Continuous Information System Use from Routine Perspective

Case Idea Management Tools

Tuomo Eloranta
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Tuomo Eloranta

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Abstract

Digital technologies are gaining an increasingly pervasive role in all aspects of contemporary business. This extends to innovation too, as companies increasingly use information systems to enable novel forms of organizing development efforts. One concretization of this is the utilization of idea management tools (IMTs) - online platforms that allow sharing and discussion of new ideas for innovations regardless of time, space, or organizational boundaries. They represent one of the most popular types of information systems explicitly designed to facilitate innovation.

While the potential benefits of IMTs are manifold, the implementation of new information systems is seldom a straightforward process. Unless meaningful continuous use of the IMTs is successfully fostered, the expected business and cultural impacts are likely to remain unrealized.

Given this, the present study examines the use of idea management tools and its evolution through two case studies that I discuss in four essays and this summary part of my dissertation. The phenomenon is examined through theoretical lenses of organizational routines and continuous information system use. Focus is in particular on 1) what kind of use routine emerges around a newly introduced idea management tool, 2) how does the use develop over time, and 3) what kind of issues can emerge in the interfaces between incumbent organizational routines and use of the tool.

The results of the study suggest that innovating with idea management tools exhibits key distinctions compared to the traditional ideals of innovation efforts and is perceived disconnected from regular work and innovation related responsibilities. Further, while organizational actors are keen to try out idea management tools, continuous use at the individual level proves out to be somewhat problematic to foster. Unmanaged interdependencies between use routine and other organizational routines can create dynamics that hinder the legitimacy of the emergent use routine in various ways. Thus results of the study draw attention to how continuous information system use is dependent not only on fostering the formation of new routines but managing the various interfaces between the emergent routine and incumbent organizational routine clusters.

Keywords Information systems, continuous use, organizational routines, innovation

Abstract

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Given this, the present study examines the use of idea management tools and its evolution through two case studies that I discuss in four essays and this summary part of my dissertation. The phenomenon is examined through theoretical lenses of organizational routines and continuous information system use. Focus is in particular on 1) what kind of use routine emerges around a newly introduced idea management tool, 2) how does the use develop over time, and 3) what kind of issues can emerge in the interfaces between incumbent organizational routines and use of the tool.

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Tekijä
Tuomo Eloranta

Välitöskirjan nimi
Tietojärjestelmien jatkuvu käyttö rutiinin näkökulmasta - case ideajärjestelmät

Julkaisija
Perustieteiden korkeakoulu

Yksikkö
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Tiivistelmä
Digitaalisten teknologioiden läpikuikkava rooli osana kaikkea modernia liiketoimintaa kasvamistaan. Ilmiö päätee myös innovaatiotoimintaan, yritysten hyödyntäessä enenevissä määrin erilaisia tietojärjestelmiä kehittyvointansa uudenlaiseen organisointiin. Yhtenä tätän konkretisaationa voidaan nähdä ideajärjestelmien käyttöönotto. Ideajärjestelmät ovat digitaalisia alustojä, jotka mahdollistavat uusien ideoiden jakamisen läpi organisation ja niistä keskustelemisen, ajasta, paikasta ja organisaationrajoista riippumatta. Ne edustavat yhtä yleisimmistä spesiistä innovaatiotoiminnan sujuvuuttamiseen kehitettävistä tietojärjestelmätyypeistä.

Vaikka ideajärjestelmiin liittyvät paljon potentiaalisia hyötyjä, uuden tietojärjestelmän käyttöönotto on harvoin suoraviivainen prosessi. Josse tapahtumien mielekästä pitkän aikavälin käyttöä saada vaalittua onnistuneesti, odotetut liiketoiminnalliset ja kulttuurilliset vaikutukset voivat jäädä haaveiksi.


Avainsanat
- tietojärjestelmät, jatkuvu käyttö, organisaationrutiinit, innovointi


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URN
The journey that in many ways culminates in the bundle of paper you are now reading has been quite a ride. The ride was simultaneously full of fun and anguish, exciting and tiresome, as expected and full of surprises, communal and lonely and rational and senseless. I'm very happy I hopped on though, and feel lucky to be able to experience it all. Despite the temptation, I shall refrain from a deeper description. I'd rather give the spotlight to all the people that pushed me on.

First, I’d like to thank professor Eila Järvenpää, whose support throughout this journey as essential as anything could be. I still remember the day I basically just waltzed into your office and announced my desire to embark on a journey towards a Ph.D. You very politely - as always - queried me about my specific research idea and plan, regarding which I didn't have the faintest idea. Before that point, the reasons behind my desire had been mainly pragmatic, and those questions helped me understand that this is going to be serious business requiring serious thought and effort. This dynamic of you always asking the right questions at the right time continued throughout the process. When I felt stuck with what I perceived as impassable challenges, you were always able to discern them into small manageable chunks that one could tackle. No words can describe how grateful I am for all your support.

I’d like to also thank professor Esa Saarinen. After taking my time to complete this process, it became necessary to find a second academic patron saint within Aalto. When many would have hesitated, considered, and reconsidered you welcomed me with open arms without flinching at all. Your pragmatic tips and encouragement in the final steps of the journey were extremely valuable to me as well.

Prof. Tea Lempialä, I owe a great deal to your insight, guidance, and support and working and writing together has been a privilege. Without you, this journey would have never started, nor gained any noticeable momentum. You showed me the ropes of academic life: how to write papers, design or run research projects, prepare lectures, etc. Further, you opened my eyes to how one can and should find meaning from it and to have fun while doing it. For this, I am forever thankful.

Outi Vanharanta, without you as an academic partner in crime especially for the past few years, I would have probably gone mad. You continue to open my eyes to exciting new viewpoints and phenomena and provide support and laughter when needed. I feel lucky that you’ve had my back.
Hani Tarabichi, your energy, jokes, and companionship have fueled me amidst the sometimes gray mist of everyday grinding. Even more importantly, however, you make me think about the real impact of my work. Your passion for making a difference is something I humbly look up to and someday wish to emulate.

