an account providing short podcasts about different topics. This can be compared to the mobility firm, where each employee can set up playlists for themselves and colleagues, to collect documents and links on specific topics. This is for instance utilized during the onboarding process of new colleagues to make them familiar with internal processes. Especially during the Covid-19 pandemic, voluntary training courses are also there to motivate personnel in the home office and to, therewith, decrease 'employees' frustration'. An example from the international mobility company would be a recently offered boot camp for digitalization and agile methods, where a high acceptance has been shown through a participation rate of 85-90%. In fact, the communication between hierarchies and teams has partially gotten improved during the pandemic. Through such programs, the 'diminishing informal knowledge exchange due to Covid-19' is actively counteracted by the management.

4.2.2.3 Strengthening Internal Networks

In order for both kinds of activities to work, all managers have declared that informal communication channels need to be implemented to improve internal networks between employees. With these networks, barriers like ‘employees’ frustration’ and the ‘diminishing of informal exchange due to Covid-19’ can be overcome. The manager of the insurance firm has declared that forming close networks increases employees’ willingness to put more effort into the needed research and pass the gained knowledge on to colleagues. In this regard, it has been said that knowledge is like a social currency (‘give and take’). This point has been especially important for the representative of the insurance company: “It helps to have networks. In a big corporation, they feel a bit like a life guarantee. It’s difficult to become a real part of big companies because the network is already established. You have to figure out how you define yourself in this setting. But when you have done that, you know how to reach out to whom for which expertise. In return, others know what to expect from you”.

The logistics manager has especially highlighted the network between managers and their employees: “We depend on our executives to have a very close relationship with their employees. They observe to detect who still has wrinkles on their foreheads and has not yet really understood a topic, and who nods in agreement. In a 1:1 conversation, they can then check-in again, whether there are any open questions. We trust every manager to do that”. Also, the energy provider manager has found: “The system provides the foundation but, ultimately, it depends on the person. Then it is important that the team leader is close to the employees. It’s the key, if they are present, close to the employees, support them accordingly, sometimes check in on them, and also hold team meetings on a regular basis”. Moreover, overcoming the challenges that arise due to the heterogeneity of the employees, depends on the management and the employees being in close contact. This is especially important during the onboarding, so that the respective managers allow time for new employees to ask questions. In the logistics company, e.g., half an hour per day is provided to clarify open questions within the first two weeks. The interview partner of the mobility company also has mentioned the importance of an exchange-intense onboarding concept to ensure that the new employees come into direct contact with the colleagues to promote informal exchange. Like the logistics company, the mobility firm has implemented short personal meetings, but with all team members: “When there are new employees, we try to have a brief introductory meeting with everyone in the department because it’s much more

personal". Additionally, the mobility firm has implemented a buddy program, where every new employee gets allocated to a contact person accompanying them for the first six months. Another suggested way to increase exchange is to give the possibility to stay in contact with trainers and participants of previous training courses. An internal training program where everyone can share their own expertise has especially been emphasized. A popular informal channel for the insurance, energy provider, and mobility company is the chat function in 'Microsoft Teams'. Similarly, the interviewed manager of the logistics firm has brought up an internal social media platform as a cross-company exchange channel.

All are further trying to strengthen networks across locations. The marketing department of the logistics company, for instance, tries to bring the employees of the whole company together at events (e.g., employee quizzes, digital concerts, random matches for digital coffee breaks, etc.). The close links between the different teams, departments, and hierarchies via so-called 'performance dialogues' help that it does not matter where employees are located physically. It has also been clarified that it is of advantage for employees to travel and go to other locations, in order to observe different sites. The IT manager has similarly stated that knowledge transfer has been addressed by enabling rotations between the locations and company-wide events to strengthen internal networks. As the insurance manager addressed, after all, employees might support each other, but: "Everyone has to find their own network".

4.2.2.4 Codifying Knowledge and Implementing Knowledge Platforms

Besides the networks, all interview partners have talked about cloud-based platforms as a possibility to store codified knowledge to make it easily accessible at any time to employees, and to prevent knowledge from getting lost due to, e.g., 'employee turnover'. The IT manager has even highlighted that it is part of the necessary management activities to provide such a system, and that knowledge must get documented. Even though codifying knowledge has been named as a challenge, it is perceived as necessary: "The know-how is bound to the employee. If he ever leaves, it would be gone. There is no way of getting around writing knowledge down or preparing packages in any form" (IT service provider manager). The interviewee of the IT firm has stated that they "[…] have the advantage that the employees are already working with the databases. In other industries, knowledge is still slumbering in people's heads and if they do not release it, there is no progress". The energy provider manager has further stated: "The introduction of a new knowledge management

system was absolutely worth it. The search results, the knowledge management, and the posting of new articles are now much easier". An expiration date of knowledge in the system ensures that it is regularly checked and updated. Because not everyone can know everything, knowledge is mainly stored in systems and made available through guided processes, which relieves employees from remembering knowledge by heart. In general, both, the IT and energy provider managers have found a knowledge management platform as helpful to overcome the barrier of the 'time delay between knowledge acquisition and exploitation'. To overcome the struggle of 'structuring the database' coherently, they both have assigned someone being responsible for managing the database and its content.

While the IT and energy provider managers have been focusing heavily on codifying knowledge, it is important for the insurance manager to make sure that the costs and benefits are weighed against each other when it comes to making knowledge explicit. The mobility and logistics managers primarily use training platforms to strengthen exchange. As with the overall centralized knowledge management, also all different kinds of training offers are aimed to get organized in one single learning management system. "With everything being digitized, there are many new programs and systems. Particularly those employees that work a lot with systems, shake their heads when there is yet a new one. That's why we try to have all things that have to do with learning running on just one platform" (mobility manager). This further minimizes the risk of 'employees' frustration' because those do not have to get used to more new platforms. In return, this encourages the 'employees' usage of knowledge databases', which has previously been mentioned as a barrier.

4.2.2.5 Assigning Responsibility of Knowledge Management

Within the IT service provider, as well as the international logistics and mobility firms, the corporate-wide knowledge management is controlled and facilitated by the HR department. As for the energy provider, the internal corporate communication department controls the cross-company knowledge. The representative of the insurance company has rather named decentralized overall networking as a way for internal knowledge transfer. However, for improved organizational learning, all five representative firms perceive the ability to centralize knowledge, and, thus, making it explicitly accessible in the long-term, as valuable. Here, especially the IT service and energy provider, as well as the mobility firm, have already implemented a platform to store know-how centralized and make it accessible cross-functionally. This goes for knowledge about processes of company-wide concern (e.g.,

leadership skills), whereas there are additional department-specific databases (e.g., for technological know-how). As recognized by the interview partners, the latter inevitably leads to a certain silo thinking, which has been even amplified during the home office situation due to Covid-19. The manager of the energy provider sees the cause in such classical silos in the fact that many expert topics are so specific, and knowledge management, especially in this sector, is fast-paced. “We are already making sure that we communicate across departments, reduce the silo mindset, and think end-to-end. […Yet,] silo thinking can be good when it comes to knowledge that does not particularly help me in my daily work” (energy provider manager). Hence, those silos are not necessarily perceived as bad because they prevent employees from ‘information overload’.

The IT service provider has likewise described: “Technical knowledge is too fast-paced in the IT industry; that is then driven by the specialist department. Permanently sustainable knowledge, on the other hand, does not get outdated so quickly and its storage is, thus, anchored in the HR department”. The firm has one employee in charge of structuring the latter in a centralized database, called the ‘door-opening academy’. Through this, tacit knowledge is made explicit, which has been a difficult, yet worthwhile process. The logistics firm, on the other hand, is still in the codifying process, including the struggles of choosing the right platform and preparing accordingly for the change management that is needed. The manager of the insurance company perceives the implementation of a new knowledge management platform as a lot of effort that needs to be carefully evaluated. Also, within the mobility firm, there is no centralized knowledge database, just a mandatory program about the company’s values that must be attended by every employee, as part of the onboarding.

In which ways the actual exploitation of the gained knowledge through top-down and bottom-up activities, as well as the previously described informal, but also formal channels, gets controlled by the management in the different knowledge-heavy industries is to be addressed in the following subchapter.

4.2.3 Enabling Tacit Knowledge Transfer Through Absorptive Capacity

Even though the interviewed managers have not used the terminology ‘absorptive capacity’, the barriers and how the different representative companies try to overcome those can be categorized in its four dimensions (acquisition, assimilation, transformation, and

exploitation). As indicated before, within the scope of this study, the focus has been placed on the final knowledge exploitation, or internalization, stage. The described team spirit, and the resulting feeling of belonging, have been presented as a basis for all ACAP dimensions by the interviewed managers.

4.2.3.1 Knowledge Acquisition, Assimilation, and Transformation

Regarding the acquisition and assimilation of new knowledge, 'employee turnover' and 'diminishing informal knowledge exchange due to Covid-19' have been mentioned as the greatest barriers. The shortcomings that arise due to the former are tried to be overcome by codifying tacit knowledge and saving it on a database. The manager of the energy provider has stated that "the important part in acquiring knowledge is to make sure that it works easily. I need to be able to enter a keyword and have an accurate hit probability". A mix of top-down and bottom-up activities especially related to informal exchange and strong internal networks have been listed to minimize the shortcomings due to diminished informal knowledge exchange.

Concerning the transformation of the PACAP into RACAP, 'information overload', 'codifying tacit knowledge', 'structuring the database', and 'knowledge complexity and contextuality' have been named as the greatest barriers. Information overload can be avoided through well-structured knowledge platforms, although codifying tacit knowledge has been affirmed to be difficult, as it needs to be understandable, well-structured, and accessible. To overcome these issues, someone needs to take responsibility, e.g., like in the energy provider firm: "One employee is, so to speak, 'the guardian of knowledge' and specifies the methodological guidelines for the knowledge reports. Then there are also chief editors at the respective locations". Knowledge complexity and contextuality have been mentioned to be overcome by internal networks, especially if managers are working closely with the employees.

4.2.3.2 Knowledge Exploitation

Generally, it is perceived that "knowledge exploitation is always the most difficult part [in the knowledge transfer process]" (insurance manager). When it comes to the final exploitation of knowledge, 'technological issues', 'employees' frustration', 'employees' usage of knowledge databases', 'missing control over knowledge exploitation', and the 'time delay between knowledge acquisition and exploitation' have been named as barriers.

Technical issues have been declared to be rarely overcome, only the interviewed energy provider has a backup plan for a short server failure, but nobody can store all the knowledge in their head. How the other listed barriers in this final stage of the knowledge transfer process are overcome by the representative companies is described in the following.

Overall, two ways have been described of promoting knowledge exchange in the different knowledge-heavy industries. The first is a top-down approach through the centralization of company-wide, and/or department-specific codified knowledge, on databases. Here, "it is important that we proactively ensure the flow of information on a daily basis" (logistics manager) by promoting and reminding employees of those platforms' learning value. As indicated before, some knowledge-heavy industries are rather advanced in that process, while others "are currently working on the topic [how knowledge can then also be implemented]" (mobility manager). They then still tend towards the second approach, which is rather bottom-up through an open dialogue culture and the established mindset throughout the company, understanding how important knowledge-sharing is. Whereas the first approach is rather formal, the second one is utilizing more informal channels, enabled through the increased freedom of employees to network internally. Most interviewed companies have made use of a combination of both approaches, in order to avoid employee's frustration and encourage them to use the knowledge platforms. The time delay between knowledge acquisition and exploitation has been mentioned to be also overcome with storing and constantly updating knowledge in a system, as well as the strengthening of informal networks. Although also encouraging informal knowledge exchange, the IT service and the energy provider have both placed a focus on codifying knowledge through formal exchange. Examples for such are the academy, the department-specific databases, mentoring programs, meeting series, or exchanges between the various locations. Informal knowledge-sharing, on the other hand, gets simplified by a skill matrix. Next to reaching out to colleagues for their expert know-how, the representative manager of the insurance industry has also found it crucial to actively provide knowledge to those employees for whom the acquired information is perceived to be relevant. However, those colleagues receiving this information, in return, often do not perceive the tacit processes behind it as useful because they are rather just interested in the explicit results.

The logistics and mobility firm each encourage their employees to 'think outside the box' by proactively offering opportunities to communicate with other departments. "It is part of

the tool kit for managers that employees are given the opportunity to look into other departments" (logistics manager). Again, those opportunities are of both, formal and informal nature. The latter becomes crucial due to the following issue detected by the representative manager in the mobility sector: "We often have employees coming back from external training courses and saying they had a great training session. They say that they would like to work like that but cannot implement the gained know-how in the company for certain reasons. It's a shame because we put so much money into external training and ultimately, the employees cannot implement it. That is why we are trying to ensure that the learning management system offers opportunities for the participants after the training to be able to exchange ideas via 'Microsoft Teams' in the training groups".

Within the logistics firm, information constantly moves 'bottom to top' and back down to the teams again through the introduced performance dialogues. "If I say that I have an important topic, which cannot be resolved at my level or the level above, it may be cascaded up to the CEO, but then from the CEO back down to the teams. This represents a good, important and fast communication medium" (logistics manager). However, in both, the logistics and mobility case, especially the voluntarily learned, but even mandatory knowledge does not get tested to possibly ensure knowledge exploitation. This is different for the energy provider sample because here employees are tested for certain knowledge at the end of every year, which is described as a usual procedure in call centers. Together with short recordings of telephone conversations with customers, this helps to ensure that knowledge has really been understood and, hence, exploited. "Through recordings of conversations you get a good feeling about the quality of the service, the employees' understanding, and where adjustments or additional information might be necessary" (energy provider manager).

In summary, all managers try to ensure knowledge exploitation in some way but face it as a major challenge in itself. In this regard, it has been stated by the insurance manager that knowledge transfer cannot get fully controlled and 'frictional losses' might always appear. Also, the representative of the logistics industry agrees: "Avoiding [… all losses during knowledge transfer] completely [...] is unrealistic". The missing control over knowledge exploitation can be addressed, if at all, by the management trying to remain informed about ongoing knowledge transfer processes, in order to detect deficits in its exploitation early on.

5 Discussion of the Findings

The following section is elaborating on the findings based on both previously stated results, whereas the unit of analysis is the process of 'tacit knowledge transfer'. Throughout this discussion, the quantitative findings are discussed together with the qualitative ones to ultimately address the RQ.

For the quantitative research, one expected outcome has been that PACAP and RACAP are positively correlated across industries (H1). Further, it has been predicted that the IT industry would indicate the highest efficiency factor and that, due to detected differences between knowledge-heavy industries, the other investigated industries would aim to learn from the IT sector's good practices (H2). Those, predicted significant differences between knowledge-heavy industries on how tacitness is managed, has also shaped the expectations of the qualitative research. The following two strategic approaches, also presented in the literature review (Montazemi, et al., 2012), have been assumed to be found in all investigated industries, as they heavily rely on tacit knowledge to reach their respective SCA (Hislop, et al., 2018; Johannessen, et al., 2001): 1) personalization strategy and 2) codification strategy. Besides this, it has been expected that, throughout all industries, a higher degree of ACAP would lead to a respectively more mindful consideration of tacit knowledge transfer processes, and the challenges arising with it.

Whereas the first hypothesis of the quantitative analysis has been accepted, the second one has been rejected. Although the IT sector has reached the highest efficiency factor, the results of the quantitative data analysis have shown that the investigated industries' ACAP have been rather similarly high among the knowledge-heavy industries in this sample. Those quantitative results have impacted the expectations of the qualitative findings. It then has been awaited that the manager's mindful consideration of their tacit knowledge transfer processes, as well as the strategies to overcome tacitness, are rather alike in the different investigated companies. In this regard, the qualitative analysis is supposed to support and possibly explain the quantitative findings throughout the following subsections.

5.1 Understanding Tacit Knowledge Transfer In Knowledge-Heavy Industries

As mentioned in the literature review, differentiating between PACAP and RACAP, and analyzing their ratio (efficiency factor), helps to detect differences between industries' knowledge transfer (Zahra & George, 2002). Tacit knowledge transfer has, thus, successfully been made measurable with the help of the efficiency factor, whereas a high efficiency of an industry's ACAP has been interpreted to indicate a 'better' transfer. When measuring ACAP, Cohen & Levinthal (1990) have already noticed that the construct is rather intangible and might not indicate the optimal level. Rather it can be used to compare the efficiency factor with e.g., other industries (Cohen & Levinthal, 1990). This comparison is valuable to the discussion of the findings at hand, whereas the other descriptive results have been found to possibly not indicate much about the optimal level. With the acceptance of the first hypothesis, this study has shown that PACAP and RACAP are positively correlated, which is in line with the results of other researchers (Montazemi, et al., 2012; Jansen, et al., 2005; Kostopoulos, et al., 2011). As this quantitative research has similar correlations, its reliability, and validity increase. However, it has been predicted that a strong correlation can be found because content-wise PACAP and RACAP are building upon each other. This indicates that RACAP can just be reached when PACAP forms the basis. The collinearity could also be the reason why the efficiency factor of the different knowledge-heavy industries, measuring how RACAP is transformed into PACAP, is rather high. Therefore, to confirm the quantitative results, the qualitative findings are discussed while especially focusing on the final step of knowledge exploitation (Zahra & George, 2002), which has been referred to as the 'integration' stage by Szulanski (1996).