For the past couple of years, my focus has been increasingly on teaching. Being able to immerse me in it has not only provided extremely rewarding experiences but also helped me find myself as an academic. For this part of my journey, I have received much help from countless people. The person I’m most indebted to though is Stina Giesecke. You gave me a platform, freedom, and support to really pursue this side of academic life. I can never thank you enough for giving me the opportunity and placing your faith in me. While pursuing this avenue, I’ve had the pleasure of working with Maria Clavert, Meri Kuikka, Johannes Kaira, Simo Lahdenne, and Jorma Laaksonen. Thank you all for the support, for all the things I’ve learned from you, and for continuously inspiring me to dig deeper. I also want to thank all past and present course assistants of SCI-C1001/2 and especially Santeri, Leevi, Eljas, An, and Riikka. Working and learning together has been not only insightful but great fun as well.

The groundwork for the thesis was made at the already dissolved research group Innovation Management Institute (IMI). All the members of that community have a special place in my heart. While I’ve had the privilege of belonging to many exquisite work communities since, none of them have really match IMI. Jaana, Matti & JP, I will forever cherish the collaboration, inspiring conversations, and fun times we had both on and off-duty. Pekka & Jussi, you took me under your wings, gave me guidance and responsibility. Thank you.

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There is no such thing as free lunch. This also applies to research as well: somebody has to foot the bill. This research was conducted as a part of Future
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Of course, I would have never made it this far without the support of my family. Mom and dad, I want to thank you for always supporting me in whatever I’ve decided to do. Ville, Olli, and Minna thank you for being there and keeping me busy with things unrelated to work. Finally, thank you Stiina for standing on my side. I love you all.

Helsinki, 28 January 2021
Tuomo Eloranta
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<th>Definition</th>
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<tr>
<td>CRM</td>
<td>Customer Relationship Management software</td>
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<tr>
<td>ECT</td>
<td>Expectation-Confirmation Theory</td>
</tr>
<tr>
<td>ERP</td>
<td>Enterprise Resource Planning software</td>
</tr>
<tr>
<td>IMT</td>
<td>Idea Management Tool</td>
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<tr>
<td>IS</td>
<td>Information System</td>
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<tr>
<td>IT</td>
<td>Information Technology</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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<tr>
<td>TAM</td>
<td>Technology Acceptance Model</td>
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<tr>
<td>TRA</td>
<td>Theory of Reasoned Action</td>
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<tr>
<td>UTAUT</td>
<td>Unified Theory of Acceptance and Use of Technology</td>
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List of Essays

This doctoral dissertation consists of a summary and of the following essays


Author’s Contribution


The paper was initiated by Prof. Tea Lempiälä, who also had a leading role in interview data analysis. The author had the leading role in the theoretical framing of the paper and digital trace data analysis. Otherwise the paper was a joint effort by both of the authors with equal contribution.


The author had a leading role in the theoretical framing of the paper and digital trace data analysis. Other aspects of the paper were a joint effort by both of the authors with equal contribution.


The author had a leading role in the theoretical framing of the paper, digital trace data analysis, and writing. Other aspects of the paper were a joint effort by both of the authors with equal contribution.

Essay 4: Eloranta T. Driving Collaborative Virtual Idea Development With Hard Cash: Smart or Harmful?

Interview data for the paper was collected together with Dr. Jaana Näsänen and Dr. Outi Vanharanta. The author was the sole contributor to the initial idea, theoretical reasoning, data analysis, and writing for the paper.
1. Introduction

1.1 Motivation for the study

To prosper and grow, companies need to innovate (Tellis, Prabhu, & Chandy, 2009). However, innovation is a highly complex endeavor as innovation processes tend to be characterized by periods of high momentum, championing and success as well as times of no-progress mixed with surprises, extensive and minute failures, power struggles and social conflicts, resistance, and resentment (Barrett, Oborn, Orlikowski, & Yates, 2012; Hayes & Walsham, 2001; Van de Ven, Polley, Garud, & Venkataraman, 1999).

Current societal trends are not making innovating any easier either. Digitalization and the rise of social media are transforming the way people approach work, as well as how organizations organize (Aral, Dellarocas, & Godes, 2013). Working and innovating are becoming increasingly organized around distributed teams of highly heterogeneous actors that entails new managerial challenges and complexity in development activities (Salas, Cooke, & Rosen, 2008; Yoo, Boland, Lyytinen, & Majchrzak, 2012). In particular, increased distributed, cross-functional work entails increased difficulty in building trust and shared understanding (Zolin, Hinds, Fruchter, & Levitt, 2004), vital ingredients for innovation (Clegg, Unsworth, Epitropaki, & Parker, 2002; Ruppel & Harrington, 2000).

To address these challenges, many companies are turning to information systems (IS) for help. Research has shown that IS can be a strong disruptive force inside an organization that helps to disseminate new dynamics into the community (Besson & Rowe, 2012). This includes fostering individual creativity as well as enabling new ways of conducting development activities (Leonardi, 2011; Oldham & Da Silva, 2015). Idea management tools (IMTs) represent one of the most widely used information systems designed to support distributed innovation activities (Kohn & Hüsig, 2006). Extant research has shown that IMTs can be very useful in increasing the innovative agency of new actor groups, generating and developing both radical and incremental ideas, teaching innovation skills to organizational members as well as integrating customers or other external groups into innovation processes (Bailey & Horvitz, 2010; Di Gangi & Wasko, 2009; dos Santos & Spann, 2011; Hutter, Hautz, Füller, Mueller, & Matzler, 2011). These benefits have led to many front running companies, including IBM (Bjelland & Wood, 2008), Volvo, Renault (Elerud-Tryde & Hooge, 2014), QUALCOMM (dos Santos & Spann, 2011) and Allianz (Benbya & Leidner, 2017) to adopt these tools.
However, the fact that there are potentially effective IS solutions available to enable distributed and virtual innovation processes does not mean that one can simply buy a tool and prosper. Changing how an organization works - be it innovating or other organizational processes - is a form of innovating in itself (Teece, 1980). Attempts to transform ways of working by adopting new technology or information systems is a complex and nonlinear process prone resistance and inertia (Edmondson, Bohmer, & Pisano, 2001; Safavi & Omidvar, 2016). Even in situations where there is widespread agreement in the organization that the planned change is essential, the introduced tool might end up being rejected (Leonardi, 2011).