When discussing the different industries' efficiency factors, the comparative review has demonstrated, contrary to the expected results, that all knowledge-heavy industries have a similar ratio of RACAP and PACAP. Hence, surprisingly, the IT industry is not significantly ahead of the other sectors. This is especially interesting as the IT industry has been the first to implement the 'Agile Manifesto' (Hohl, et al., 2018). It seems like, especially in this sample, the insurance sector has developed structures that enhance the efficient use of their ACAP as well. Nevertheless, all the other knowledge-heavy industries also seem to do very well in this sample, as all have reached an efficiency factor above 90%. Table 10 compares those efficiency factors and demonstrates that the η-range is only 15%.

Table 10: Industry Comparison (Sorted According to the Achieved Efficiency Factors)

Industry	N	η
IT service provider	6	106%
Insurance	9	101%
Device maintenance services	7	100%
Logistics	5	98%
Finance services	16	97%
Energy provider	10	97%

Industry	N	η
Other	21	97%
Building services	8	95%
Telecommunication	7	95%
Mobility	3	91%
Total	92	98%

As the efficiency factor here measures the tacit knowledge transfer between organizational units, the quantitative results indicate that this process varies less significantly between different knowledge-heavy industries than expected. However, as discussed by Zahra and George (2002), quantitative studies do not demonstrate the arguments and interrelations between the results. This can be affirmed because open questions, e.g., regarding the strategies used to reach the respectively high efficiency factor, are remaining after the conduction of the quantitative analysis. Those have been aimed to be answered with the succeeding qualitative analysis. Here, it has been of interest to elaborate further on the processes of companies from the industries, besides the IT service provider, that 1) have reached $\eta > 100\%$ (insurance sector), in order to analyze their good practices and whether they have learned from the IT sector; and 2) have $\eta < 100\%$ (energy provider, logistics, mobility sector), to elaborate on what those do differently in their tacit knowledge transfer.

Concerning the first issue, both sectors having reached $\eta > 100\%$, pursue tacit knowledge transfer with different strategic emphases. Therefore, it cannot be assumed that the insurance sector has copied the IT service provider's approach. Yet, both still might have reached a high efficiency factor because the selected strategic approach needs to fit the company's context-specific organizational learning. With that, the expected outcome that the IT sector is capitalizing on its pioneer role in being agile and, therefore, remaining in the center of the modern economy's evolution (Iansiti & Lakhani, 2020), is contradicted. As for the second issue, the representative companies within the different knowledge-heavy industries, regardless of their reached efficiency factor, have pointed to similar strategies. Although Jansen, et al. (2005) have considered a cross-industry comparison of tacit knowledge-sharing practices as relevant, and no previous investigation has done so yet, the researchers have initially predicted significant differences in managing tacitness between knowledge-heavy industries. Based on the results, this cannot be confirmed. Further, the managers' mindful consideration of their tacit knowledge transfer processes and detected shortcomings

seem similarly high. This means that the managers' mindset towards and understanding of their specific tacit knowledge transfer processes and the resulting barriers are interlinked with their strategic response. It can be assumed that knowledge-heavy companies strategically emphasize one of the two identified approaches. This finding is adding to the sole detection of those strategies in existing literature (Montazemi, et al., 2012).

In line with the expected outcomes for the qualitative interviews, all representative managers clearly see tacit knowledge itself as valuable, yet the phenomenon of tacitness as a challenge. This is, for instance, demonstrated by the amount of the stated shortcomings due to this knowledge tacitness, and the overlaps between the different industries that have been detected throughout the process of analyzing the results (see table 11). The representative manager of the energy provider has named all eleven shortcomings, which have also been enumerated partially by the other managers. This might be grounded in the fact that this particular manager has had the highest executive position out of this sample. Therefore, experience on the field seems to be affecting the mindful consideration of difficulties in tacit knowledge transfer. As no barrier has been named by all interviewed representatives, the industry contextuality appears to be an important factor influencing tacit knowledge transfer.

Table 11: Detected Shortcomings in Tacit Knowledge Transfer by Industry

Shortcomings / Industry	IT service provider	Insurance	Logistics	Energy provider	Mobility
Codifying tacit knowledge	x		x	x	
Diminishing informal knowledge exchange due to Covid-19	x			x	
Employee turnover			x	x	x
Employees' frustration		x	x	x	x
Employees' usage of knowledge databases	x		x	x	
Information overload	x	x		x	
Knowledge complexity and contextuality		x	x	x	x
Missing control over knowledge exploitation		x		x	x
Structuring the database	x			x	x
Technological issues				x	
Time delay between knowledge acquisition and exploitation	x	x		x	

In general, all interviewed managers have stated that knowledge transfer is an important topic within their company. Particularly, the final step of knowledge exploitation (Zahra & George, 2002), or 'internalization' (Szulanski, 1996), as well as its control has been commonly stated to be most difficult. Here, the two representative managers of the insurance and logistics firm have had a tendency towards a personalization strategy, encouraging internal networks (Li, 2012; Al-Omoush, et al., 2020; Johannessen, et al., 2001; Li & Hsieh, 2009). The insurance manager reasons this with the fact that employees often do not see the added value of the actual tacit processes behind gaining the explicit results. The latter is, hence, perceived as more valuable, which indicates a misunderstanding of the former (Hohl, et al., 2018; Johannessen, et al., 2001). Instead, the employees seem to simply just not see the actual difference between tacit and explicit knowledge in their daily work.

When being asked about knowledge exploitation within teams, the other managers preferred to refer back to the implemented platforms and, hence, rather the previous step of how knowledge is transformed, in order to make it usable at all. It is assumed that the representatives of the IT service and energy provider, as well as the manager of the mobility firm, have done so because they have more control over this respective transformation step of the knowledge transfer process than over the actual exploitation. It has to be mentioned, that those three representative companies, although having the widest range of 15% between their reached efficiency factors and expertise of the interviewed managers, are very advanced in codifying their internal knowledge. For instance, the interviewees of the IT service provider have stated that their employees are already working with databases, highlighting that codifying, and storing knowledge is understood as part of the employees' daily routines (Plangger, et al., 2020; Nazir & Pinsonneault, 2021). Hence, the codification strategy, introduced in the literature review, has been clearly preferred in those three industries (Jansen, et al., 2005; Grimaldi & Torrisi, 2001; Mahuha & Birollo, 2020; Nazir & Pinsonneault, 2021; Plangger, et al., 2020).

5.2 Addressing Tacitness In Different Knowledge-Heavy Industries

Resulting from the previous subsection, the allocated value to tacit knowledge, as well as its utilization and role within the insurance company, therewith, differs from the other representative firms. This is in line with Grimaldi & Torrisi (2001), finding that the boundaries between tacit and explicit knowledge vary across industries. However, as expected, the two approaches are present in all industries, but with different, purposefully

selected emphasizes. The first approach is understood as encouraging informal networks to increase knowledge exchange and ties between employees from different teams, departments, and hierarchies. The second approach is a more formal one of making knowledge explicit in order to store codified information in a database and make it accessible at any time. These two strategies are utilized to further categorize the findings (Montazemi, et al., 2012). With all interviewed companies talking about both, the assumption that firms need to foster social ties and relationships between teams, and that this gets possibly supported with centralizing knowledge on platforms, is confirmed (Montazemi, et al., 2012; Nazir & Pinsonneault, 2021).

5.2.1 Personalization Strategy

Interestingly, the manager of the insurance company does not see a need to tackle the corporate-wide contempt to differentiate between explicit and tacit knowledge. Hence, the implementation of a new knowledge management platform is perceived as an effortful whole new project, whereas the costs might outplay the possible benefits. At this point, this is especially surprising against the fact that the insurance company has reached the second highest efficiency factor within this sample. Being traditionally more hierarchical structured, and not having completely anchored an agile mindset within the firm yet, these high results contradict the expected results. However, this underlines the previous statement that firms claiming to be agile are not necessarily performing better than those that are not (Hohl, et al., 2018). That indicates that the firm has strategically focused on the personalization strategy, pursuing a different approach to knowledge transfer than the other interviewed companies of knowledge-heavy industries. Instead of aiming to implement a centralized knowledge platform, providing explicit knowledge, the insurance company favors building internal networks because they are like a life guarantee for the company and its individual employees (Iansiti & Lakhani, 2020; Plangger, et al., 2020). Therefore, the value of information rather gets communicated clearly and contextual by an individual, rather than a system (Badimo, 2019; Li, 2012). Here, it helps that the interviewed insurance company is relatively small, simplifying the establishment of internal networks, in which everyone knows quickly where and how to get specific expert knowledge. As this approach appears to work well for the traditional insurance company, the suggestion of Chang et al. (2021) to remain decentralized to simplify cross-organizational knowledge transfer seems to actually work in particular contexts. This approach also is closest to Nonaka and Takeuchi's (1995) introduced organizational structure, called the 'hypertext organization'. By valuing tacit

knowledge, the network between employees is most important in the insurance company. However, as the represented company is still organized hierarchical, the full exploitation of those networks' value might get hindered.

Again underlining that all companies still pursue both strategies to some extent, this is also in line with the team dynamics in the IT service provider, as it has been stated that everyone knows automatically which colleague to approach for what kind of specific know-how. Similarly, it is clearly defined who owns what kind of know-how in the logistics firm. Although being rather big international companies, the mobility and logistics firm, both place additional value in job rotations and cross-functional site visits to gain better insights and build upon those networks. In all investigated companies, opportunities are created for informal exchange that are likely to have positive long-term effects on the innovativeness of the permanent organization (Mahuha & Birollo, 2020; Kaufmann, et al., 2020). Hence, the personalization strategy is partially implemented in those other firms as well.

5.2.2 Codification Strategy

Four representative companies have strongly been aiming to centralize company-wide knowledge in a database. Two requested managers, namely the representative of the IT service provider and the mobility firm, have reached out to the HR department to attend the interviews, assuming that those HR managers would be having the best overview about internal knowledge transfer. Additionally, one more manager (of the logistics firm) has indicated throughout the interview that the HR department might be a better contact when it comes to answering questions about the knowledge transfer mindset. The representative of the energy provider has named the internal corporate communication department as being responsible for the transfer process of company-wide knowledge.

All interviewees have stated that there is a differentiation between subject-specific knowledge, driven by the experts in the operational departments, and company-wide knowledge, which could possibly get centralized in platforms (Chang, et al., 2021; Jansen, et al., 2005). In line with Mahuha and Birollo (2020), this centralization is expected to help overcoming key barriers in tacit knowledge transfer. However, the interviews have shown that employees cannot be forced to actually use certain databases or tools. Instead, managers can only provide their teams with platforms, and try to communicate the added value until it becomes part of everyone's daily practices, and ultimately, of the corporate mindset (Nazir

& Pinsonneault, 2021). Here, all representative companies are using a combination of proactively reminding their employees of the existing systems and possible trainings, as well as passively enabling their access to the knowledge databases for them to gather subject-specific know-how themselves.

5.2.3 Supporting Strategic Activities

An initially expected outcome has been that companies with a higher degree of ACAP are considering their tacit knowledge transfer processes as a challenge within today's fast-paced business environment more mindfully. However, as detected in the results of the quantitative data analysis and again confirmed through the qualitative interviews, the representative knowledge-heavy industries do not differ immensely regarding their ACAP and overall knowledge transfer strategies. Yet, some differences in executing those have been found, next to the described varying levels of know-how centralization. Thus, some different activities are implemented to support the two previously identified strategies (Montazemi, et al., 2012).

All representative companies try to combine top-down with bottom-up activities when it comes to tacit knowledge transfer. As indicated before, they all realize that they need to provide employees with tools, platforms, and learning opportunities, but then it is up to the individual employees themselves to actually make use of those. This also relates to the overall organizational learning mindset and how well it is exemplified by the executive level (Cohen & Levinthal, 1990; Plangger, et al., 2020; Sloan, 2020). This has especially been the case in the logistics company, where cooperate values are said to be applied in the daily work of all employees, regardless of their position. All interviewees also place high value on the lower management being close to their teams, and for each individual to understand the need for and value of knowledge transfer (Nonaka & Takeuchi, 1995; Johannessen, et al., 2001). Considering the observations made throughout the interviews, it is assumed that the managers of the IT service and energy provider, as well as the insurance company, have had a good overview of the processes throughout their respective companies. Their confidence and ability to provide the researchers with several examples are reasoned in their long tenure. Whereas the HR manager of the mobility firm has been relatively young and new to the firm, the given responses have become more competent throughout the interview, as the questions have gotten tailored towards the own area of responsibility. Here, a good overview and close bonds with team members could also clearly be seen as important.

With the important detected transfer barrier of knowledge overload, two managers (of the insurance firm and the energy provider) have underlined that no one can know everything. Here, the building of a silo structure can be of advantage, as long as competences and responsibilities are clearly defined (Li & Hsieh, 2009; Montazemi, et al., 2012; Mahuha & Birollo, 2020). Again, this can get enabled through the two different approaches of 1) internal networking (personalization strategy; mainly focused on within the insurance firm), and 2) centralized databases (codification strategy; aimed for, e.g., by the energy provider). The energy provider, in particular, is storing the department-specific information in systems, in form of guided processes. With those, knowledge can also get passed on to new employees more quickly. Generally speaking for all interviewed companies, the onboarding of new employees seems to be a crucial part of the employees' journey of building their knowledge base. Next to the usage of centralized knowledge platforms, also other modern formats of sharing information, e.g., personalized playlists (mobility firm) or provided podcasts (logistics firm), have gotten introduced throughout the past year. Overall, the communication between hierarchies and teams has partially improved during the ongoing pandemic, and the interviewed managers have stated that their teams have gotten more agile and self-responsible (Janssen & van der Voort, 2020; Al-Omoush, et al., 2020). This, together with offered training programs to motivate employees in the home office, has led to alternative ways for informal knowledge exchange while working remotely. Lessons learned throughout the Covid-19 pandemic are expected to also enable companies to respond more flexibly to possible future crises (Janssen & van der Voort, 2020; Al-Omoush, et al., 2020).

All interviewees place a high value on trainers being employees of the respective company, so that knowledge can get exploited internally (Montazemi, et al., 2012; Berger & Johnston, 2015). External lectures are mostly obtained to enable future internal knowledge transfer, which is then initiated by team members that have strengthened their expertise. Most representative companies allow every employee to take over the role of the lecturer and present an individually chosen topic to colleagues across teams. For instance, 70-80% of the speakers are internally employed by the IT service provider. The interviewed managers have stated to not know how to stimulate knowledge transfer in a comparably efficient way with external sources. The interviewed company in the mobility sector is the only firm that mainly refers to external trainers. This is reasoned in the fact that employees can trust external coaches more comfortably and be sure that sharing their worries with them would not have

negative effects on their career. The fact that this particular firm is showing the lowest efficiency factor of this sample, indicates that internal trainers might be of more advantage for organizational learning than external ones. However, having reached a higher efficiency factor, also the interviewed managers in the IT service, and energy provider sector have indicated that they explore the market for external trainers and their specific expertise. Yet, considering that all representative companies have reached a high efficiency factor, these slight differences do not necessarily lead back to the use of internal or external trainers. Nevertheless, it is assumed that the right mix needs to be found, whereas internal knowledge exploitations should get favored over external exploration (Montazemi, et al., 2012; Berger & Johnston, 2015).

After all, the levels of ACAP and the perceived barriers resulting from knowledge tacitness are similar across knowledge-heavy industries. Therewith, the here drawn cross-industry comparisons can contribute to the generalization of existing research about ACAP, as an enabler for tacit knowledge transfer (Jansen, et al., 2005; Montazemi, et al., 2012). Also, the two strategies to overcome barriers resulting from tacitness have both been emphasized across the investigated industries, although to different extents. At the macro-level, those parallels indicate that dialogue is encouraged across knowledge-heavy industries, as they share a similar understanding of knowledge transfer and overcoming tacitness in particular.

6 Limitations and Future Research Directions

This section is concerned with the limitations of the applied mixed method approach. Based on that, its contribution for future investigation is assessed, and further research directions are given.

The limitations of the conducted quantitative research that need to be considered are threefold. Firstly, the data is conducted by a consultancy where one of the authors has worked for many years. Hence, this enables easy access to the raw data used, but on the other hand, the analysis is subject to more possible biases. The reliability is improved by the conduction of the study being overseen by the University Mannheim, as well as by the second author and their collaborative work on this thesis. Secondly, the participants have paid and self-selected themselves for the study, in order to get a market research report to demonstrate their customer centricity. Thus, the answers could be biased, considering the fact that the managers might have been wanting to improve the image of their company. Consequently, for further reliability testing, interviews have been conducted with every participant, which is to be distinguished from the qualitative interviews for the purpose of this thesis. Thirdly, a bigger sample size would have created more significant results, which is why especially the industry cross-comparisons have been analyzed carefully and further strengthened through the succeeding qualitative research.

All in all, this indicates a direction for future research, where the results are to be checked on a larger random data set, possibly across further industries and geographical borders. This thesis focuses intentionally on the comparison between a selection of knowledge-heavy industries, whereas it could be of interest for further research to compare the results to 1) other knowledge-heavy industries, but also 2) less knowledge-heavy industries (e.g., being more production-oriented). With the D-A-CH region being known for its innovativeness, it is also of interest to test the results in other, less innovative countries or regions. This could possibly have an impact on the respectively gained efficiency factors, whereas the differences between the then detected corporate mindsets towards tacit knowledge transfer and the here interviewed managers' understanding can be compared.

As the interviewed managers have shown interest in improving organizational tacit knowledge transfer, other companies could also consider using the quantitative questionnaire (see appendix; table 13) individually, in order to assess their company's ACAP and compare it with the presented results. Like Zahra and George (2002) have

mentioned, although PACAP and RACAP "[…] have some commonalities across different firms and attain equifinality, they are idiosyncratic in the specific ways firms pursue, develop and employ them. This variability gives firms a basis to develop different types of competitive advantage" (p. 189).

When it comes to the emphasized qualitative research design, past experiences shape the interpretation of both researchers significantly. However, such biases are outweighed by the interview reports being written in a previously defined format, as well as compared and analyzed from two different perspectives. Also, as the researchers have been representing a key instrument of the data collection themselves, their own self-reflecting learnings have been captured as well, in order to remain aware of possible biases. One researcher's task throughout the interviews has primarily been to actively ask the prepared open-ended core questions, whereas the other one has observed and taken notes carefully. The interview flow has always been kept at a good pace and all responses have been professional. However, as the active researcher has previously worked with the interviewed managers, some summed up key statements have been partially biased. Therefore, it might be of interest for future research to conduct further interviews with companies that are not included in this sample, in order to ensure the researchers' biases have not been affecting the results.

Due to the Covid-19 pandemic, on the field investigations could not take place, which has limited the interactions between interviewees and researchers. Hence, interviews have been held and observations made via a video conferencing tool of 'Microsoft Teams'. Based on those circumstances, it could be of interest to investigate tacit knowledge transfer again years after the pandemic to eliminate possible distortions. Such follow-up research could also assess the effect of the pandemic on know-how-sharing between organizational units.

Due to the semi-structure of the interviews, there have been no boundaries to the participants' responses, as they have been free in their expressions and their decisions of what to express. Consequently, their statements have been self-reported, subjective, and biased from their standpoints. In order to avoid misunderstandings based on language barriers, as well as a possible limitation in what interviewees have been wanting to express, all interviews have been held in German, the mother tongue of the participants. On the contrary, this might have caused important expressions to get lost in translation during the transcribing process for the interview reports.

The results of the qualitative research alone are not generalizable outside of this study because the patterns have developed in the specific, contextual sites of the respectively interviewed companies. As mentioned before, this again relates to the fact that tacit knowledge transfer processes "[…] are idiosyncratic in the specific ways firms […] employ them" (Zahra & George, 2002, p. 189). Yet, as five individual interview protocols have evolved, cross-industry comparisons can be made to a reliable extent. The preceding quantitative investigation has further added to the generalizability of this mixed methods study at hand. Additionally, it has ensured a non-random selection of the interview partners, therewith contributing to the study's reliability as well as validity. Although this study has allowed data triangulation, it is limited to interviews, observations, and few secondary data on the investigated knowledge-heavy industries and representative companies. Therefore, further sources (e.g., official documents, social media content, etc.) might get considered for future investigations. Also, the results of the semi-structured interviews can be again tested with a quantitative survey for further statistical generalization. Even though the interviews have consisted of open-ended questions and answers have not been specifically predetermined, overlaps in the responses have occurred, for instance, regarding the detected shortcomings and the used strategies. Within the scope of the thesis, those have been listed (see table 11) and can be tested with closed questions in a quantitative survey.

Choosing this mixed method approach, the amount of data being processed has been enormous, especially looking at the time frame for this research. For both, quantitative and qualitative research, the focus is consequently placed on the perceptions of managers rather than employees at lower operational levels. Extending the research intensively in one representative company, including the conduction of a quantitative survey amongst, or more interviews with employees of different hierarchical levels, could also benefit the depth of future research. Hence, differences of ACAP at the individual level and multiple perspectives on tacit knowledge transfer processes inside one individual company could be analyzed for a single case study approach. However, this further research could be built upon the findings of this thesis, and by addressing various layers within an organization, add to a better comparative understanding of the contexts.

After all, the combination of both research methods ensures the outweighing of each other's limitations to some extent. The careful development of individual interview protocols, gained from representative expert interviews within different knowledge-heavy industries, enabled a valuable cross-industry comparison throughout this discussion section.

7 Conclusion

Companies are working on their ability to absorb and share knowledge between organizational units to better react to the environmental changes and, hence, strengthen their SCA, whereas tacit knowledge is considered to be especially relevant (Zahra & George, 2002; Johannessen, et al., 2001). However, tacitness, as a barrier to reaching this particular SCA, has not been researched in-depth at the team level, especially not comparing the results across industries. Consequently, the following RQ has been formulated:

How is tacit knowledge transferred between organizational units in different knowledge-heavy industries?

The unit of analysis, being the process of 'tacit knowledge transfer', possibly getting enabled as companies realize their ACAP, has been investigated through a combination of a quantitative survey and qualitative semi-structured interviews. Regarding the RQ, the main findings are summarized in the following, ultimately leading to theoretical and practical contributions, as the topic is relevant for researchers as well as managers.

Firstly, the levels of ACAP and the perceived barriers resulting from knowledge tacitness are similar across knowledge-heavy industries. Therefore, assumptions in previous literature, indicating that knowledge is transferred differently across industries (Grimaldi & Torrisi, 2001) could not be confirmed for knowledge-heavy ones. Also, the strategies to overcome barriers in the tacit knowledge transfer between organizational units have been similar across the investigated industries. Consequently, the following two detected main strategies are commonly used, yet emphasized differently: 1) the personalization strategy, encouraging informal networks to increase knowledge exchange and social ties between teams, departments, and hierarchies; and 2) the codification strategy, a more formal approach of making knowledge explicit in order to store codified information in a database and make it accessible at any time.

Even though the managers of all representative companies within the knowledge-heavy industries have mentioned both strategies, it becomes clear that they are differently executed. Which strategy is emphasized, mainly depends on the company's understanding of tacit knowledge transfer, and their perceived value of organizational learning. These different emphases are not considered by previous research yet. Although those two strategies have been described in existing literature, they have not been applied to

knowledge transfer between teams, but only between headquarters and subsidiaries (Montazemi, et al., 2012). For both strategies, a good team spirit, where learning is normalized, responsibilities for knowledge transfer are assigned, and a close bond between managers and employees, as well as a combination of top-down and bottom-up activities exist, have been identified to be crucial. Here, this research at hand ties in with previous literature stressing the importance of internal networks (Montazemi, et al., 2012; Li, 2012; Plangger, et al., 2020).

A further interesting implication for research about ACAP is the specifically mentioned difficulty of exploiting knowledge. Here, it has been found that managers mainly try to control the know-how transfer in the preceding stages of knowledge acquisition, assimilation, and transformation, as they have less control over its actual exploitation. So far, literature discusses the four dimensions of ACAP with equal importance (Zahra & George, 2002; Jansen, et al., 2005; Montazemi, et al., 2012). Previous literature can, therefore, get reviewed having this emphasized ultimate knowledge exploitation in mind. Moreover, in line with Grimaldi and Torrisi (2001), different allocations in the value, role, and usage of tacit knowledge have been detected in the knowledge-heavy industries, due to the different strategic focuses. This should also be taken into account when reviewing pre-existent literature about tacit knowledge transfer, possibly using those different perspectives as a basis for future factorial analysis to discuss their impact on other variables (e.g., financial performance). Consequently, the conducted mixed method approach could give some *theoretical contributions*, especially with providing evidence of similarities between knowledge-heavy industries. It, therewith, contributes to the generalization of research about ACAP as an enabler for tacit knowledge transfer (Jansen, et al., 2005; Montazemi, et al., 2012).

On the other hand, this thesis provides *practical contributions* for organizational strategists in knowledge-heavy industries. Due to the fact that all interviewed representatives of the different industries make use of the same strategies to overcome similar barriers in tacit knowledge transfer, a continuous cross-industry exchange of practices and interdisciplinary knowledge appears benefiting (Sloan, 2020; Iansiti & Lakhani, 2020). Although the IT industry is unexpectedly not much ahead of other knowledge-heavy industries, and, therefore, does not significantly capitalize on its pioneer role in being agile, companies do not have to look for inspiration limited to their own industry to increase their ACAP. Instead,

they are encouraged to exchange knowledge across industry borders, while still being able to understand those same two main strategies. This investigation has also demonstrated that different company-specific variables (e.g., size, experience, financial performance, etc.), do not matter exclusively when it comes to overcoming tacit knowledge transfer barriers. Instead, it also significantly depends on how potential knowledge is realized and, in this process, transferred between teams. This ultimately seems to depend on the company's mindset towards organizational learning and each individuals' willingness to exchange knowledge. The conclusion can be drawn that tacit knowledge transfer can be improved in all knowledge-heavy companies when addressing the barriers in a way that is strategically fitting to the individual corporate mindset of the firm. With identifying the different strategic emphases that are interlinked with this respective mindset towards learning, a further practical implication for managers is to detect and understand possible misfits. The detected shortcomings in knowledge transfer (see table 11) serve as a guideline for managers to overcome tacitness more strategically and detect lacks when systematically addressing those barriers.

All in all, the topic of tacit knowledge transfer is considered especially relevant for knowledge-heavy companies, which is mirrored in the interviewed managers' high willingness to participate in this research and share their practices as well as respectively detected barriers. Also, all representative managers have stated that, due to its importance, they are internally working on improving tacit knowledge transfer. Consequently, more research on this topic is expected to arise in the future.

Bibliography

Al-Omoush, K. S., Simón-Moya, V. & Sendra-García, J., 2020. The Impact of Social Capital and Collaborative Knowledge Creation on E-Business Proactiveness and Organizational Agility in Responding to the COVID-19 Crisis. *Journal of Innovation & Knowledge,* 5(4), pp. 279-288.

Badimo, K. H., 2019. *How Artificial Intelligence Can Help to Address Some of the Limitations of Knowledge Management LinkedIn.* [Online] Available at: https://www.linkedin.com/pulse/how-artificial-intelligence-can-help-address-some-knowledge-badimo/ [Accessed 23 February 2021].

Baran, B. E. & Woznyj, H. M., 2020. Managing VUCA: The human dynamics of agility. *Organizational Dynamics,* 39(3), pp. 1-11.

Baškarada, S., 2013. *Qualitative Case Study Guidelines.* Victoria, Australia: Australian Government Department of Defence, Defence Science and Technology Organisation, Joint and Operations Analysis Division.

Bell, E., Bryman, A. & Harley, B., 2019. *Business Research Methods.* 5 ed. Oxford: Oxford University Press.

Berger, J. & Johnston, K., 2015. *Simple Habits for Complex Times. Leader to Leader.*. Stanford: Stanford Business Books.

Buchardt, C. & Maisch, B., 2019. Digitalization needs a cultural change – examples of applying Agility and Open Innovation to drive the digital transformation. *Procedia CIRP*, Volume 84, pp. 112-117.

Burns, R. & Burns, R. P., 2008. *Business Research Methods and Statistics Using SPSS.* London: SAGE Publications Ltd.

Camillus, J. C., 2008. Strategy as a Wicked Problem. *Havard Business Review,* 86(5), pp. 98-101.

Chang, F. et al., 2021. *Journal of Clearer Production,* 282(1), pp. 1-15.

Christensen, C. M., 1992. Exploring the Limits of the Technology S-Curve. Part I: Component Technologies. *Production and Operations Management,* 1(4), pp. 334-357.

Christofi, M. et al., 2021. Agility and flexibility in international business research: A comprehensive. *Journal of World Business,* 56(3), pp. 1-18.

Cohen, J., 1988. *Statistical Power Analysis for the Behavioral Sciences.* 2 ed. New York: Routledge Academic.

Cohen, W. M. & Levinthal, D. A., 1990. Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly,* 35(1), pp. 128-152.

Creswell, J. W. & Creswell, J. D., 2018. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.* 5 ed. Los Angeles: Sage.

Epstein, D. J., 2019. *Range: Why Generalists Triumph in a Specialized World.* New York: Riverhead Books.

European Centre for Disease Prevention and Control, 2021. *Covid-19.* [Online] Available at: https://www.ecdc.europa.eu/en/covid-19 [Accessed 21 March 2021].

Grimaldi, R. & Torrisi, S., 2001. Codified-tacit and general-specific knowledge in the division of labour among firms: A study of the software industry. *Research Policy,* 30(9), pp. 1425-1442.

Hau, Y. S., Kim, B., Lee, H. & Kim, Y.-G., 2012. The effects of individual motivations and social capital on employees' tacit and explicit knowledge sharing intentions. *International Journal of Information Management,* 33(2), pp. 356-366.

Hislop, D., Bosua, R. & Helms, R., 2018. *Knowledge Management in Organizations: A critical Introduction.* 4 ed. Oxford: Oxford University Press.

Hohl, P. et al., 2018. Back to the future: origins and directions of the "Agile Manifesto" - views of the originators. *Journal of Software Engineering Research and Development,* 6(15), pp. 1-27.

Iansiti, M. & Lakhani, K. R., 2020. *Competing in the Age of AI: Strategy and Leadership When Algorithms and Networks Run the World.* Havard: Harvard Business Review Press.

Jansen, J. J. P., Van Den Bosch, F. A. J. & Volberda, H. W., 2005. Managing Potential and Realized Absorptive Capacity: How Do Organizational Antecedents Matter?. *The Academy of Management Journal*, 48(6), pp. 999-1015.

Janssen, M. & van der Voort, H., 2020. Agile and adaptive governance in crisis response: Lessons from the COVID-19 pandemic. *International Journal of Information Management*, 55(1), pp. 1-7.

Johannessen, J.-A., Olaisen, J. & Olsen, B., 2001. Mismanagement of Tacit Knowledge: The Importance of Tacit Knowledge, the Danger of Information Technology, and What to Do about It. *International Journal of Information Management*, 21(1), pp. 3-20.

Kaufmann, C., Kock, A. & Gemünden, H. G., 2020. Emerging strategy recognition in agile portfolios. *International Journal of Project Management*, 38(7), pp. 429-440.

Kostopoulos, K., Papalexandris, A., Papachroni, M. & Ioannou, G., 2011. Absorptive capacity, innovation, and financial performance. *Journal of Business Research*, 64(12), pp. 1335-1343.

Li , C.-Y. & Hsieh, C.-T., 2009. The Impact of Knowledge Stickiness on Knowledge Transfer Implementation, Internalization, and Satisfaction for Multinational Corporations. *International Journal of Information Management*, 29(6), pp. 425-435.

Li, C.-Y., 2012. Knowledge stickiness in the buyer–supplier knowledge transfer process: The moderating effects of learning capability and social embeddedness. *Expert Systems with Applications*, 39(5), pp. 5396-5408.

Mahuha, A. & Birollo, G., 2020. Organizational practices that enable and disable knowledge transfer: The case of a public sector project-based organization. *International Journal of Project Management*, 38(1), pp. 1-12.

Malhotra, N. K., 2010. *Marketing Research: An Applied Orientation.* 6 ed. New Jersey: Pearson Education Inc..

Montazemi, A. R., Pittaway, J. J. & Qahri Saremi, H., 2012. Factors of Stickiness in Transfers of Know-How between MNC Units. *The Journal of Strategic Information Systems,* 21(1), pp. 31-57.

Nazir, S. & Pinsonneault, A., 2021. Relating agility and electronic integration: The role of knowledge and process coordination mechanisms. *Journal of STrategic Information Systems,* 30(2), pp. 1-22.

Nespeca, V., Comes, T., Meesters, K. & Brazir, F., 2020. Towards coordinated self-organization: An actor-centered framework for the design of disaster management information systems. *International Journal of Disaster Risk Reduction,* 51(1), pp. 1-12.

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

Plangger, K. et al., 2020. Strategic enablement investments: Exploring differences in human and technological knowledge transfers to supply chain partners. *Industrial Marketing Management,* 91(1), pp. 187-195.

Rittel, H. W. J. & Webber, M. M., 1973. Dilemmas in a General Theory of Planning. *Policy Sciences,* 4(1), pp. 155-169.

ServiceRating GmbH, 2021. *TOP SERVICE Deutschland.* [Online] Available at: https://topservicedeutschland.de/ [Accessed 21 March 2021].