Previous research has shown that attitudes towards idea management tool implementations can vary highly among company personnel. Employees are not necessarily uniformly enthusiastic about using IMTs and might associate with increased stress or lack of clear purpose (Wendelken, Danzinger, Rau, & Moeslein, 2014). Company management can have doubts about the system leading them to support the initiative in a limited fashion (Elerud-Tryde & Hooge, 2014). Motivational drivers of users can also be highly heterogeneous (Ikävalko & Lempiälä, 2019; Wendelken et al., 2014) and opinions of the user community and company clash (Di Gangi & Wasko, 2009). Further, processing ideas can be a daunting task (Soukhoroukova, Spann, & Skiera, 2012), and implementation of suggestions cumbersome (Dahl, Lawrence, & Pierce, 2011; Elerud-Tryde & Hooge, 2014). All this suggests that getting organizational members to use IMTs is unlikely to be particularly trivial.

While the use of IMTs has been examined from a variety of perspectives including motivations for use (Wendelken et al., 2014), social interaction and collaboration strategies inside the user community (Hutter et al., 2011), characteristics of successful users (Bayus, 2013), studies on long term use are still relatively scarce. This is reflective of broader trends in IS use research, that has tended to focus on examining use shortly after the introduction of a new system (S. Brown, Venkatesh, & Goyal, 2012). Such focus is problematic as understanding whether a new information system is valuable or not can take time. As users interact with the system more, their attitudes towards it might change considerably: to better in cases where use provides satisfactory results or to worse if not (Bhattacherjee, 2001). Thus, the way information systems are used right after they are introduced to organizations tends to be distinct from the way it unfolds after a more extended period of time (Bhattacherjee & Lin, 2015; Delone & McLean, 2003).

This has prompted calls for increased study of long-term or continuous IS use (Jasperson, Carter, & Zmud, 2005). Similarly, requests for more longitudinal work and studies examining the dynamics between the use of idea management tools and the use context have been made (Bailey & Horvitz, 2010; Zuchowski, Posegga, Schlagwein, & Fischbach, 2016). Following this, interesting studies on issues like evolution of users' idea submission strategies (Bayus 2013), post-adoption managerial approaches, and challenges (Benbya and Leidner 2018; Tierney and Drury 2013) or cultural impacts of IMT adoptions (dos Santos and Spann 2011) have already been conducted. However, we still lack understanding
of how the long term use of idea management tools unfolds and what kind of issues can emerge when attempting to integrate such tools into the daily life of an organization.

A key thing to consider in this process is the fact that information systems tend to be used to conduct tasks that are tied to more extensive work routines (Polites & Karahanna, 2013). Accordingly, to provide value, they need to be integrated into the organization’s incumbent routines (Pentland & Feldman, 2008). If this integration proves to be complicated or the new tool compromises performing incumbent routines, organizational members can start resisting or even abandoning the new IS (Leonardi, 2009). Thus when new information systems are introduced in the organization, careful attention should be paid to potential interdependencies between the emergent use routine forming around the new IS and related incumbent routines and IS (Cacciatori, 2012; Dönmez, Grote, & Brusoni, 2016; Kremser & Schreyögg, 2016). Evolution and change of organizational routines triggered by newly introduced technology have received plenty of scholarly attention in organization studies (Edmondson et al., 2001; Leonardi, 2011; Pentland & Feldman, 2008). However, research on the role of routine interdependencies in routine change processes is still scarce that has led to several calls for further studies (Kremser & Schreyögg, 2016; Parmigiani & Howard-Grenville, 2011).

With this in mind, the present work examines the use of idea management tools inside organizations, i.e., as an internal tool that enables company employees to create new ways to innovate. More specifically, the goal of the study is to create novel understanding of issues organizations deal with as they interact with idea management tools in the long term. In this endeavor, particular attention is also paid on the interdependencies between incumbent organizational routines and the emergent idea management tool use routine that formed in the studied organizations.

1.2 Research questions and research approach

The present study has three primary research questions. It consists of this summary part and four essays, each of which addresses one or several of the research questions below.

The research questions of the study are:
1. What kind of use routines emerge around idea management tools?
2. How does the use of idea management tools develop over time?
3. How are emergent idea management tool use routines interdependent with incumbent organizational routines?

From a theoretical perspective, the work builds on IS continuance and organizational routines research to examine the phenomena under study. With a shared interest in studying change of established behavioral patterns, the literature on organizational routines (Becker, 2004; Parmigiani & Howard-Grenville, 2011) and contemporary IS continuance models (Limayem, Hirt, & Cheung, 2007; Polites & Karahanna, 2013) share a critical common ground that...
is leveraged to understand the dynamics related to long term use of idea management tools in companies.

Analytical approaches in the study exhibit variation. They span from qualitative inductive interpretive approaches to machine learning-based natural language processing. As a whole, the present work follows the paradigm of pragmatism with the general aim of creating a holistic understanding of the practically relevant issues related to the phenomena in focus - dynamics related to the continuous use of idea management tools.

Data for the study has been collected from two Finnish organizations: one financial service and one chemical processing company. Both cases represent contexts where idea management tools were used to support innovation work conducted by company personnel rather than facilitate innovating with external partners, which idea management tools also enable (Bayus, 2013; Di Gangi & Wasko, 2009). This orientation was motivated by the fact that recently the intra-organizational perspective has been largely neglected (Elerud-Tryde & Hooge, 2014; Ikävalko & Lempiälä, 2019).