Sheng, M. L., 2018. Foreign tacit knowledge and a capabilities perspective on MNEs' product innovativeness: Examining source-recipient knowledge absorption platforms. *International Journal of Information Managemen,* 44(1), pp. 154-163.

Sloan, J., 2020. *Learning to Think Strategically.* 4 ed. New York: Routledge.

Sue, V. M. & Ritter, L. A., 2012. *Conducting Online Surveys.* 2 ed. Los Angeles: SAGE Publications.

Szulanski, G., 1996. Exploring internal stickiness: Impediments to the transfer of best practice within the firm. *Strategic Management Journal,* 17(2), pp. 27-43.

Utterback, J. M., 1994. *Mastering the dynamics of innovation: how companies can seize opportunities in the face of technological change.* USA: Harvard Business School Press.

Wood, T., 2021. *Global Stars: The Most Innovative Countries, Ranked by Income Group.* [Online] Available at: https://www.visualcapitalist.com/national-innovation-the-most-innovative-countries-by-income/ [Accessed 21 March 2021].

Yin, R., 2009. *Case Study Research: Design and Methods.* 4 ed. Los Angeles, California: Sage Publications.

Zahra, S. & George, G., 2002. Absorptive Capacity: A Review, Reconceptualization, and Extension. *Academy of Management Review,* 27(2), pp. 185-203.

Appendix

Additional Information for the Literature Review

Table 12: List of Codes

*The number indicates how often the respective label has been named in the reviewed literature. Further, the colors are indicating the respective categories to the labels.

Category (axial codes)	Labels (selecive codes)	Keywords (open codes)	Amount named*	Indicative quotes
Defining knowledge transfer	artificial intelligence	artificial intelligence, deep learning, machine learning	101	"Concurrently, there has been significant discussion about the viability to codify tacit knowledge and the role of AI technology in Knowledge Management" (Badimo, 2019, n.p.)
	combine explicit & tacit knowledge	combine explicit & tacit knowledge, combine formal & informal knowledge transfer	119	"organizational knowledge is created through a continuous dialogue between tacit and explicit knowledge" (Johannessen, et al., 2001, p. 15)
	knowledge stickiness	knowledge stickiness (negative, neutral, positive)	135	"the levels of tacitness, complexity and specificity of transferred knowledge have a significant impact on the knowledge stickiness" (Li & Hsieh, 2009, p. 433)
	knowledge transfer	knowledge diversification, knowledge leveraging, knowledge implementation, knowledge integration, knowledge management, knowledge transfer	903	"knowledge transfer is defined as the use of formal and informal practices to value, share, absorb and create knowledge" (Mahura & Birollo, 2020, p. 2)
	tacit knowledge	contextual, know-how, tacit knowledge	406	"The tacit dimension of knowledge is comprised of both cognitive and technical elements (Nonaka, 1994). The cognitive element refers to an individual's mental models consisting of mental maps, beliefs, paradigms, and viewpoints. The technical component consists of concrete know-how, crafts, and skills that apply to a specific context" (Montazemi, et al., 2012, p. 33)
Managing knowledge tacitness	agility	agility, lean	436	"agility often involves a combination of rapidly making sense of new situations along with the norms that support robust interaction and dissent to elevate decision-making quality" (Baran & Woznyj, 2020, p. 1)

	decentralization	decentralization, MNE, self-organization	224	"This framework and decentralized network effectively break the traditional centralized knowledge sharing dilemmas" (Chang, 2021, p. 14)
	employees' motivation	commitment, engagement, internalization, motivation, trust	222	"Managers also need to ensure that potential partners are properly motivated in terms of knowledge transfers" (Li, 2012, p. 5405)
	flexibility	flexibility	110	"defined 'flexibility' as a firm being able to effectively respond when faced with challenging and changing circumstances" (Christofi, et al., 2019, p. 10)
	management's awareness	leadership, managements' awareness, managers' duties	191	"an enterprise would do well to recognize that they may be wicked. Moving from denial to acceptance is important" (Camillus, 2008, p. 106)
	networks	embeddedness, collaborations, networks, partnerships, relationships, sharing interaction, social networks	507	"knowledge creation and knowledge transfer activities are influenced by various social mechanisms and the coordination between firm networks" (Li, 2012, p. 5400)
	organizational culture	culture, identity, policies, regulation, rules, shared values, ties	228	"use of multiple formal and informal mechanisms – structure, management systems and processes, culture and leadership, for example – permit it to transfer product and process knowledge, often having tacit components, across borders" (Montazemi, et al., 2012, p. 33)
	social capital	cognition, individual employees, people, social capital	272	"social capital is conceptualized as a set of relational resources embedded in relationships that positively influence firm conduct and performance" (Montazemi, et al., 2012, p. 33)
	strategic decision-making	strategic decision-making	221	"Knowledge plays important role in building the decision-making schemes" (Chang, 2021, p. 3)
	teams	communication, cross-functionality, interdisciplinary teams, rotation, units	307	"knowledge based on personal experience […] can be made explicit at the organizational level through trust and relationship building processes, […] provided by organizing the company in teams" (Johannessen, et al., 2001, pp. 9-10)
	VUCA environment	ambiguity, complexity, uncertainty, volatility, VUCA, wicked problems	312	"Alongside these discussions of VUCA are various ideas about how executives should guide their organizations in dealing with turbulence and attempts to characterize how employees of all levels can best deal with increasingly frequent change or uncertainty" (Baran & Woznyi, 2020, p. 1)

Enabling knowledge transfer through absorptive capacity	absorptive capacity	absorptive capacity	232	"ability to recognize the value of new information, assimilate it, and apply it to commercial ends" (Cohen & Levinthal, 1990, p. 128)
	combine exploring & exploiting knowledge	combine exploring & exploiting knowledge	111	"Knowledge exploitation is related to drawing upon the existing domains of knowledge such as internal functions. […] The key idea in knowledge exploitation is the leveraging of knowledge of different functional units to sense and respond to environmental change [and] is related to securing and developing knowledge from new domains such as external partners and customers" (Nazir & Pinsonneault, 2021, p. 4)
	combine external & internal knowledge	combine external & internal knowledge	166	"resources may be transferred across the firms and markets, leading to a mixture of both internal and external sources for competitive advantage" (Li, 2011, p. 5397)
	competitive advantage	competitive advantage, SCA	162	"tacit knowledge is recognized as playing a key role in determining the extent to which companies are able to create sustainable competitive advantages" (Johannessen, et al., 2001, p. 14)
	innovation	innovation	343	"The ability to exploit external knowledge is thus a critical component of innovative capabilities" (Cohen & Levinthal, 1990, p. 128)
	knowledge threshold	certain degree, diminishing returns, paradox, threshold, u-shaped relationship	20	"Thus tacit knowledge promotes continuous improvement only to a certain level, and then declines" (Johannessen, et al., 2001, p. 12)
	learning	learning	309	"knowledge will increasingly be focused on companies' ability to learn" (Johannessen, et al., 2001, p. 16)
	performance	financial performance, success	182	"ACAP contributes directly to innovation and indirectly (i.e., via innovation) to subsequent financial performance" (Kostopoulos, et al., 2010, p. 1340)

Additional Information for the Quantitative Study

Table 13: Quantitative Questionnaire

C = Category, S = Subconstruct, *these items are negatively poled and the translation positively

C	S	English item (Jansen, et al. 2005)	Translated German item
Potential absorptive capacity	**Acquisition**	1. Our unit has frequent interactions with corporate headquarters to acquire new knowledge	Es findet ein häufiger Austausch von Abteilungen mit der Konzernzentrale / Unternehmensleitung statt, um neues Wissen zu erwerben bzw. zu teilen (vertikaler Wissenstransfer).
		2. Employees of our unit regularly visit other branches	Ein Austausch zwischen einzelnen Abteilungen unseres Unternehmens findet häufig statt.
		3. We collect industry information through informal means (e.g., lunch with industry friends, talks with trade partners)	Wir sammeln Informationen über unsere Branche auf informellem Weg (z. B. Mittagessen oder gesellige Treffen mit Kunden und Lieferanten, Handelspartnern oder Interessenvertretern der Branche).
		4. Other divisions of our company are hardly visited*	Mitarbeiter unseres Unternehmens besuchen regelmäßig andere Abteilungen des Unternehmens.
		5. Our unit periodically organizes special meetings with customers or third parties to acquire new knowledge	Wir organisieren regelmäßig spezielle Meetings mit Kunden oder Dritten, z. B. Verbänden und Universitäten, um neues Wissen zu erwerben.
		6. Employees regularly approach third parties such as accountants, consultants, or tax consultants	Unsere Mitarbeiter treten regelmäßig mit Dritten (z. B. Wirtschaftsprüfern, Unternehmensberatern, Steuerberatern) in Kontakt.
	Assimilation	7. We are slow to recognize shifts in our market (e.g., competition, regulation, demography)*	Wir erkennen schnell Veränderungen in der Unternehmensumwelt (z. B. Wettbewerber, Recht oder Demographie).
		8. New opportunities to serve our clients are quickly understood	Wir sind in der Lage, neue Chancen zur Erfüllung von Kundenbedürfnissen schnell zu verstehen.
		9. We quickly analyze and interpret changing market demands	Wir analysieren und interpretieren Marktveränderungen schnell.
Realized absorptive capacity	**Transformation**	10. Our unit regularly considers the consequences of changing market demands in terms of new products and services	Wir erwägen regelmäßig die Konsequenzen von sich verändernden Marktanforderungen in Bezug auf neue Produkte / Dienstleistungen.
		11. Employees record and store newly acquired knowledge for future reference	Mitarbeiter erfassen und dokumentieren neu erworbenes Wissen zur späteren Verwendung.
		12. Our unit quickly recognizes the usefulness of new external knowledge to existing knowledge	Wir erkennen schnell den Nutzen von extern akquiriertem Wissen für unser bestehendes Wissen.
		13. Employees hardly share practical experiences*	Mitarbeiter unseres Unternehmens teilen häufig Erfahrungen aus dem Berufsalltag miteinander.
		14. We laboriously grasp the opportunities for our unit from new external knowledge*	Es fällt uns leicht, die Chancen, die sich für unser Unternehmen aus externem Wissen ergeben, zu verstehen.
		15. Our unit periodically meets to discuss consequences of market trends and new product development	Wir treffen uns regelmäßig, um die Auswirkungen von Markttrends und Neuproduktentwicklungen zu diskutieren.
	Exploitation	16. It is clearly known how activities within our unit should be performed	In unserem Unternehmen ist klar geregelt, wie bestimmte Aktivitäten innerhalb und zwischen einzelnen Abteilungen ausgeführt werden sollten.
		17. Client complaints fall on deaf ears in our unit*	Beschwerden von Kunden finden in unserem Unternehmen Gehör.
		18. Our unit has a clear division of roles and responsibilities	Wir haben eine klare Verteilung von Rollen und Verantwortlichkeiten in unserem Unternehmen.
		19. We constantly consider how to better exploit knowledge	Wir reflektieren regelmäßig, wie man bestehendes Wissen besser ausnutzen könnte.
		20. Our unit has difficulty implementing new products and services*	Wir haben keine Schwierigkeiten damit, neue Produkte / Dienstleistungen und Prozesse zu implementieren.
		21. Employees have a common language regarding our products and services	Unsere Mitarbeiter haben ein gemeinsames Verständnis von unseren Produkten / Dienstleistungen (z. B. Nutzen, den wir unseren Kunden bieten).

Additional Information for the Correlation and Regression Analysis

Table 14: Regression Model Summary

Resulting from a linear simple regression analysis, the two tables below prove the correlation between the two variables from the correlation analysis (RACAP and PACAP). The overall regression has been stated significant with an F-value 247.130 ($p > 0.001$) indicating a high variance.

Model	R	R square	Adjusted R square	Std. error of the estimate
1	.856[a]	.733	.730	7,04463

a. Predictors (Constant): RACAP

b. Dependent Variable: PACAP

Table 15: Regression ANOVA (Analysis of Variance)

Model		Sum of Squares	df	Mean square	F	Sig.
1	Regression	12264.311	1	12264.311	247.130	.000[a]
	Residual	4466.419	90	49.627		
	Total	16730.729	91			

a. Predictors (Constant): RACAP

b. Dependent Variable: PACAP

Figure 6: Visualization of the Correlation Between PACAP and RACAP

This following scatter graph with a fit line further demonstrates the linear regression between PACAP and RACAP (Burns & Burns, 2008). Regarding the correlation analysis conducted in 4.1.1, the straight-line relationship between the variables proves the linearity assumption, whereas the fact that the data is equally distributed above and underneath the fit line proves the homoscedasticity. Both is needed for the Pearson correlation. Furthermore, having more dots on the top-right end of this graph validates the assumption made during the descriptive result analysis about having more companies with a high degree of ACAP in the sample.

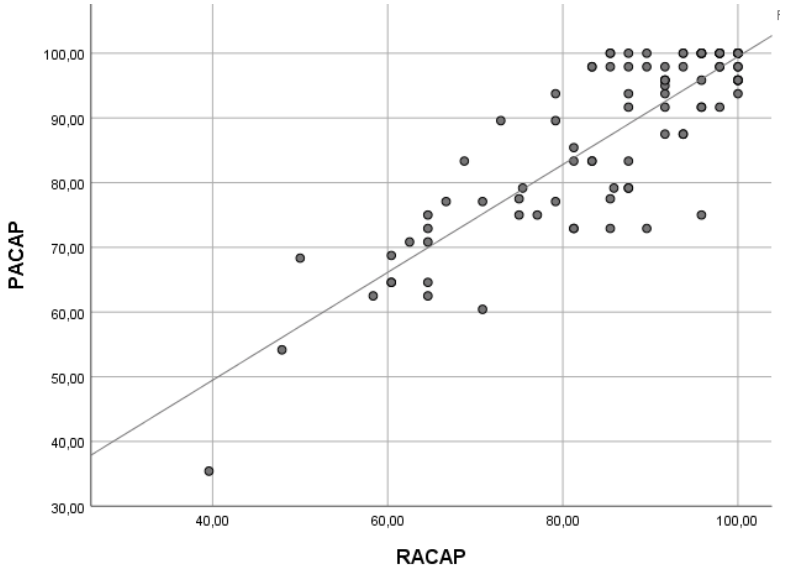


Figure 7: Regression Histogram
Mean 0.00; Std. Dev = 0.994; N = 92
The histogram does not show extreme outliners which is important for a regression analysis.

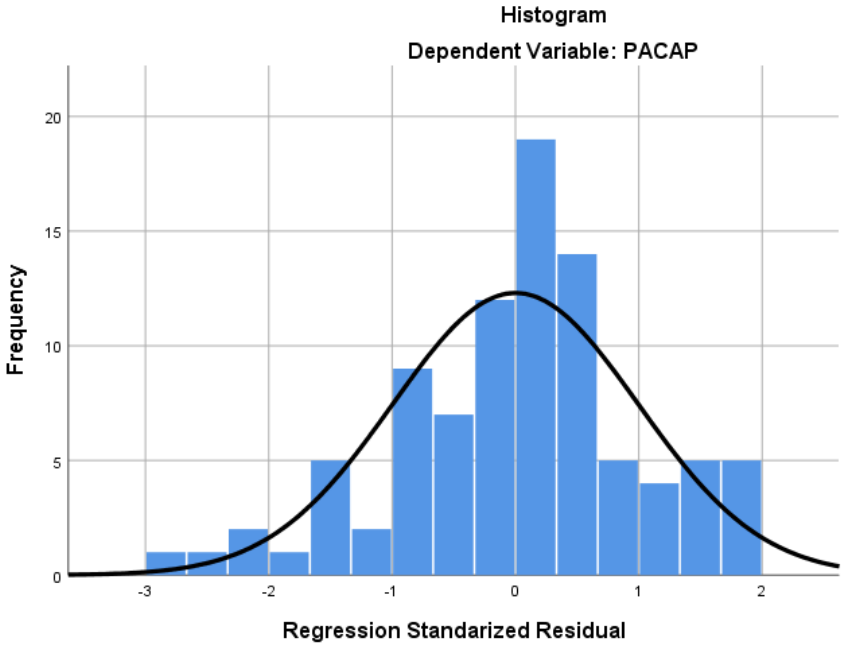
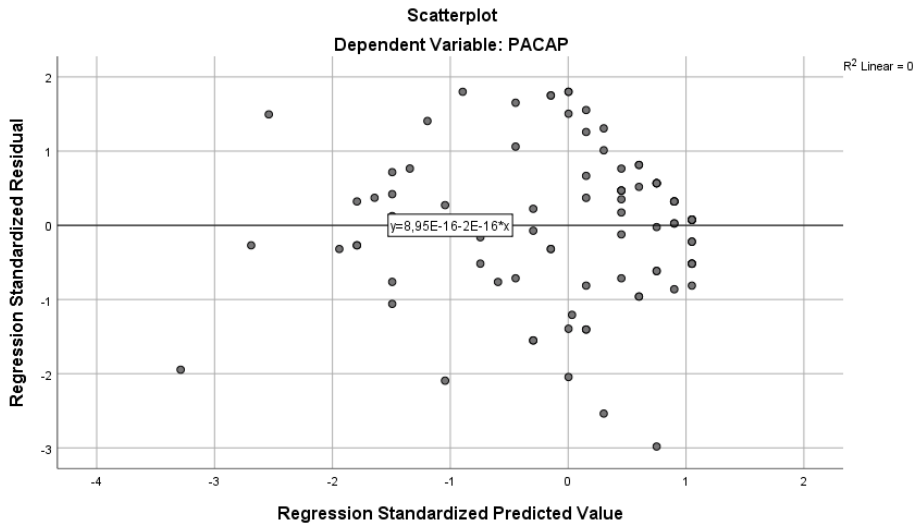


Figure 8: Regression Residual Plot
The reference line shows where the residuals are 0. That the data is spread equally around the line in the scatterplot with not apparent pattern shows homogeneity of variance (Burns & Burns, 2008). As a result, the histogram and residual plot further "[…] indicate that linear regression assumptions are met" (Burns & Burns, 2008, p. 387). The bell-shaped line in the histogram proves that the data is normally distributed which is needed, together with the linearity and homoscedasticity assumption, to conduct a Pearson correlation (Burns & Burns, 2008).



Additional Information for the Qualitative Study

Table 16: Interview Protocol Form

The following table is inspired by Yin's (2009) 'Case Study Protocol Form'. Here, it is to be mentioned that the interviewed managers, within the scope of this qualitative research, are representatives for companies within knowledge-heavy industries. As it is those industries of interest for the study at hand, the representative companies are not to be understood as cases.

1. Overview of the interview report

- **Study background**: Master Thesis on 'Tacit Knowledge Transfer Between Organizational Units: Investigating How Different Knowledge-Heavy Industries Overcome Knowledge Tacitness'
- **Institution**: Lund University, School of Economics and Management
- **Authors**: Karola Kremer and Pauline Steudten (both students of the MSc program in International Strategic Management)
- **Qualitative research design**: explanatory semi-structured interviews
- **Research question**: How is tacit knowledge transferred between organizational units in different knowledge-heavy industries?
- **Unit of analysis**: the process of 'tacit knowledge transfer'
- **Source of data collection**: individual managers of representative companies in different knowledge-heavy industries within the D-A-CH region
- **Purpose**: contributing theoretically and practically to existing investigations by explaining the results from the preceding quantitative data analysis

2. Field procedures

- **Access to interviewees**: gained through phoning managers that have participated in a quantitative survey, conducted in 2019 / 2020
- **Time frame and place of scene**: end of April - mid May 2021; up to 1-hour interviews are conducted via a video conferencing tool of Microsoft Teams; a time buffer for occurring unexpected events has been calculated

3. Interview instrument

Below a listing of the core questions, with additional sub questions, can be found, as well as the introductory text as an orientation to the interviews and the closing text.

	English item	**Translated German item**
a. Orientation	First of all, thank you for your time and approval for this interview. Before we get to the questions, we want to give you some background information. You may remember your participation at the TOP SERVICE study 2019/2020, consisting of a management and customer survey. In the management survey, we included an additional topic about your company's absorptive capacity in	Zunächst einmal vielen Dank für Ihre Zeit und Zustimmung zu diesem Interview. Bevor wir mit den Fragen starten, möchten wir Ihnen einige Hintergrundinformationen zu dem Thema geben. Vielleicht können Sie sich an Ihre Teilnahme an der TOP SERVICE Studie 2019/2020 erinnern, die aus einer Management- und Kundenbefragung bestand. In die Managementbefragung haben wir in diesen Jahren absorptive capacity als ein zusätzliches Thema

	these years of the study, for which you answered a few more questions. This absorptive capacity describes the process, in which knowledge is gathered and put into practice.	aufgenommen, für das Sie einige Zusatzfragen beantwortet haben. Diese besagte Kapazität beschreibt den Prozess wie Wissen aufgenommen und angewendet wird.
	We are currently writing our master's thesis at Lund University, Sweden, about knowledge transfer, where we evaluate exactly these questions. Your industry has achieved very good results and has shown that your company can absorb new knowledge well and use it in a targeted manner. We would now like to understand in-depth how your company uses, and shares knowledge between teams in daily processes. The reason is that we investigate the similarities and differences of companies from different knowledge-heavy industries in our thesis. Thus, when we ask the following questions, please think about the processes in your overall company and not only the once you, as an individual employee, might be using. Further, the focus is on tacit know-how, meaning the kind of information that is held by individual employees and hence, cannot be easily coded or shared. Did we set the stage clearly? Do you have any remaining questions before we start?	Derzeit schreiben wir an der Universität in Lund, Schweden, unsere Masterarbeit zum Thema Wissenstransfer, für die wir genau diese Fragen auswerten. Ihre Branche hat sehr gute Ergebnisse erzielt und gezeigt, dass Ihr Unternehmen neues Wissen gut aufnehmen und gezielt einsetzen kann. Wir möchten nun detaillierter verstehen, wie Ihr Unternehmen das Wissen verwendet, und wie der Wissenstransfer zwischen Teams funktioniert. Der Grund dafür ist, dass wir in unserer Arbeit die Ähnlichkeiten und Unterschiede von Unternehmen aus verschiedenen wissensintensiven Branchen untersuchen. Wenn wir also die folgenden Fragen stellen, denken Sie bitte an die Prozesse in Ihrem gesamten Unternehmen und nicht nur an die, die Sie als einzelner Mitarbeiter möglicherweise verwenden. Darüber hinaus liegt der Fokus auf implizitem Know-how, d.h. der Art von Informationen, die einzelne Mitarbeiter implizit besitzen, und die daher nicht einfach codiert oder weitergegeben werden können. Haben wir den Hintergrund des Interviews verständlich gemacht? Haben Sie noch Fragen, bevor wir beginnen?
	My research partner will take notes during the interview. Are you fine if we additionally record your answers for later transcribing? We ensure that they will be analyzed anonymously. This means that your name, as an individual employee, as well as	Meine Forschungs-Partnerin wird während des Interviews Notizen machen. Ist es in Ordnung, wenn wir Ihre Antworten zusätzlich für die spätere Transkription aufzeichnen? Wir stellen sicher, dass sie anonym analysiert werden. Dies bedeutet, dass Ihr Name als einzelner

	your company's name remains protected, we will simply name the industry your company is operating in. *Response: Yes → start recording* Thank you. I started the recording now. *Response: No → use of the notes without recording* Then we will start with the questions now.	Mitarbeiter sowie der Name Ihres Unternehmens geschützt bleiben. Wir nennen lediglich die Branche, in der Ihr Unternehmen tätig ist. *Antwort: Ja → Aufnahme starten* Vielen Dank. Die Aufnahme ist nun gestartet. *Antwort: Nein → Notizen verwenden ohne Aufnahme* Dann beginnen wir jetzt mit den Fragen.
b. Core and sub questions	**How is your company organized?** - How do you define teams in your company? - How are your teams organized? - How stable is your team composition? - How are roles and responsibilities allocated in your teams? - How much freedom do team members have when making decisions? - How are you entitled to having an agile mindset within your company? - How flexible are the team members? - How quick can your company respond to the market? **How would you describe your organizational learning?** - How is organizational learning reflected in your company's values? - How do you encourage organizational learning? - How would you describe your failure culture? - How do you make sure that previously learned knowledge is reused in the long-term?	**Wie ist Ihr Unternehmen organisiert?** - Wie definieren Sie Teams in Ihrem Unternehmen? - Wie sind Ihre Teams organisiert? - Wie stabil ist Ihre Teamzusammensetzung? - Wie werden Positionen und Verantwortlichkeiten in Ihren Teams zugewiesen? - Wie viel Freiheit haben Teammitglieder bei Entscheidungen? - Wie stehen Sie in Ihrem Unternehmen zu einer agilen Denk- und Arbeitsweise? - Wie flexibel können Ihre Teammitglieder agieren? - Wie schnell kann Ihr Unternehmen auf Veränderungen im externen Markt reagieren? **Wie würden Sie das organisationale Lernen in Ihrem Unternehmen beschreiben?** - Wie spiegelt sich organisationales Lernen in den Werten Ihres Unternehmens wider? - Wie fördern Sie organisationales Lernen? - Wie würden Sie Ihre Fehlerkultur beschreiben? - Wie stellen Sie sicher, dass zuvor erlerntes Wissen langfristig genutzt wird?

	- How do you record, and store acquired knowledge for future reference? - How is know-how centralized and formalized? - How often do employees rotate between teams? - How do you enable cross-functional communication (between units)? **How does your company put gained knowledge into practice?** - How is the understanding of knowledge in your company? - How do you encourage formal / informal knowledge exchange? - How do you make sure this knowledge is used in daily routines? - How do your colleagues perceive how your company puts gained knowledge into practice? **What shortcomings or barriers do you see regarding tacit knowledge transfer?** - Where do you think tacit knowledge might get lost in the transfer process? **How do you overcome tacit knowledge transfer difficulties?**	- Wie erfassen und speichern Sie erworbenes Wissen, um später darauf zurückgreifen zu können? - Wie wird Know-how zentralisiert und formalisiert? - Wie oft wechseln Mitarbeiter zwischen Teams? - Wie fördern Sie funktions-übergreifende Kommunikation (zwischen Teams)? **Wie setzt Ihr Unternehmen gewonnenes Wissen in die Praxis um?** - Wie ist das Verständnis von Wissen in Ihrem Unternehmen? - Wie fördern Sie den formellen / informellen Wissensaustausch? - Wie stellen Sie sicher, dass dieses Wissen im Alltag genutzt wird? - Wie nehmen Ihre Kollegen wahr, wie Ihr Unternehmen gewonnenes Wissen in die Praxis umsetzt? **Welche Defizite oder Hindernisse sehen Sie beim impliziten Wissenstransfer?** - Wo könnte Ihrer Meinung nach implizites Wissen im Transferprozess verloren gehen? **Wie überwinden Sie Schwierig-keiten beim impliziten Wissenstransfer?**
c. Closing	Thank you very much for your time and the insights into your company's processes. *(Brief summary of the key points / issues within the specific representative company, seeking interviewees' confirmation for accuracy.)* We will now have further interviews with other companies from different industries to get a better understanding of the tacit	Vielen Dank für Ihre Zeit und die Einblicke in die Prozesse Ihres Unternehmens. *(Kurze Zusammenfassung der wichtigsten Punkte / Probleme in der jeweiligen Firma, um die Richtigkeit durch den Befragten bestätigt zu bekommen.)* Wir werden nun weitere Interviews mit Unternehmen aus anderen Branchen führen, um ein besseres Verständnis derer Prozesse zum

	knowledge transfer processes and compare those with other industries. Can we contact you again if we have follow-up questions? We aim to finish the thesis in June. If you are interested in the results, we can send those to you then. Do you have any further questions from your side?	impliziten Wissenstransfer zu erhalten und diese Informationen dann mit anderen Industrien zu vergleichen. Können wir Sie eventuell erneut kontaktieren, falls weitere Fragen aufkommen sollten? Wir werden die Masterarbeit voraussichtlich im Juni abschließen. Wenn Sie an den Ergebnissen interessiert sind, können wir diese dann gern an Sie senden. Gibt es noch weitere Fragen Ihrerseits?

4. Evaluation and guide for the interview report

- **Outline**: the RQ is posed based on the preceding literature review and quantitative data analysis; the definition of succeeding qualitative methodology (including qualitative research design, the data collection and sample, as well as reliability, validity, and ethical considerations); the presentation of the results and discussion of the findings; and ultimately, the limitations and future research directions as well as the conclusion
- **Format of the interview report**: see qualitative questionnaire guideline
- **Expected extent of documentation**: four to six interviews to be provided in the appendix**Fehler! Verweisquelle konnte nicht gefunden werden.** of the thesis at hand (see documentation of the semi-structured interviews)
- **Evaluation procedure**: two authors interpret observations and secondary data; interviews get summarized and documented; comparing similarities and differences of knowledge transfer processes across different knowledge-heavy industries; drawing cross-industry conclusions in the discussion of the findings
- **Validity and reliability**: pattern matching through cross-industry synthesis (internal); analytical generalizability (external); emphasis on data quality over quantity; flexible and iterative process of data collection and analysis; triangulation; non-random and purposeful selection of representative interview partners for the sampling; considering rival explanations; finally, this protocol form adds to the reliability and guides the researchers when collecting data

Table 17: Qualitative Questionnaire Guideline
*As this is a semi-structured interview, the sub questions are only asked if not all previously established labels are addressed by the interviewee's response to the core questions.

(Core and sub) questions*	**Interviewee's response (including indicative quotes)**
How is your company organized?	
- How do you define teams in your company? - How are your teams organized? - How stable is your team composition? - How are roles and responsibilities allocated in your teams? - How much freedom do team members have when making decisions? - How are you entitled to having an agile mindset within your company? - How flexible are the team members? - How quick can your company respond to the market?	
How would you describe your organizational learning?	
- How is organizational learning reflected in your company's values? - How do you encourage organizational learning? - How would you describe your failure culture? - How do you make sure that previously learned knowledge is reused in the long-term? - How do you record, and store acquired knowledge for future reference? - How is know-how centralized and formalized? - How often do employees rotate between teams? - How do you enable cross-functional communication (between units)?	
How does your company put gained knowledge into practice?	
- How is the understanding of knowledge in your company? - How do you encourage formal / informal knowledge exchange? - How do you make sure this knowledge is used in daily routines? - How do your colleagues perceive how your company puts gained knowledge into practice?	
What shortcomings or barriers do you see regarding tacit knowledge transfer?	
- Where do you think tacit knowledge might get lost in the transfer process?	
How do you overcome tacit knowledge transfer difficulties?	
Further relevant observations:	

Documentation of the Semi-Structured Interviews

Table 18: Interview A – IT Service Provider (η =106%)

(Core and sub) questions	Interviewee's response (including indicative quotes)
How is your company organized? • How do you define teams in your company? • How are your teams organized? • How stable is your team composition? • How are roles and responsibilities allocated in your teams? • How much freedom do team members have when making decisions? • How are you entitled to having an agile mindset within your company? • How flexible are the team members? • How quick can your company respond to the market?	The hierarchies are rather flat; the employees in their respective teams are distributed across three different locations in Germany; each subsidiary is additionally divided into three departments; one of the interviewed managers is responsible for the service unit, which is again divided into three sub teams (consisting of the 1st level customer service, technicians for remedying technical faults and IT specialists); all employees have a lot of freedom and flexibility, and therefore, also much responsibility; nobody is prescribed his / her daily work routine, whereby the goal is roughly defined over a period of about four weeks; however, the employees can structure their activities themselves, which further depends a lot on the customers' demand, since those are accompanied throughout the consultation, conception and implementation of their IT services / products; the employees themselves get the support they need from other teams and even departments; if there is a major technical disruption, cross-divisional teams are brought together at short notice; the organization is characterized by the fact that many employees start as trainees and get qualified within the firm itself; it, thus, consist of many young employees *"Every single employee actually has a lot of freedom. This then also leads to them having a corresponding responsibility."*
How would you describe your organizational learning? • How is organizational learning reflected in your company's values? • How do you encourage organizational learning? • How would you describe your failure culture? • How do you make sure that previously learned knowledge is reused in the long-term? • How do you record, and store acquired knowledge for future reference?	The corporate-wide knowledge management is controlled by the HR department; for improved organizational learning, knowledge is attempted to get centralized, and thus made accessible in the long-term by making it explicit (e.g. through a knowledge database and through a centralized knowledge academy); there is a HR employee, who is mainly responsible for the training of (new) employees; this person puts together new courses and prepares packages in the academy in the way the company needs those; the high training rate makes learning an essential part from the beginning on, and hence also for the culture of the firm; the academy has been a door opener to 'normalize' knowledge transfer for employees and to lower their inhibition threshold to share own, or request others' knowledge; this door opener hence stimulates the organizational learning within the company; the knowledge exchange has always been taking place more on demand and employees have therefore met in meeting rooms to discuss; it is stated to be difficult to make