1.3 Essays and related research questions

This dissertation consists of four essays, approaching the studied phenomenon from differing but complementary perspectives. Essays 1 and 2 represent conference papers, which have been presented and distributed to academic audiences. Essays 3 and 4 represent working papers, the earlier or present iterations of which have been presented in scientific forums, but that have not been distributed in their current form. The four essays are descriptive in nature and exhibit variations in the specific phenomenon in focus, theoretical grounding, levels of abstraction, and analytical approach. The main goal of this summary part of the dissertation is to bring together the findings of all of the studies into a coherent whole, grounded on the theoretical lenses of continuous information system use and organizational routines. Further, to the extent individual essays exhibit briefness in portraying specific aspects of the studies, this summary part aims to complement the depictions.

The essays are summarized in Table 1 below. After this, a brief description of each essay is provided.
### Table 1. Essays included the present work and corresponding research questions

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Case</th>
<th>Original research questions</th>
<th>Orientation</th>
<th>Table Text</th>
<th>Approach</th>
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<tbody>
<tr>
<td>2</td>
<td>Evolution of idea management tool use - a case study</td>
<td>Finance</td>
<td>How does the use of an idea management tool evolve over time, and how does this influence the things that should be paid attention to by the administrators of the tool at different points of the process? How are the promises that are given in the extant literature on idea management systems played out in reality?</td>
<td>pragmatic</td>
<td>Interviews, n = 21 …1st round: May 2012 …2nd round: May 2013 …3rd round: May 2014 Digital trace data: (quantitative), 750 ideas, , 1500 comments, coverage: Oct 2011 - Jan 2014 Digital trace data (qualitative), 80 ideas, 318 comments</td>
<td>Qualitative (inductive) + Quantitative</td>
</tr>
<tr>
<td>3</td>
<td>Is it all about innovation after all? Individual level use of Virtual Innovation Platforms</td>
<td>Finance</td>
<td>What kind of heterogeneous use motivations do employees have towards virtual innovation platforms? What kind of issues reduce the perceived meaningfulness of using virtual innovation platforms?</td>
<td>interpretive</td>
<td>Interviews, n = 21 …1st round: May 2012 …2nd round: May 2013 Digital trace data: 120 ideas, 578 comments, coverage: Oct 2011 - Jan 2014 Archival data: 380 slides, 22 pages A4 text documents</td>
<td>Qualitative (inductive)</td>
</tr>
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</table>

The essay applies practice (Orlikowski, 2000) and temporal structure (Orlikowski & Yates, 2002) lenses to study a change initiative aiming to strengthen innovation capabilities in a financial services organization. As a whole, the study aims to create new understanding of how incumbent organizational routines and their temporal structures interact with the emergent routines forming around newly introduced organizational structures aimed to facilitate innovation. One key part of the initiative was the introduction of a new idea management tool. Following this, from the perspective of present work, essay 1 is focused mainly on understanding the temporal dynamics surrounding idea management tool use. As such, the findings from the article address research questions: “What kind of use routines emerge around idea management tools?” and “How are emergent IMT use routines interdependent with incumbent organizational routines?”

From the employee perspective, the findings of the study show that the use of the idea management tool is mainly taking place during the small gaps between performing existing work routines and considered as a separate, rather than being integrated inside them. The use was framed as being subordinate to “real” work routines and deprioritized against them.

From the organizational perspective, findings illuminate problems that arise due to the disconnectedness of the IMT routine from other organizational routines, particularly the development project planning and performance evaluation routines. More specifically, there are rhythmic contradictions between the stream of ideas posted to the tool and development project planning routine, which hinders the case organization’s ability to implement promising ideas. Further, as the performance measurement routines in the company fail to recognize the value of time spent innovating with the tool, users question the value of spending time in the tool. These issues hamper the integration between the emergent idea management tool use routine and incumbent organizational routines. These issues contribute to a lack of attractiveness for performing the emergent IMT use routine.


The essay examines the same case as in Essay 1 but looks at it from a more long term perspective, with a focus on how the use of the tool evolves. The study primarily examines how employees interact with the tool and utilize its different functionalities as time passes. The essay also discusses the discrepancies between expected and realized benefits linked to the use of the tool from a user perspective.
The study particularly addresses the research question: “How does the use of idea management tools develop over time?”

The study finds that the idea management tool manages to create new dynamics into the innovation routines of the organization that results in a steady flow of new suggestions for potential innovations. However, contrary to expectations, the organization struggles to implement the posted ideas. Also, the desired routine of the user community engaging in constructive conversations in the tool does not seem to form. These issues appear to contribute to the fact that after an initial honeymoon period, user activity in the tool goes into a decline. Users still browse the tool, but fewer ideas are shared, and fewer comments and votes are posted. While the tool continues to attract new users that generate content, user turnover is very high. The results indicate that new users engage with the tool for a minimal amount of time and abandon it quickly.


The essay revisits the same case in Essay 1 and Essay 2. The paper examines motivational aspects related to the use of the tool from an individual-level perspective.

The study particularly addresses the research questions “What kind of use routines emerge around idea management tools?” and “How are emergent IMT use routines interdependent with incumbent organizational routines?” through an examination of the value newly introduced idea management tool manages to generate for company employees and how they integrate the tool to their innovation and other work routines.

The findings of the study show how active users integrate the idea management tool in their routines for four use purposes. The first identified use purpose is sharing ideas outside one’s work role. The new tool provided a concrete mechanism to take those ideas forward, which previously did not exist. However, the use of the tool for other types of ideas was not seen purposeful, as well-functioning mechanisms for those already existed. Interestingly, the sharing of extra-role ideas was not complemented with efforts of idea championing, as prioritizing such efforts over other work routines was perceived undesirable. The second identified use purpose deals with efforts of relaxation during a workday. Browsing the idea management tool was perceived to provide a refreshing break from regular tasks while offering opportunities for inspiration to one’s work. The third identified use purpose was linked to efforts of gaining awareness of company activities outside the scope of users’ regular sphere of attention. The tool was seen to opportunities to learn about developments in different parts of the organization and thus create visibility over organizational silos. The users welcomed this increased transparency. Final use purpose was tied to efforts of making the organization a better place to work in. Using the tool was perceived as a
concrete way to contribute to the company adopting a more open and collaborative working culture.