• How is know-how centralized and formalized? • How often do employees rotate between teams? • How do you enable cross-functional communication (between units)?	knowledge explicit through the process of writing it down, but it is worthwhile and has changed the mindset of the company and also the attitude of employees towards sharing knowledge, so that it is now valued more; new employees are already giving positive feedback after six months about the flat hierarchies and that the transfer of knowledge is part of the culture; this is defined as the foundation to build a company upon; the company is described as always interested in learning and improving; an emphasis is placed on steadily expanding the company's knowledge net; even trainees are encouraged to share and present knowledge; they are happy to show their knowledge in presentations; here, they can freely choose their topic; 70-80 % of the speakers are internal employees; those are favored compared to external presenters, and the managers would not know how to stimulate knowledge transfer as much with external sources; the departments use an additional platform (for technology-specific know-how) besides the cross-company academy (where mainly long-term knowledge, e.g. leadership skills is centralized); the technology-specific knowledge is stated to be codifiable and thus can be integrated into these platforms *"In our academy, 70-80% are our own speakers. This is the key to normalize knowledge-sharing."* *"Employees worry less about sharing knowledge. [...] It is much more normal for us that knowledge transfer takes place. You have to cross this inhibition threshold first. The academy functions as a door opener and is now part of the mindset."* *"The employees automatically know whom to approach for which knowledge, this comes through the informal exchange."* *"In employee interviews after six months, you always hear: I can ask anyone at any time and if they don't know, they tell me who knows. You can go there at any time and everyone takes the time to explain. It is a huge advantage that we maintain an open mindset and an open culture in the company."*
How does your company put gained knowledge into practice? • How is the understanding of knowledge in your company?	Knowledge exchange is promoted a) top-down through centralization in the HR department (e.g., through the academy) and through the departments (e.g., through the knowledge database); and b) bottom-up through the open dialogue culture, the freedom of the employees, as well as the established mindset throughout the company and common understanding how important the sharing of

• How do you encourage formal / informal knowledge exchange? • How do you make sure this knowledge is used in daily routines? • How do your colleagues perceive how your company puts gained knowledge into practice?	information is; a focus is placed on making knowledge explicit with the help of formal knowledge exchange that is integrated into everyday life; ways of formal knowledge exchange are: 1. Academy: many employees are trained internally; there are many courses available; this training is centralized in the in-house academy on the 'Cisco Networking Academy' platform; up to 80% of the presenters are internal employees; twice a year each employee has a meeting to discuss his / her personal training plan; during cross-functional trainings they also get to know employees from other departments and locations; this way they get to know the challenges of one another; the initial goals of the training programmes are tracked in future employee feedback sessions; if appropriate, there is an internal knowledge transfer taking place 2-3 months after the training (which is coordinated by the HR department). 2. Knowledge database: (training-) documents, presentations and knowledge can be stored in this database, integrated in the so-called 'Omnitracker' platform, which all employees can access, but the manager has admitted that one cannot know whether this knowledge database is actually being used; the platform has been active for about two years; the respective departments maintain the content themselves, and the manager drives the platform's usage; the system offers modules that can be used and then stocked up with knowledge; the HR department does not interfere here because the technical content is stated to be 'too fast-paced' in the IT industry; the greatest difficulty in the implementation has been to convince the employees of the platforms' added value. 3. Mentoring program: this is available for trainees and lateral entrants; so far the knowledge transfer has been based more on the 1:1 exchange with the mentor; now more effort is put into writing down this knowledge and making it available at any given time; a technical trainee officer is responsible for writing down all knowledge packages and creating further courses; 2-3 times a year the mentors get together to compare their respectively covered topics. 4. Skill matrix: employees can look up which colleague has which skills and expertise; but this knowledge is mainly distributed informally; also, this matrix is mainly used by managers to design further training plans for the employees. 5. Meeting series: those include daily 'stand-ups', which thematically mainly cover daily operations; they are divided according to location, whereby each has a team

	leader who organizes himself and consults with the other team leaders to possibly adjust topics. 6. Exchange between locations: Before Covid-19, there has been a lot of effort put in the organization of exchange events; the rotation between the locations has been supposed to get increased for a stronger team spirit and feeling of belonging; additionally, the whole company has been brought together 1-2 times a year so that employees could get to know each other personally across the different locations; the interviewed managers have confirmed that this also partially works in the home office, but the exchange is not as profound through virtual formats. *"Technical knowledge is too fast-paced in the IT industry; that is then driven by the specialist department. Permanently sustainable knowledge, on the other hand, does not get outdated so quickly and its storage is, thus, anchored in the HR department."*
What shortcomings or barriers do you see regarding tacit knowledge transfer? • Where do you think tacit knowledge might get lost in the transfer process?	1. Codifying tacit knowledge: the greatest obstacle is to document knowledge into one unified written form, in order to make it available to all employees 2. Time delay between knowledge acquisition and exploitation: knowledge is often not available when it is needed 3. Employees' usage of knowledge databases: the codified knowledge, and the respective platforms where it is saved, must also be used by employees; even as a manager one cannot know whether those are actually exploited; the added value has to be clearly recognized and the learning culture must be set accordingly; the greatest effort, according to one of the interviewed managers, has been to convey to the employees that this platform now exists and that it can also be used 4. Information overload: employees must be able to easily acquire and learn knowledge; just because a lot of knowledge is offered this does not automatically work; there is always the risk of 'knowing too much' and, thus, losing the overview 5. Structuring the database: knowledge must be structured and well processed; someone must always be responsible for this structuring process, whereas not everyone is capable of doing this well; the more people (having their individual logic), the more difficult it gets 6. Diminishing informal knowledge exchange due to Covid-19: the pandemic has caused the informal knowledge exchange between the employees to diminish significantly; the HR manager has claimed that there is no explicit solution to this issue

	"The greatest barrier has been to get into the employees' minds that this knowledge platform exists and that it can be used. Since the beginning of this year, the utilization has improved because the employees realized that an added value can be extracted from the database. We are also still working on its optimization, e.g. in shortcuts and search functions." *"It is always most troublesome to put knowledge in written form and structure it accordingly."* *"Knowledge is not always directly available where it is needed."* *"You have to be able to absorb the amount of knowledge. If you have an infinite amount of knowledge in a database, that doesn't mean that [...] the learning works automatically. Somebody still has to structure and work on it. Not everyone is capable of doing that either."*
How do you overcome tacit knowledge transfer difficulties?	A team spirit, the feeling of belonging, and an organizational learning culture are the basis for good knowledge transfer; with formal exchange processes (e.g. via the academy or the knowledge database) this culture is promoted and everyone is encouraged to share knowledge; this is driven top-down as well as bottom-up; all knowledge must be documented (written down or recorded) in order to make it accessible at any time; knowledge transfer is also addressed during staff inductions, feedback sessions and in training plans; to enable a good structure, building blocks, linkages and networks are used in the platforms; the trainee officer takes care of the training and skill development of employees, as well as the creation of new courses; rotations between the locations and cross-location events are intended to strengthen the team spirit; some events are currently taking place online (e.g. mentors' get-togethers) *"The know-how is bound to the employee. If he ever leaves, it would be gone. There is no way of getting around writing knowledge down or preparing packages in any form."* *"During the induction of new employees, they are confronted with the knowledge database. It is hence easier for them to use it than for long-established employees."* *"We have the advantage that the employees are already working with the databases. In other industries, knowledge is still slumbering in people's heads and if they do not release it, there is no progress."*

Further relevant observations: This interview has been held with two representative managers of the firm. The initially contacted interviewee, being the Service Operations manager, has requested a colleague from the HR department to join as well. In general, the former has appeared to be very confident giving answers, although the HR manager has only joined the interview later. Right at the beginning, the participant has pointed out that the corporate-wide knowledge management is controlled by the HR department. Regarding the second core question, and particularly the sub question concerning the centralization of knowledge, the manager has again underlined that the invited colleague would have been responsible for answering such questions. Nevertheless, the questions have been responded to as best as possible, based on the existing knowledge, and the first interviewee has not given the impression that those answers have been incomplete. With the HR manager joining the interview, however, a few things have been added, which indicates that the knowledge transfer between the managers seems to work well but is based much on the fact that each individual knows where what knowledge can be gained and whom to refer to best for specific expertise. When addressing the topic of platforms, the HR manager has mostly talked about the cross-company academy but has then asked the Service Operations manager to further elaborate on how their knowledge database works within the own department. Consequently, both have built on the others' knowledge base and have complemented each other as a team. This is in line with the information they have given about the team dynamics within the company, as they have stated that everyone knows automatically which colleague to approach for what kind of specific know-how. In general, both interview partners have answered quickly, and the responses have been very much on point. With that, much information has been gained throughout this 50-minute interview, but a few more of the listed sub questions have had to be asked by the researchers to force the respondents to dig deeper. This might have gotten avoided to some extent, if the interviewees would have been provided with some more time to think before they respond or continue to respond. Therefore, sometimes, the managers got interrupted by (subjective) follow-up questions.

Table 19: Interview B – Insurance (η = 101%)

(Core and sub) questions	Interviewee's response (including indicative quotes)
How is your company organized? • How do you define teams in your company? • How are your teams organized? • How stable is your team composition? • How are roles and responsibilities allocated in your teams? • How much freedom do team members have when making decisions? • How are you entitled to having an agile mindset within your company? • How flexible are the team members?	There are teams of different size; larger teams are called 'groups'; the freedom of choice, flexibility and employees' responsibilities vary and depend on the leadership style of the respective manager; some teams can act very autonomously; the composition of the teams and the designation of the departments often change; operating in the insurance sector, the company is traditionally structured more hierarchical; appointments with the respective manager can be requested in order to get their opinion / go; an agile way of thinking is not yet fully anchored; there are only attempted approaches through e.g. open workspaces, bookable meeting rooms and mobile working; there are no more fixed workplaces or -schedules to enable project teams to exchange ideas; through remote work (Covid-19), the employees inevitably become more trusted and flexible; however, it has been stated that this should get even more encouraged

• How quick can your company respond to the market?	*"I also try to ensure a certain degree of flexibility."*
How would you describe your organizational learning? • How is organizational learning reflected in your company's values? • How do you encourage organizational learning? • How would you describe your failure culture? • How do you make sure that previously learned knowledge is reused in the long-term? • How do you record, and store acquired knowledge for future reference? • How is know-how centralized and formalized? • How often do employees rotate between teams? • How do you enable cross-functional communication (between units)?	Organizational learning receives little systematic attention; it is driven from the employees rather than promoted from the management; corporate values are hanging on the walls, but are not always implemented; there are a few formal regular meetings, but mainly at the upper management level; meeting series with other departments allow employees to present their projects in order to disseminate the knowledge of who owns what know-how; one has to establish his / her position in the company, so that other employees know who owns which tacit knowledge and expertise; once a week there is a knowledge exchange on current topics, whereby nobody specifically asks about the tacit knowledge (how is this to be done); additionally, twice a week there are so-called 'deep dives' taking place to get an overview of who is doing what; sometimes employees do not even notice when new projects are initiated; sometimes they do not involve in discussions around topics of their expertise at all; agreements with other employees take place through direct, mostly informal channels, whereby the manager is usually informed about the knowledge exchange; informal communication is initiated by the employees themselves; currently the main work- and knowledge platform is 'Microsoft Teams'; an idea of the interviewee would be to centralize know-how in 'Microsoft Teams' (or the 'Confluence' platform), so that it can be stored in the long-term and is available when it is needed; but most of the knowledge is difficult to be made explicit; due to Covid-19 and mobile working, a stronger silo thinking has developed *"Knowledge has to be built up over the years. We sometimes suffer from 'frictional losses' because employees don't know exactly what others are working on."*
How does your company put gained knowledge into practice? • How is the understanding of knowledge in your company? • How do you encourage formal / informal knowledge exchange?	Implementing the knowledge gained (its exploitation) is stated to be most difficult; employees try to position themselves with their know-how in order to be asked for advice; employees then approach each other informally and provide knowledge to those colleagues for which they perceive the information to be relevant; however, there are almost no formal routines; employees are trying to proactively pass knowledge on to colleagues who might need it; this is associated with a lot of effort (active knowledge transfer is a necessity); setting up a knowledge management system would be a completely new project, whereas there is no guarantee that this would be used

• How do you make sure this knowledge is used in daily routines? • How do your colleagues perceive how your company puts gained knowledge into practice?	ultimately; in everyday business new knowledge is mostly disregarded, only when it becomes relevant is it actively perceived or searched for (time delay); there are attempts to make knowledge explicit (in 'Microsoft PowerPoint', 'Microsoft Teams', targeted chats, 'Confluence') where everyone can read it if they want to do so; yet, this cannot be controlled; one has to hope that employees actually look at it; this always results in 'frictional losses' as well; more value is placed on informal exchange as soon as a topic becomes relevant; little value is placed on proof, as the employees do not recognize the added value; the upper management just wants to see the results; seemingly, there is a need to become more pragmatic and less concrete *"Knowledge exploitation is always the most difficult part [in the knowledge transfer process]."*
What shortcomings or barriers do you see regarding tacit knowledge transfer? • Where do you think tacit knowledge might get lost in the transfer process?	1. Information overload: employees do not always want to receive new knowledge directly, due to a possible information overload; therefore, they disregard it in order to advance their own projects 2. Time delay between knowledge acquisition and exploitation: knowledge mostly becomes important with a time delay after the acquisition and can therefore get lost easily 3. Employees' frustration: employees get frustrated when they find out that external advice has been obtained, even though the knowledge has been available internally all along 4. Missing control over knowledge exploitation: one has no influence on how colleagues deal with the knowledge that has been passed on; mainly surprising knowledge is absorbed and retained, less surprising knowledge is more likely to be forgotten; when it comes to positive news, the information is spread rapidly throughout the whole company and no one can control this informal distribution; this is why such news are often kept secret until they are getting published officially; no one can force employees to perceive knowledge immediately 5. Knowledge complexity and contextuality: since knowledge sticks to people (tacitness), employees have to constantly prove their personal worth and how their tacit expertise can add value (multiplier effect), so that their knowledge is heard; they have to proactively pass on knowledge; knowledge transfer is therefore very dependent on the abilities of the individual; the individual's freedom to decide how knowledge is passed on, on the one hand, makes it easier because, better networks can be formed, but on the other hand, also more difficult because knowledge

	is made less explicit; with rising complexity of the respective tasks, knowledge transfer becomes even more difficult; topics have become more overarching between different functions due to this complexity; therefore, there are more agreements than in the past (where more official forms have been used); today, and especially in marketing, one has to work more agile and together in networks to exploit knowledge within an organization *"The times when I receive information and when it is needed, never coincide."* *"People have to realize that you offer additional value [with your know-how], and you have to prove that again and again."* *"I have no control over how the information I provide others with is used. Sometimes it can be that I have something great, but it then gets silted up."*
How do you overcome tacit knowledge transfer difficulties?	Most important is (informal) communication; a high degree of flexibility makes communication easier; the difficulties can only be overcome with a combination of top-down activities that simplify communication (such as enabling mobile working, flexible working hours and open workspaces) with bottom-up activities (actively looking for knowledge exchange with colleagues); this has already started pre-Covid-19, which means that employees now have the necessary resources available; on the other hand, it is now more difficult to reach colleagues because no one knows whether they are currently available; the costs and benefits have to be weighed against each other when it comes to making knowledge explicit; within the company the employees know a lot, but nobody knows everything; employees can support each other, but each individual is responsible for building his / her own network; it helps that the company is relatively small; if these networks are established; one quickly knows how to get which knowledge and where; when close networks are formed, employees are more willing to put more effort in the needed research and pass on the gained knowledge; knowledge is like a currency or an information deal, it puts pressure on others to share something in exchange as well (give and take) *"It helps to have networks. In a big corporation, they feel a bit like a life guarantee. It's difficult to become a real part of big companies because the network is already established. You have to figure out how you define yourself in this setting. But when you have done that, you*

	know how to reach out to whom for which expertise. In return, others know what to expect from you." *"Everyone has to find their own network."*
Further relevant observations: The interviewed marketing manager has spoken little about the team under the own command, and has kept all answers rather general, applying them to the overall company. Hence, a lot of cross-company comparisons between the different departments have been made, in order to provide the researchers with the best possible answers. This has possibly been due to the fact that the manager has been employed by the firm for many years and has worked in different departments. The answers have always been backed up with examples for an increased understanding. Consequently, one can assume that the interviewee has a good overview of the processes throughout the company. Whenever it has been spoken about higher-level managers, the participant has avoided looking directly into the camera and has instead focused on a point above it. During the entire interview, however, the manager has made a calm, relaxed impression and all answers have seemed extremely personal, honest and open ("it is just us" / "we are among us"). However, as soon as the recording has been stopped, the body posture has relaxed a little more and the manager has admitted that the RQ would be a difficult subject. Furthermore, it has been claimed that it would have been easier if the questionnaire has been sent beforehand to prepare. However, since this has been a semi-structured interview and the respondent should answer as unbiased as possible, this has not been an option. In fact, the manager has answered very well, has spoken freely and has included many details, without the researchers having to ask many follow-up questions (out of the sub question set). As the interviewee has been a former client of the active researcher, the latter's responses have partially been advisory and the given summaries of the participant's key statements have been somewhat biased. This is reasoned in the researcher's previously gained background knowledge about the company.	

Table 20: Interview C – Logistics (η = 98%)

(Core and sub) Questions	Interviewee's response (including indicative quotes)
How is your company organized? • How do you define teams in your company? • How are your teams organized? • How stable is your team composition? • How are roles and responsibilities allocated in your teams? • How much freedom do team members have when making decisions? • How are you entitled to having an agile mindset within your company?	Next to the headquarter, corporate locations are spread all over Germany, in order to be close to the customers, and to provide them with personal service; e.g., out of historical reasons there are three locations for customer service, but they all execute the same tasks; even departments without direct customer contact (e.g. marketing) are distributed across the country; employees have the opportunity to visit other locations; the teams are rather small; the company now has a few hundred employees spread across Germany; this small number is reasoned in the fact that service partners are excluded from this count; the employees have their own responsibilities and form so-called 'one man teams'; they have a lot of flexibility and freedom of choice; feedback does not have to be obtained for everything; this saves time during processes; however, the owned flexibility depends on the manager and the department; since it is an international company, some tasks are also highly process-dependent

• How flexible are the team members? • How quick can your company respond to the market?	and therefore associated with less freedom; cross-site and cross-team boards are then centralized and deal with cross-functional issues together to drive continuous improvement, using various standardized tools *"[The firm's distribution in different locations] has grown historically, but it has the charming side effect that, on the one hand, we can centralize topics, but on the other hand, we also stay in contact and up-to-date concerning local issues."* *"Employees have a lot of flexibility and responsibility. The manager says: I have my experts for expert topics in the team for a reason."* *"The short decision-making paths and the great freedom of choice suits us because we don't have to talk to each other for three hours for every tiny issue."*
How would you describe your organizational learning? • How is organizational learning reflected in your company's values? • How do you encourage organizational learning? • How would you describe your failure culture? • How do you make sure that previously learned knowledge is reused in the long-term? • How do you record, and store acquired knowledge for future reference? • How is know-how centralized and formalized? • How often do employees rotate between teams? • How do you enable cross-functional communication (between units)?	The perception and importance of organizational learning are different depending on the location, department and function; since the company is international, some highly tacit, process-dependent tasks only have to be learned once and are then carried out in a standardized way, in order to maintain the quality; this then allows a rather little scope for development; however, in other departments, organizational learning is more important; there are two basic educational programs consisting of several modules available for employees of every department: 1) A centralized, mandatory program that must be attended by every employee (part of the onboarding); it is the same for all employees, in order to learn the basic knowledge of the company; part of it is the communication of the company's values, which should influence the actions of all employees 2) A (voluntary) program offered to everyone who wants to become a manager; here the focus is placed more on the results to be achieved through leadership skills Both programs employ internal lecturers, who are not bought in externally; anyone can give lectures, so the knowledge cannot get lost and the spirit during the events is great; the modules last about 2-3 days and are usually on site; due to Covid-19, they are now online; nevertheless, a personal interactive exchange through smaller breakout rooms is ensured to some extent by the video conferencing tool 'Zoom Communications'; it is important that employees are familiar with the tool kit and feel comfortable with also taking part in discussions virtually; the programs are centrally controlled by the HR department; employees are registered for modules individually by their managers, based on their respective

	training plans and interests; in addition, every employee has access to an account providing short podcasts about topics that are of interest for the individual, but not necessarily important for daily work routines; this is organized by the HR department and has been used more actively during the home office situation; *"There must be a few standardized processes, otherwise we cannot deliver consistent quality."* *"The knowledge is disseminated by internal employees. We don't fly in external consultants. Anyone of our employees who wants to inspire others, can take part."* *"As a result, the knowledge is not lost. Employees teach employees and that creates a great spirit."* *"Our culture, including our values, is relatively well formalized. You can wake everyone up at 4:00 a.m. and they can enumerate our values. Those values are really applied [in the daily work life], as well as exemplified already at the management level."*
How does your company put gained knowledge into practice? • How is the understanding of knowledge in your company? • How do you encourage formal / informal knowledge exchange? • How do you make sure this knowledge is used in daily routines? • How do your colleagues perceive how your company puts gained knowledge into practice?	Within the company, knowledge is not understood as something that improves daily work, but rather as something to provide people with new insights; the goal is that knowledge is made available proactively across hierarchies and function borders; knowledge from the initial educational program is not tested later; employees get handouts and learn where to find which knowledge; the informal exchange is encouraged; employees have the opportunity to look into other departments; there are functional meetings in different rhythms; cross-departmental knowledge transfer takes place if managers actively invite other departments to the meeting, so people can 'think outside the box'; how departments make use of this possibility depends on the commitment of the respective manager; then there are company-wide events, including the nomination for employee awards; company-wide there are also so-called 'town halls'; internal communications is a separate department that takes care of proactively informing all employees about current (strategy focused) topics; most of the information is distributed by email, whereas currently a lot of the content is concerned with regulations regarding Covid-19; the performance dialogue is an important tool for fast cross-hierarchical communication, in which the team discusses its current performance; the regularity of these dialogues depends on the department and the urgency of the topic; the manager then speaks with his / her manager, etc., so that knowledge is distributed from 'bottom to top' and

	back again; the topics of the boards are standardized, so that it is ensured that everyone is talking about the same topics; this process is described as very helpful, important and fast; however, it is not tested whether every employee still remembers the knowledge learned during the onboarding after e.g., two years; yet, the manager has assured that every employee in the head office can reflect the company values 'in his / her sleep', which are seen as important for every of the employee's activities; in the other locations every second one should be able to still do so *"It is part of the tool kit for managers that employees are given the opportunity to look into other departments. Often, the opportunity is then used to invite colleagues from another department to functional meetings in order to talk about the respective other department."* *"If I say that I have an important topic, which cannot be resolved at my level or the level above, it may be cascaded up to the CEO, but then from the CEO back down to the teams. This represents a good, important and fast communication medium."* *"Every employee can contribute to the dialogue."* *"It is important that we proactively ensure the flow of information on a daily basis."* *"Short daily meetings are there to motivate a little as well."*
What shortcomings or barriers do you see regarding tacit knowledge transfer? • Where do you think tacit knowledge might get lost in the transfer process?	1. Knowledge complexity and contextuality: the greatest challenge is the heterogeneity among the target groups that are to be provided with knowledge; their ability to absorb knowledge depends on various factors (e.g., age, level of education, qualification, etc.) 2. Employees' frustration: digitalization is an opportunity but also a challenge for many employees; those who have not grown up with it, must also be made familiar with it, this cannot be targeted, as this would quickly lead to discrimination 3. Employee turnover: it can be difficult for new employees that do not own the know-how yet to understand essential processes in and values of the company 4. Codifying tacit knowledge: the problem with uncoded knowledge is that it cannot be defined; it is important that employees ask the right questions when knowledge gaps appear, and that they have the space to communicate those to the manager

	5. Employees' usage of knowledge databases: it is not enough to make the knowledge platforms available; managers must also encourage employees to use them actively, and to take part in meetings; they need to be willing, familiar, and comfortable with it *"On the one hand, we have academics in abstract central functions that do complex forecast calculations, and, on the other hand, there are employees with lower qualifications that are responsible for a clearly defined area. We have young employees in their 20s, who are currently in training, and older employees, who cannot easily find their way into the digital setting."* *"I see the challenge, in the course of digitalization, that some employees did not grow up with digital understanding. And that those should not suffer any loss of information just because of that."* *"Most of the time, the reason for knowledge being tacit is that it is difficult to code. It takes the individual employee, who realizes that there is a knowledge gap, and then asks the right question."*
How do you overcome tacit knowledge transfer difficulties?	The challenges that arise due to the heterogeneity of the employees cannot be solved structurally; here it depends on the management and the employees being in close contact, and that the managers create space for questions; especially, when it comes to onboarding, there is a close connection to the manager, who allows time for new employees to ask questions; in the first two weeks, half an hour per day is provided to clarify open questions; also, everyone switching internally from one function to another, can ask questions and always gets a detailed explanation if needed; a strong corporate culture that strengthens the team cohesion, as well as teams of a 'manageable' size and regular check-ins, help here; these check-ins are often 'coffee call-like'; in addition to the centrally provided formats (e.g., onboarding training, performance dialogues), departments individually decide for themselves which exchange formats work best for them (sales e.g., has its own knowledge platform); this works because the expert knowledge is clearly defined depending on the department; often calls within the departments become so large anyways, that even more participants from other departments are included; this way a greater exchange can take place; there also exists an internal social media platform for knowledge transfer; the close links between the locations via the performance dialogues help that it does not matter where employees are located physically; of course, it is also of advantage for

	employees to travel and go to other locations to observe on site; it does not help to just copy processes and implement them in exactly the same way; one also has to see if they can be contextualized; the manager has said that the company has been the best in terms of corporate culture, even before Covid-19; the interviewee doesn't know any other company that is so culture-inducing; the firm is relatively formalized with corporate values, buzzwords, focus strategies, role allocation, and individual performance goals; all of this is in the DNA of every employee; already before Covid-19, everything has been well documented and nicely organized; now the managers have an even more active role; however, the interviewed manager has stated to be the wrong contact person when it comes to strengthening the culture of knowledge transfer, but there is definitely an initiative controlled by the HR department *"It is clearly defined who owns, and who needs what information."* *"We depend on our executives to have a very close relationship with their employees. They observe to detect who still has wrinkles on their foreheads and has not yet really understood a topic, and who nods in agreement. In a 1:1 conversation, they can then check-in again, whether there are any open questions. We trust every manager to do that."* *"Avoiding [… all losses during knowledge transfer] completely [...] is unrealistic."* *"Check-in calls are there to clarify open questions, address important issues and ask how others are doing something."* *"Here it is important that managers actively encourage employees. To do this, they have to provide the exchange platforms, and actively invite all employees to participate, in order to create space for open questions."* *"The knowledge transfer that you need to work in the respective area was already well documented and transparent before Corona. Now [...] the firm has again placed a stronger focus on it and has given managers an even more active role."*
Further relevant observations: The fact that the video camera of the interviewee's work laptop has not been working, has significantly limited possible observation in body language and posture. Therefore, no interpretation about the participant's perceived comfort can be given. Further, it has been difficult to assess whether the participant still	

wants to add something to the answers and is still thinking, or whether the interview partner has been done responding to a particular question. However, this has been tried to get outweighed by the researchers allowing short dialogue breaks. After all, the interviewee has not seemed to have gotten interrupted, or brought into an uncomfortable situation at any point of the semi-structured interview. Overall, the manager has been friendly, happy to contribute to this research, and interested in the thesis' background. Responses have been given in a very open and detailed way. Not many sub questions have had to be asked. Throughout the interview, many examples have been given. The participant has made a significant use of rhetorical mediums, in forms of metaphors and storytelling. In general, the manager has spoken very positively and confidently about the firm, seemingly being proud to work for it. This has been exemplified e.g., by the company's values being described to be in every employee's DNA and the culture to be really induced. Moreover, the manager has seemed capable of providing correct information. Only when being asked about the culture of knowledge transfer particularly, the participant referred to the HR department to be a better contact person to answer in-depth. After all answers have been given, needed in order to cover each and every evolved theme, the interviewee has challenged the researchers to think of follow-up questions. This has been reasoned in the manager's pure interest in the topic, and in continuously improving the own knowledge base through this dialogue. As this interview has been aimed to be of an unbiased nature, however, it has been agreed to stick to the core questions and only ask follow-up questions through future email contact, if such arise during the analysis. At this point, the researchers perceive the evolved patterns throughout the interview to be of sufficient depth in order to understand the tacit knowledge transfer processes within this company, as a representative of the logistics industry.

Table 21: Interview D – Energy Provider (η =97%)

(Core and sub) questions	**Interviewee's response (including indicative quotes)**
How is your company organized? • How do you define teams in your company? • How are your teams organized? • How stable is your team composition? • How are roles and responsibilities allocated in your teams? • How much freedom do team members have when making decisions? • How are you entitled to having an agile mindset within your company? • How flexible are the team members? • How quick can your company respond to the market?	The company is divided into different business fields, which are outsourced into their own subsidiaries; nevertheless, all colleagues understand themselves as employees of the holding, regardless of their location; therefore there are cross-company activities and knowledge, but also technical know-how limited to a respective business field and department; consequently, the activities of the individual departments and employees within are clearly defined; departments are divided into smaller teams depending on the location; besides daily business activities, there are agile, overarching projects; depending on the department, the teams' responsibility and freedom of choice varies in daily operations; some teams have to adhere more to defined processes than others; not every employee has to know everything; instead, guided processes are supposed to relieve them to some extent; the work in the customer service department is divided into first and second level, so that not everyone has to know all processes; this is due to the complexity within the company; thus, employees in the second level have more in-depth skills and specific expertise

	"We try to relieve the employees with the guided processes, so that one does not have to know the entire process. [...] It has gotten so complex that this is necessary. The employee cannot be expected to have all the know-how."
How would you describe your organizational learning? • How is organizational learning reflected in your company's values? • How do you encourage organizational learning? • How would you describe your failure culture? • How do you make sure that previously learned knowledge is reused in the long-term? • How do you record, and store acquired knowledge for future reference? • How is know-how centralized and formalized? • How often do employees rotate between teams? • How do you enable cross-functional communication (between units)?	The company's knowledge management is very fast-paced; the tools and platforms used are exchanged as soon as they do no longer work (e.g., it has just been switched to the knowledge management solution 'Sabio'); every employee should be able to access the same knowledge; for this it is crucial that the knowledge is made available in a target-oriented manner; many expert topics are very specific, which results in classical silos; their existence is common in the energy industry; technical know-how is controlled by the specialist departments, but cross-company knowledge is controlled from the holding department for internal corporate communication; the latter uses an intranet and a newsletter to spread information; therefore, the employees are provided with a mix of possibilities to either actively access or passively receive knowledge; specialist departments can also communicate knowledge they perceive as relevant to corporate communications, in order for it to be included in the intranet; employees can also ask questions and exchange information in virtual groups on the intranet; those function as a communication channel between departments; the intranet is described as state of the art and very structured; meetings between departments, hierarchies and locations are mainly hold through telephone conferences (e.g., jour fixe, dailies, town halls); there are formal and informal 'Microsoft Teams' channels where the offered chat function is used; the informal 'coffee conversations' in the kitchen have been shifted here due to the home office situation during Covid-19; team leaders exchange ideas and have their own informal channels with other teams leaders in their respective locations; the used formats and channels must also suit their individual leadership styles; the silo thinking between subsidiaries and departments again underlines that not everyone needs to know everything; the overarching HR department still plays a role in maintaining and further developing knowledge, as it is concerned with the overall development of the personnel; the training system is clearly structured and specified; training plans for employees are developed with the help of side-by-side coaching; employees have a clear number of hours available for training (8 -10h / quarter); there are internal lecturers / consultants in the headquarters (e.g., for quality management), which are certified trainers and receive methodically prepared documents on specific

	topics; the lecturers then hold training sessions in the various locations as internal trainers; those trained employees in the respective locations can then continue to train other colleagues there independently; however, for some topics the firm is roaming the market for external trainers with specific know-how; the training schedules are coordinated according to the overall seasonal workload (e.g., more training takes place in summer, when the workload is lower); also at the management level, training priorities are regularly set in the annual meetings; here, online training courses are also provided as standards *"The technical know-how is controlled by the specialist departments. Cross-company knowledge is then controlled by the department for internal corporate communication."* *"We noticed that the old knowledge management platform no longer works because the knowledge cannot be obtained in this form anymore. Also, the keyword search has been relatively poor."* *"We are already making sure that we communicate across departments, reduce the silo mindset, and think end-to-end."* *"Silo thinking can be good when it comes to knowledge that does not particularly help me in my daily work."*
How does your company put gained knowledge into practice? • How is the understanding of knowledge in your company? • How do you encourage formal / informal knowledge exchange? • How do you make sure this knowledge is used in daily routines? • How do your colleagues perceive how your company puts gained knowledge into practice?	Technical knowledge is mainly stored in the knowledge database and then accessed by employees; alternatively, employees make direct use of the guided processes; in order to make the knowledge understandable by everyone, there is an employee called 'the guardian of knowledge'; this person specifies the methodological guidelines for the knowledge reports; chief editors at the respective locations then provide further support to employees, and are available for questions about the reports; also, the other way around, customer service employees can report errors, which the chief editors then adjust; in customer service, employees are tested for certain knowledge at the end of the year; this is an usual procedure in call centers; to measure the quality of the offered service, good experiences have been made through such quizzes; how knowledge is used and exploited is also evaluated at the location level; here, a distinction is made between standard knowledge and news; recordings of conversations in the call center and a short testing of employees by managers help to ensure that knowledge has really been understood; team leaders sit in the same offices as the employees and are close by; they quickly notice whether knowledge is

	being applied; if errors occur, they are learned from and taken into account in the next knowledge report *"Through recordings of conversations you get a good feeling about the quality of the service, the employees' understanding, and where adjustments or additional information might be necessary."* *"One employee is, so to speak, 'the guardian of knowledge' and specifies the methodological guidelines for the knowledge reports. Then there are also chief editors at the respective locations."* *"The important part in acquiring knowledge is to make sure that it works easily. I need to be able to enter a keyword, and have an accurate hit probability."*
What shortcomings or barriers do you see regarding tacit knowledge transfer? • Where do you think tacit knowledge might get lost in the transfer process?	1. Missing control over knowledge exploitation: it is difficult to know whether employees have understood knowledge; reading and actually understanding, as well as exploiting it makes a difference; Knowledge chains possibly cause information to change throughout its transmission, so that it can get conveyed incorrectly 2. Knowledge complexity and contextuality: knowledge is so complex that not every employee can know everything 3. Information overload: the previous point can easily lead to an information overload 4. Structuring the database: if information is not filtered, everyone receives knowledge that might not be relevant to the individual; the person in charge for judging this relevance needs to be trusted a lot; the effort to initially fill and maintain a knowledge management system is high 5. Employees' usage of knowledge databases: switching of systems are difficult to convey to employees 6. Employees' frustration: it takes time for them to get used to new ones; change management plays a significant role during Covid-19 7. Codifying tacit knowledge: employees themselves cannot always put into words what knowledge they are lacking, if it is of high tacitness 8. Time delay between knowledge acquisition and exploitation: knowledge can get out-of-date 9. Employee turnover: this is a challenge because new employees always start with less knowledge 10. Technological issues: the fact that a lot of knowledge is stored in systems is a major obstacle when the technology is not available (e.g., server failure)