**Essay 4: Eloranta T. Driving Collaborative Virtual Idea Development With Hard Cash: Smart or Harmful? Working paper presented at Aalto University Department of Industrial Engineering & Management research colloquium, Espoo, Finland, 7.3.2019**

The essay adopts a longitudinal orientation similar to Essay 2 and examines how employees of a chemical processing company utilize different functionalities of a newly introduced idea management tool. The study particularly focuses on how the use develops after the company starts providing financial rewards for partaking in virtual discussion in the tool.

The study particularly addresses research questions: “How does the use of idea management tools develop over time?” and “How are emergent IMT use routines interdependent with incumbent organizational routines?”

The findings of the study show how a reward system reflecting the general rewarding practices in the organization increases the use of the tool, particularly in the short term. Further, the findings show how increased conversation around posted ideas in the tool was not distributed equally in terms of topics being discussed. As the use of the tool developed, disproportionate increases were noted in conversations dealing with practical aspects of work and issues closely linked with staff’s day-to-day work routines.

**Table 2.** Essays included the present work and corresponding research questions

<table>
<thead>
<tr>
<th>Essay #</th>
<th>Essay Title</th>
<th>RQ1: What kind of use routines emerge around idea management tools?</th>
<th>RQ2: How does the use of idea management tools develop over time?</th>
<th>RQ3: How are emergent IMT use routines interdependent with incumbent organizational routines?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Complex Temporalities and Competing Rhythms- Different Temporal Orientations of Idea Development.</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>2</td>
<td>Evolution of Idea Management Tool Use – A case study.</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Is it all about innovation after all? Individual level use of Virtual Innovation Platforms.</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>4</td>
<td>Driving Collaborative Virtual Idea Development With Hard Cash: Smart or Harmful?</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>
2. Theoretical background

The present work builds on three distinct but somewhat overlapping streams of research: studies of innovation management and idea management tools, in particular, studies of information system use and information system continuance in particular, and finally studies of organizational routines. These theoretical foundations of the present work are visualized in Figure 1 and will be discussed next. I start with an introduction to innovation management research and outline the role idea management tools in innovation and their particular characteristics. Next, I discuss extant research on the use of information systems. I initiate this by presenting the most widely used theoretical model in the field - Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989). From there, I proceed towards discussing recent theories of information system use that explicitly 1) acknowledge the human tendency to follow familiar behavioral patterns and 2) make a distinction between short and long term IS use (Bhattacherjee & Lin, 2015; Limayem et al., 2007). Finally, I examine and discuss research on organizational routines and the dynamics related to changing routines. The section ends with a summary and reflection of the differences between information systems continuance and organizational routines literature regarding conceptualizations of repeated action patterns.
This section starts with a brief introduction to the basic concepts of innovation management in a corporate context. After that, I proceed to discuss the role of idea management tools in supporting innovation efforts in organizations and discuss extant research regarding the value they can bring from both organizational and individual perspectives.

The importance of innovating has been well established as a critical source of competitive advantage and growth for both societies as well as individual organizations (Kandampully & Duddy, 1999; Van de Ven, 1986). However, desire and efforts to innovate do not necessarily lead to success, and competitive advantage but instead rest on the company having adequate capabilities and structures in place to enable and support it (Lengnick-Hall, 1992; McGrath, Tsai, Venkataraman, & MacMillan, 1996). Further, regardless of the support structures in place, innovation processes tend to be convoluted, nonlinear and filled with uncertainty and, as such present a wide variety of technological, socio-political and institutional challenges that need addressing (Sotarauta & Srinivas, 2006; Van de Ven, 1986; Van de Ven et al., 1999).

This complexity has led to considerable scholarly interest in the field of innovation management. Nowadays the studies on innovation management represent a highly pluralistic stream of research, comprising of a wide variety of different topics including but not limited to national innovation systems, innovation policy, innovator networks, product, service, and administrative innovation; innovating with suppliers, paradoxes of innovation (Alam, 2002;
Dougherty, 1992; Giesecke, 2018; Lempiälä & Vanharanta, 2018; Patana, Pihlajamaa, Polvinen, Carleton, & Kanto, 2013; Pihlajamaa, Kaipia, Säilä, & Tanskanen, 2017; Pihlajamaa, Patana, Polvinen, & Kanto, 2013; Teece, 1980) just to name a few areas of interest.

This body of literature has produced numerous suggestions on how organizations can best foster innovation efforts of their employees through support structures and other organizational arrangements. Some of these structures are over-arching, such as formal process models that delineate on an abstract level the different steps and decision points each development project in a company goes through, and as such, provide systematic structure to innovation processes (Cooper, 1990; Khurana & Rosenthal, 1998). Others are more specific, such as brainstorming methodology that, in essence, helps users by providing guidelines on how to generate novel ideas in a group (Osborn, 2013).

2.1.1 Defining idea management tools

The increased proliferation of information technology as a core aspect in company operations has also extended itself to innovation (Yoo et al., 2012), and nowadays, companies are increasingly using software tools to support different areas of innovation efforts (Barczak, Griffin, & Kahn, 2009). Specialized information systems like structural simulation or patent management tools, as well as more general solutions like enterprise resource planning and product lifecycle management software, are being used to facilitate the development of new offerings and operational improvements (Hüsig & Kohn, 2011; Leonardi, 2011). In the area of specialized tools, one particularly exciting category of software applications are idea management tools (IMTs), virtual suggestion boxes that allow its users to share their ideas with a broader audience. They represent one of the most widely used forms of information systems, that has been explicitly designed to facilitate innovation (Kohn & Hüsig, 2006). Recording and disseminating new ideas in organizations has been identified as a critical area in which even the most innovative companies are struggling (Barczak et al., 2009). IMTs are a type of software application that aims to address this exact problem.