	11. Diminishing internal knowledge exchange due to Covid-19: although the energy provider sector is descried to be better off in Germany during the Covid-19 crisis than other industries, they also suffer from less informal exchange between the teams; via interactions on 'Microsoft Teams' critical dialogue and conflicts are less possible *"The transition phase from old to new structures is always difficult."* *"It is always difficult to know whether everyone has understood new knowledge. Having read something is the one thing, actually understanding knowledge and then really exploiting it is another."* *"As knowledge is conveyed from A to B to C, there is also the danger of the particular knowledge being changed in such a way that it is no longer understood as intended [...], and is conveyed incorrectly."* *"Employees like to say: 'I lack some knowledge.' When I then ask: 'Which knowledge?', they respond: 'I don't know, something is just missing.' You simply cannot own all the knowledge in the entire company."* *"With an information overload, one can no longer process knowledge at all."*
How do you overcome tacit knowledge transfer difficulties?	The knowledge management system and intranet provide the foundation for the company's knowledge transfer, but it ultimately depends on how the employees deal with the knowledge; therefore, the teams are provided with various tools (top-down), but they must then be used by the employees and team leaders (bottom-up); the team leaders then implement their own routines together with the team depending on their leadership style; since knowledge can expire, an expiration date in the system ensures that it is regularly checked and updated; because not everyone can know everything, knowledge is mainly stored in systems and made available through guided processes; with those, one can also pass on knowledge to new employees more quickly; knowledge is acquired by employees over time; if there is a server failure, short training sessions are prepared so that no time is wasted; to ensure that knowledge is properly understood and exploited, conversations in the call centers are overheard; when team leaders listen to their employees, they can quickly take countermeasures, and check the quality of the offered service; this helps to recognize early where there is a need for further training; not everyone has to know everything;

	it is important to relieve the employees from remembering knowledge by heart; for the implementation of new platforms, feedback from the customer service employees is gathered; now also the implementation of a cloud-based customer relationship management system is in progress for the customer service, whereby it is expected that the development goes faster than with the previous intranet, since a lot of knowledge has been acquired during the set-up of the previous cloud-based system *"The introduction of a new knowledge management system was absolutely worth it. The search results, the knowledge management, and the posting of new articles is now much easier."* *"The system provides the foundation but, ultimately, it depends on the person. Then it is important that the team leader is close to the employees. It's the key, if they are present, close to the employees, support them accordingly, sometimes check in on them, and also hold team meetings on a regular basis."* *"The structure is one side; we can provide the tools, but they are useless if the managers and employees in the locations do not work together, support each other accordingly, keep knowledge present, and also make sure that knowledge is understood and exploited."* *"Knowledge is acquired over time. Employees who have been with us for 6-7 years have the basic knowledge. New employees certainly need 12-18 months before they no longer have to look up processes."* *"Lately, I think, managers have become much more sensitive and pass on knowledge at an earlier stage now."*
Further relevant observations: The interviewed manager has appeared very confident and straight-forward in all given answers throughout the entire interview. This is likely to be reasoned in the fact that this participant has had the highest executive position out of all five interviewed managers. This indicates the interviewee's competence and experience in communicating with business partners, but probably also previous academic researchers. Having this higher-level management position in the company, a very good overview of the knowledge transfer processes within the whole organization could be given. As a department head of the customer service, however, the interviewee has indicated that there is no need for the service employees to e.g., understand procedures executed at the energy plants. Instead of having detailed insight in every department's operations, it has been emphasized to rather know whom to contact for which specific know-how. The former has been described to be of no relevance for the team below this manager in daily work tasks. The interviewee has stressed several times that it is important to not overload employees with information. When responding to the core questions, the manager has talked freely and looked straight into the camera. While representing the	

performed role in the firm clearly, the interviewee has seemed rather serious. This has been of advantage for the perceived competency in the given answers. Not many sub questions have been asked. After all, the customer service manager has claimed the research topic to be very interesting, because information gathering, its supply, and final processing is especially important across various industries during the current Covid-19 crisis.

Table 22: Interview E – Mobility (η = 91%)

Core and sub) questions	Interviewee's response (including indicative quotes)
How is your company organized? • How do you define teams in your company? • How are your teams organized? • How stable is your team composition? • How are roles and responsibilities allocated in your teams? • How much freedom do team members have when making decisions? • How are you entitled to having an agile mindset within your company? • How flexible are the team members? • How quick can your company respond to the market?	Locations are spread all over Germany; additional sales force positions are also present in other European countries, in order to be close to the customers there; executive departments (e.g., marketing, IT, HR) sit together in the headquarter; the team sizes vary depending on the department, but are rather small with approximately five employees being led by a team manager; the interviewed HR manager has not been able to say exactly where the employees have freedom in their decision making; however, there basically are classically defined processes through which the offered services are clearly defined; it also depends on the size of the customer e.g., how much the firm can respond to their needs; there is a separate department for talent development and organizational development, in which the interviewee works; this department takes care of knowledge management; it is set up with mostly very young, new colleagues; overall, the over 2000 national and international employees in the company are partially very young and new to the company, while others have been with the frim for a long time *"Is this okay? Should I go into more detail here?"* *"But again, there is no guarantee."*
How would you describe your organizational learning? • How is organizational learning reflected in your company's values? • How do you encourage organizational learning? • How would you describe your failure culture? • How do you make sure that previously learned knowledge is reused in the long-term?	The thirst for knowledge in the company is rather big; further training is offered by internal and external trainers in two main ways, whereby the attempt is made that everything is organized in one single learning management system, which is based on a talent management system by 'Cornerstone': 1. Internal training program: resulting from this, the internal knowledge transfer has been much more anchored in the company within the past two years; everyone who has something to share can teach others about their knowledge; during Covid-19 this program has become even more advanced; with this program, knowledge from certain departments, or employees with a certain expertise, is conveyed in workshops; the duration is between 00:30 and 3:00 hours, depending on the topic and format; all training events

• How do you record, and store acquired knowledge for future reference? • How is know-how centralized and formalized? • How often do employees rotate between teams? • How do you enable cross-functional communication (between units)?	are offered in the learning management system; employees can book appointments free of charge and therewith, build networks across other teams; the HR department also actively approaches employees if they think topics might be of interest to them; the aim is that the training platform remains part of internal conversations, so that internal knowledge exchange is guaranteed; the participation of the employees in the training is completely free of charge and approval processes by the management level; however, the attendance in a training is usually briefly discussed with the manager, so that the team knows that an employee will be gone for a while; short lunch lectures are also offered, so that those do not interfere with the working hours; further, own formats have emerged in the departments, through which knowledge is shared within the teams; the demand is recognized, since training courses are fully booked; at the moment, training courses are also there to motivate employees in the home office 2. Inhouse Academy: this consists of a mixture of internal and external trainers, who are invited to the academy; the trainings include e.g., talent development programs for the next career steps; coaching is offered with external trainers because it is argued that employees can trust those coaches more comfortably, and be sure that sharing their worries with them would not have negative effects on their career There are only a few mandatory trainings (e.g., about the offered products, occupational safety); the aim is to ensure a wide range of learning tools that all employees can use, so that they get what they need in their everyday work; to reach this goal, also other time-limited training courses are included in the learning management system, e.g. a boot camp for digitization and agile methods; this international course has shown a significantly high participation rate of 85-90%; throughout this course employees could collect batches and reach different levels; for online training, the firm is still working with other providers, e.g. now also with LinkedIn learning; additionally, lessons learned are very firmly anchored in the company; the learning offer so far has been very focused on the headquarter, but the increase in virtual training has enabled that field service and international employees can also be better integrated; 'Microsoft Teams' and 'OneDrive' are intensively used by the different departments for knowledge storage; however, the knowledge that gets stored here, is not centralized enough that someone from e.g., the HR department could access data from the product management; hence, due to

	different access regulations, every department has its own 'Microsoft SharePoint' to store know-how; those ensure that any colleague within the same department could access all documents, invoices, etc., in a possible worst case (e.g., the employee in charge being sick for a prolonged time); although the departments' specific know-how is stored separately, the HR department offers the opportunity to share this tacit knowledge cross-functionally; the local drive structure, in which employees only have has access to certain folders, has therewith shifted to the cloud; another additional function is that employees can create playlists in the learning management system in which documents (PDFs, links to videos, etc.) on a specific topic are listed; these playlists can be private or made public and, thus, be shared with the entire organization or the respective team; this way, information is centralized and can be accessed in one easily findable place; this tool is also used during the onboarding of new employees to make them familiar with internal processes *"We have set up training programs with which we can strengthen and further promote knowledge within the organization. We make sure that there is a stronger networking and that employees exchange ideas with one another, so that we can make the best possible use of knowledge. That is also our core challenge."* *"Knowledge is passed on well through the internal training program because it can be acquired free of charge and without any coercion."* *"Through the internal network, employees also get to know other employees who have core competencies in certain areas, and learn whom to address best."* *"[...] exciting formats have been created within the team, where, for example, presentations by team members on various topics or working methods are presented."* *"The thirst for knowledge in the company is rather big."* *"We have a wide range [of training programs] that all employees can use and through which everyone gets what they need in their everyday work."*
How does your company put gained knowledge into practice?	The focus is placed on promoting voluntary knowledge exchange between employees; it is a mix of actively reminding employees of the learning options and creating

• How is the understanding of knowledge in your company? • How do you encourage formal / informal knowledge exchange? • How do you make sure this knowledge is used in daily routines? • How do your colleagues perceive how your company puts gained knowledge into practice?	the opportunities for them to exchange knowledge; the participation in trainings is not reported, for both, working council reasons and to emphasize the voluntary nature of the training; nevertheless, the firm is currently trying to make it easier for employees to implement the knowledge gained; after attending a training, there is the possibility to continue exchanging ideas with other participants and the trainer in 'Microsoft Teams' groups, and to ask follow-up questions; evaluation questionnaires are sent out immediately after each training and then again after some time has passed; there are no follow-ups in the sense that employees are tested on what they have learned; there is a channel in 'Microsoft Teams' for cross-functional knowledge exchange, where employees can e.g., also promote their presentations; otherwise, attempts are made to remind the employees of trainings via the intranet; they are currently working on a newsletter to promote new learning offers *"We are currently working on the topic [how knowledge can then also be implemented]."* *"We often have employees coming back from external training courses and saying they had a great training session. They say that they would like to work like that but cannot implement the gained know-how in the company for certain reasons. It's a shame because we put so much money into external training and ultimately, the employees cannot implement it. That is why we are trying to ensure that the learning management system offers opportunities for the participants after the training to be able to exchange ideas via 'Microsoft Teams' in the training groups."* *"We want to constantly remind them of new learning offers."*
What shortcomings or barriers do you see regarding tacit knowledge transfer? • Where do you think tacit knowledge might get lost in the transfer process?	1. Missing control over knowledge exploitation: putting gained knowledge into practice is difficult 2. Employees' frustration: it is especially frustrating for employees when they cannot implement know-how they have acquired during external trainings; just because the present processes and available tools are limited; also, other employees that do not understand the new processes yet having to adapt to them, prevent employees from exploiting the gained knowledge; additionally, those external trainings are often very expensive 3. Knowledge complexity and contextuality: there is a large age range within the company, meaning many young and rather older employees work closely

	together; the challenge is to combine the best of both 'worlds' and to promote the knowledge exchange between them; the employees actually have to use the new formats, but they are already working with so many different platforms that they do not want to be introduced to any new ones; with all know-how now getting shifted into the cloud, everything gets saved and changed automatically; this is a bit irritating for the interviewed manager and described as 'not so great'; there is a risk that individual employees get tempted to just store the documents on the desktop to avoid those updates; but then the actual sense of working on it simultaneously gets lost 4. Structuring the database: also, it is difficult to find the best system because there are so many to choose from; after all, they can all do the same, it just has to fit the company 5. Employee turnover: above all, tacit background knowledge is lost through employee fluctuation, although it would be important for the company's overall progress *"One challenge is putting [knowledge] into practice. [...] It is super depressing for employees when [...] newly gained knowledge does not work as learned because the processes for it do not yet work or other employees, who do not yet understand it, would have to adapt also."* *"We have a large number of employees, who have been with the company for a long time, but also many new and young employees, who bring in a new spirit. One of the main challenges is to unite these two groups, to combine the good of the new and of the old, and to manage that the employees exchange ideas as best as possible."* *"It is a challenge to make the exploitation of knowledge as homogeneous as possible for the different groups."* *"Human knowledge and social skills are extremely important. We have few employees in the department that have been with the company for a long time. When it comes to organizational learning and progress, it is important to know whom I can address for this. This [tacit] background knowledge is difficult to pass on because it has grown over the years."*
How do you overcome tacit knowledge transfer difficulties?	During the onboarding, the aim is to ensure that the new employees come into direct contact with the others from the department, in order to promote the informal exchange of knowledge; there are e.g., short personal meetings with everyone from the team; sharing knowledge is therefore a

	significant part of the corporate culture, which is also supported by the cross-functional training programs or the sharing of the previously mentioned playlists; uploaded documents in the cloud have gotten accessible for more employees across different departments; there are exchange groups in 'Microsoft Teams', which are subject-specific (e.g., to stay in contact with trainers and participants of previous training courses); also, there is a buddy program, where every new employee gets allocated to a contact person accompanying them for the first six months; the onboarding concept and matching the right partner (interhuman and time-dependent) is centrally planned by the HR department; apart from official formats, the marketing department additionally tries to bring the employees of the whole company together at events (e.g., employee quizzes, digital concerts, random matches for digital coffee breaks, etc.); attempts are made to distribute knowledge through the internal training program; in particular, the goal is that everyone knows who to approach with questions and how processes work in other departments; it is aimed to include everything that has to do with training in one learning management platform so that employees who are already working with many platforms do not have to use even more; with 'Cornerstone' the departments now work more closely together (e.g., the project management department has carried out its own training courses before, but is now using the same system as HR to centralize trainings, and simplify the process of accessing those for employees) *"When there are new employees, we try to have a brief introductory meeting with everyone in the department because it's much more personal."* *"We try to ensure that our departments work together in a cross-functional manner, so that they think 'outside the box' and know what the individual processes are like in the company. This means that employees know who they can possibly bring on board from other departments, so that they can exploit their knowledge and keep the other department informed."* *"It is not good for the culture when a team changes a process, but does not take into account that it has an effect on another department as well, especially if they do not know about this change. That is why we try to be transparent and make the teams work openly and interface-oriented with one another."*

	"With everything being digitized, there are many new programs and systems. Particularly those employees that work a lot with systems, shake their heads when there is yet a new one. That's why we try to have all things that have to do with learning running on just one platform."

Further relevant observations: This interviewed manager has been much younger than all other participants. In fact, the HR manager has been working for the company for only two years, and has, therewith, been the second longest employed within the department. This has been a bit surprising for the researchers, but has been reasoned due to the fact that younger generations are more likely to change their jobs more often. In the beginning, the interviewee has appeared a bit nervous, touched the own face quite often, and laughed a lot. The interview has been much less formal and the manager even offered the informal 'you' ('du'), which is unusual in a German business setting. This has been reasoned in the fact that 'everyone here is still quite young'. As soon as the introduction has begun, the face of the manager has become more serious and it has been nodded a lot for confirmation. In general, all answers have included a lot of 'ehm' and 'yes …'. The interviewee has been looking down often, as if there has been a note block to help answering the questions. The first question has seemed to make the HR manager feel insecure because no details or guarantee on the correctness of the answers could be given. It has been referred to the sales department having that particular knowledge. However, from the second question on, the answers have gotten much more free and the manager has appeared much more comfortable and secure about the given data. Therefore, talking broadly about the company as a whole, as well as internal structures has been problematic for the HR manager, but as soon as the interviewee has been asked to talk about the tasks within the own department, all responses have been given very confidently. Here, many examples have been given for a better understanding and explanation of the value each program adds to the company. From there on, less sub questions have had to be asked, as the manager has been able to speak freely and in-depth about the different learning tools, as well as challenges that are faced concerning tacit knowledge transfer.