Concerning the term idea management tool, three issues should be noted. First, solutions to issues of idea collection and management can come in many forms. The most rudimentary approach is inviting staff to write their ideas on paper forms and place them in a physical “suggestion box”, from which those responsible for processing ideas gather them for further inspection (Fairbank & Williams, 2001). On the other end of the spectrum lie sophisticated integrated solutions which might include a public online platform that enables refining ideas collectively in a community (Bayus 2013; Bailey and Horvitz 2010) or even combine such platform with offline elements like creativity training, prototyping, networking assistance and so on (Benbya & Leidner, 2018; dos Santos & Spann, 2011; Leimeister, Huber, Bretschneider, & Krcmar, 2009).

With this in mind, in the context of the present study, idea management tools are defined as technological artifacts that are specifically designed to enable users to share their ideas to others and receive feedback from others as well as view, give feedback and develop further ideas that other users have posted. This
definition acknowledges the digital and online-based nature of modern idea management solutions. It draws attention to the technological artifact in itself rather than the potential offline elements related to idea collection and dissemination.

The second important thing to note is the distinction between the term idea management system and the term idea management tool, as understood in the context of the present study. Software solutions aimed at addressing the challenge of recording and disseminating ideas in an organization tend to be accompanied with a formal process model that specifies how ideas gathered with the software are examined, evaluated and potentially implemented (Bailey & Horvitz, 2010; Benbya & Leidner, 2018; dos Santos & Spann, 2011; Montoya-Weiss & O’Driscoll, 2000). As people post ideas in the tool, it is obvious that without some sort of guidelines on how the ideas will be treated, it can be challenging to capture value from the activity from either individual or organizational perspective. This dynamic is captured in the term “idea management system” that as a concept, comprises of the technological artifact used to share and develop ideas together with the formalized organizational processes defined for handling the posted ideas (Sandström & Björk, 2010; Westerski, Dalamagas, & Iglesias, 2013).

The rationale for using the term “idea management tool” rather than the more established term of “idea management system” is based on the present study’s strong emphasis on the use of the technological artifact in itself. While issues related to idea processing are also discussed as part of the empirical part of the present study, this examination is also centered around the use of a technological artifact specifically. With this mind, I perceived distinguishing the technological artifact from formal idea evaluation process models and other closely tied organizational structures related to the artifact - such as reward schemes - to provide increased clarity when describing the dynamics of the studied phenomenon.

The third important issue to note is that academic discussion around IMTs is spread around a wide variety of different concepts and terms, including for example virtual innovation pipeline (Bailey & Horvitz, 2010), idea/innovation competitions (Elerud-Tryde & Hooge, 2014), crowdsourcing (Bayus, 2013), virtual communities for innovation (Langner & Seidel, 2015) to name a few. These different terms and concepts are associated with slightly different contexts and conditions for computer-supported innovation. For example, the term crowdsourcing tends to be used when IMTs are used to gather suggestions for innovations from actors that are external to the organization (Bayus, 2013; Chua, Roth, & Lemoine, 2015; Leimeister et al., 2009). In contrast, in innovation competitions, actors posting ideas can be members of the organization or external actors, but idea development activities are organized as time-limited contests rather than providing a possibility to make any type of suggestion at any time (Adamczyk, Bullinger, & Mösllein, 2012; K. J. Boudreau, Lacetera, & Lakhani, 2011; Ikävalko & Lempiala, 2019).

Out of all of the potential terminological positionings for the study, the emphasis of the present study is on technological artifact used to gather and develop
ideas, and I considered the term “idea management tool” to be most fitting for the present study. However, at the core of each term listed earlier is an information system focused on collecting and examining ideas that users enter into it, paired with organizational structures for processing the ideas to generate innovations. Thus all these different streams of literature were considered relevant from the perspective of idea management tool research and thus drawn from in the present study.

2.1.2 Fostering innovation processes with idea management tools

Innovation process is traditionally divided into three subsequent parts: 1) the front end, spanning from ideation to concept definition; 2) the development phase where concepts are developed into actual products, services or operational improvements and 3) implementation period where finished results of the development work are commercialized or diffused into the surrounding environment (see e.g. Poskela, 2009; Van de Ven et al., 1999). From the viewpoint of the innovation process, IMTs span the range from idea generation to concept development and project initiation. As such, idea management tools aim to support the so-called front-end of innovation (Montoya-Weiss & O’Driscoll, 2000). Effective and structured management of the front-end phase has been identified as a vital part of companies’ innovation capability (Khurana & Rosenthal, 1998; Poskela, 2009; Zhang & Doll, 2001), and thus these tools address a highly important innovation management challenge.

Idea management tools are flexible in the sense that organizations can leverage them in a variety of differing ways. The same basic functionality enables the collection of ideas from inside the company (Bailey & Horvitz, 2010; dos Santos & Spann, 2011; Elerud-Tryde & Hooge, 2014) or the general public (Bayus, 2013; Di Gangi & Wasko, 2009). Ideas can be gathered continuously (Bayus, 2013) or in the form of a time-limited competition (dos Santos & Spann, 2011). Further, unlike many other types of information systems used in contemporary organizations like enterprise resource planning (ERP) (M.-C. Boudreau & Robey, 2005) or customer relationship management (CRM) (Hayes & Walsham, 2001) software, IMTs tend to be voluntary to use (Zuchowski et al., 2016) and are not particularly strongly associated with efforts to increase organizational control. Following this, they exhibit high levels of interpretive flexibility (Pinch & Bijker, 1984) as to why and how they should be used can be perceived in very different ways. Open-endedness and lack of strong associations to managerial control are becoming increasingly prevalent in information systems used in contemporary organizations (Malhotra & Galletta, 2005). As such, IMTs are in line with current information system trends and make them stand out from more traditional pieces of corporate software, like ERPs and CRM solutions.

Following the breadth of use possibilities discussion around IMTs is spread around a wide variety of different concepts and terms, including for example virtual innovation pipeline (Bailey & Horvitz, 2010), idea/innovation competitions (Elerud-Tryde & Hooge, 2014), crowdsourcing (Bayus, 2013), virtual communities for innovation (Langner & Seidel, 2015) to name a few. These different
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Potential reasons for organizations to implement and use idea management tools are also manifold. From the perspective of direct benefits to innovation, IMTs can help in bringing systematicity and structure to the early phases of the innovation process through standardized templates and procedures (Montoya-Weiss & O’Driscoll, 2000). Ideas are usually entered into the system using a standardized form, which helps the comparison of ideas during decision-making processes and provides cues for users on what is a good idea and how it should be described to enable efficient processing (Montoya-Weiss & O’Driscoll, 2000). Further, by enabling a straightforward and readily accessible way to air one’s ideas, IMTs tend to result in an increased number of development ideas that reach the management (Soukhoroukova et al., 2012), even to the point that processing of the ideas becomes a challenge (van den Ende, Frederiksen, & Prencipe, 2015; Westerski et al., 2013). Besides, since IMTs are concrete and visible artifacts closely linked with innovating, they also can bring more indirect benefits to companies. By introducing an IMT to the organization, companies can underline their commitment towards innovating, and as such, IMTs can boost the innovative culture of an organization (Elerud-Tryde & Hooge, 2014; D. Klein & Lechner, 2009).

Similarly, drivers of use from the perspective of users are also heterogeneous (Simula & Ahola, 2014). Organizational actors utilize them to share ideas, find new contacts, gain inspiration, learn innovation-related skills, and so on (Bailey & Horvitz, 2010; Elerud-Tryde & Hooge, 2014; Wendelken et al., 2014). IMTs provide support to the idea generation and development activities by enabling cross-disciplinary collaboration (Elerud-Tryde & Hooge, 2014), gaining feedback and support from others (Füller, Hutter, & Faullant, 2011) and guiding the user to consider the idea from all relevant angles (Montoya-Weiss & O’Driscoll, 2000). By providing an easily accessible idea repository, IMTs also can additionally help in ensuring that suggestions do not end up being forgotten amidst the hectic daily life in companies (Cormican & O’Sullivan, 2003; Flynn, Dooley, O’Sullivan, & Cormican, 2003). Further, idea feasibility can sometimes hinge on lack of proper timing in terms of strategy, technology, etc. and in such cases, idea management tools can help bring old ideas into the spotlight at a more suit-
able time (Elerud-Tryde & Hooge, 2014). Finally, IMTs enable innovation-related enjoyment and networking opportunities and community recognition (Bailey & Horvitz, 2010; K. J. Boudreau et al., 2011; Bullinger, Neyer, & Rass, 2010; Füller et al., 2011).

2.1.3 Challenges of idea management tools

Naturally, the utilization of IMTs in an organization can also result in various challenges. Collecting ideas with IMTs can produce a very large mass of suggestions that come in irregular batches and exhibit large variances in quality (Westerski et al., 2013). This means that the selection of best ideas becomes a critical but challenging task (Soukhoroukova et al., 2012). Further, companies can struggle with implementing the best ideas due to a lack of resources or other organizational support structures (Dahl et al., 2011; Elerud-Tryde & Hooge, 2014). It is also important to note that motivational drivers among the whole staff can be very heterogeneous (Ikävalko & Lempiälä, 2019; Simula & Ahola, 2014), which can make encouraging use throughout the organization a challenge. Even company management can have their reservations regarding IMT implementations (Dahl et al., 2011; Elerud-Tryde & Hooge, 2014), leading to a potential lack of support.

Research has also shown that employees might associate IMT use with stress or lack of business relevance (Wendelken et al., 2014). With this in mind, it is crucial also to remember that the use of the IMTs thus can present a new source of work burden for employees (Zuchowski et al., 2016). Thus reward schemes are often designed to encourage active use of these tools. Extant research has identified a variety of different rewarding possibilities ranging from recognition, and small thank you gifts to financial rewards and possibilities to lead a product development project team (M. J. Antikainen & Vaataja, 2010; Bailey & Horvitz, 2010; Wendelken et al., 2014). While there is no exact consensus on what are the best ways to encourage IMT use with incentives, current understanding on the topic emphasizes the importance of intrinsic motivation and non-monetary incentives (K. J. Boudreau et al., 2011; Ebner, Leimeister, & Krcmar, 2009; Hutter et al., 2011). Further, scholars have underlined that user preferences regarding rewards can be highly heterogeneous, and reward systems should recognize this plurality and represent a mixture of different types of rewards (Ebner et al., 2009; Simula & Ahola, 2014; Wendelken et al., 2014).

2.2 Use of information systems in organizations

In the previous section, a wide variety of potential organizational and individual level benefits of idea management tools can bring were discussed. Albeit there is little doubt about the usefulness of these tools, it’s crucial to remember that simply procuring a new information system is not enough to realize the potential benefits. Instead, these new tools need to be integrated into existing work routines and used continuously for actual impacts to materialize (Jasperson et al., 2005; Pentland & Feldman, 2008; Polites & Karahanna, 2013). These dynamics apply to all information systems, including IMTs. In this section, I will
present key theories related to the use of information systems in organizations starting with Technology Acceptance Model (TAM) (Davis et al., 1989) and proceeding to contemporary theoretical frameworks on continuous information system use (Bhattacherjee, 2001; Bhattacherjee, Perols, & Sanford, 2007), until finally discussing frameworks that take into account the role of habituated behavior in the formation of long term IS use (Bhattacherjee & Lin, 2015; Limayem et al., 2007; Polites & Karahanna, 2013).

Despite the considerable interest in how new information systems are taken into use as a phenomenon, it still entails numerous unresolved questions (Tsai, Compeau, & Meister, 2017). The process of how the use of information systems becomes continuous is one of those questions. In the field of IS use research, majority of studies is focused on examining use only after a concise period of use (S. Brown et al., 2012) even though the success of a new IS system rests more on whether it becomes integrated into the organization than whether it is tried out (Bhattacherjee, 2001). This imbalance has prompted calls for further studies in the area (Jasperson et al., 2005).

In the following, I present the Technology acceptance model (TAM), as it is the most commonly used theoretical framework for studying information system use (Lee, Kozar, & Larsen, 2003) and is thus foundational to our current understanding of the topic. Then I proceed to continuous information system use theories, which were developed to address some of TAM’s deficiencies in terms of explaining long term IS use. Finally, I discuss the most recent theoretical developments around the topic, more specifically those IS continuance models that take into account the role of habituated behavior and routines in defining long term use of information systems.

2.2.1 Acceptance of technology in organizations

Technology acceptance model (TAM) - which forms the cornerstone of IS use research - approaches IS use from an adoption perspective (Lee et al., 2003). Building on the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), TAM argues that the use of a specific information system is determined simply by individuals’ intentions to use the system (Davis et al., 1989). This intention is determined by several factors. These include the attitude towards the use and the perceived usefulness of the system, where the latter refers to the subjective likelihood that the use of the system will help an individual accomplish specific tasks. A notable concept in the model is also perceived ease of use, defined as “the degree to which the prospective user expects the target system to be free of effort” (Davis et al., 1989, p. 985). Davis et al. (1989) argue that easy to use systems create a feeling of self-efficacy that can increase one’s motivation to use the system and thus strengthen positive attitude towards system use. Furthermore, easy to use systems also allow its users to accomplish more with the system, leading to increased perceived usefulness of the system (Davis et al., 1989). The basic technology acceptance model is visualized in Figure 2.
TAM has later received various updates and revisions. TAM2 introduced new variables seeking to expand on social and cognitive processes influencing perceived usefulness and system use (Venkatesh & Davis, 2000). It was further extended in the Unified theory of acceptance and use of technology (UTAUT), which builds on the idea that suitable organizational and technical infrastructure can significantly support the use of new IS. Following this, UTAUT includes a new key construct of facilitating conditions that are seen to potentially directly influence information system use (Venkatesh, Morris, Davis, & Davis, 2003). Further, a variety of authors have directed attention towards the effect of different moderating and mediating variables, such as age, experience, gender, etc. that can significantly influence the relationships between different constructs (Venkatesh & Davis, 2000; Venkatesh et al., 2003). Venkatesh et al. (2003) observed that the effect of social influences on system use is stronger among older workers and women. As such, the results suggest that when it comes to IS use, individual differences between determinants of IS use can make a difference.

2.2.2 Continued use of information systems

While Technology Acceptance Model has and its variants have enabled great progress, and convincing results in the field of IS research (King & He, 2006), the dominance of TAM has led to problematic blind spots in our understanding regarding long term IS use.

TAM has been primarily designed to explain the initial adoption of IS, i.e., first-time use of technologies (Bhattacherjee & Lin, 2015). However, studies have shown that adoption and continued use of IS are distinct phenomena (Bhattacherjee, 2001; Bhattacherjee & Lin, 2015). TAM posits that IS use is determined by perceived usefulness and ease-of-use of the IS in question (Davis et al., 1989). However, Bhattacherjee (2001) found that after the initial introduction of an information system, the importance of ease-of-use as an explanatory variable for system use can start fading away. Also, while a system might be challenging to learn initially, over time, as users become familiar with the system, the steep learning curve ceases to impede system use (Bhattacherjee & Lin, 2015).

Further, Goh et al. (2011) found that employee sensemaking can fluctuate considerably. Naturally, problems in the tool’s performance can quickly lead to users questioning its value. However, if encountered issues are remedied with modifications or workarounds, the perception of value might be restored (Goh et al., 2011). Finally, Leonardi (2009) observed how perceptions regarding the value of new IS could be formed in sensemaking discussions with colleagues.
even before the user interacts with the system, but change drastically if expectations are not met.

The overemphasis on adoption has created a lack of understanding of why users discontinue use after initial adoption (Bhattacherjee, 2001). Further, we still struggle to grasp the post-adoptive situation as a context as well as factors leading to increased/decreased use, long term use, resistance, etc. (Jasperson et al., 2005). As a remedy to this situation and to address the distinction between adoption and long term use, so-called IT continuance models have developed. Bhattacherjee et al. (2007, p. 17) define IT continuance as “users’ decisions to continue using an IT over the long run” in contrast to IT acceptance that focuses on users’ initial or first-time decisions to use IT. This definition reflects well the key conceptual differences between TAM and IS continuance models, which bring continuance to the forefront instead of acceptance.

IT-continuance models are very similar to TAM models insofar main determinant of IS use is seen to be the intention to use IS. However, the models have key differences in terms of what is considered to determine the intention to use IS. IS continuance models are based on is Expectation-Confirmation theory (ECT) (Anderson & Sullivan, 1993; Oliver, 1980; Oliver & Linda, 1981), which has originally been developed as a consumer behavior theory to explain consumers’ repurchase decisions (Bhattacherjee, 2001). The core assumption in ECT is that the repurchase decision is based on whether the consumer is satisfied with its use (Anderson & Sullivan, 1993; Oliver, 1980; Oliver & Linda, 1981). Bhattacherjee (2001) argues that the same dynamics also apply to long term IS use, since both repurchase and continued IS use decisions “(1) follow an initial (acceptance or purchase) decision, (2) are influenced by the initial use (of IS or product) experience, and (3) can potentially lead to ex-post reversal of the decision.” (Bhattacherjee, 2001, p. 355).

Contrasting them with TAM, IT-continuance models replace “Attitude towards use” with the “Satisfaction” construct. “Satisfaction” is determined by “perceived usefulness of IS” - similar to TAM - and “Confirmation”, referring to “realization of expected benefits of the IS use”, which is also argued to include perceived ease-of-use, which unlike in TAM models is not a separate construct in IT continuance models. The basic model is visualized in Figure 3.

![Figure 3. IS Continuance model (Bhattacherjee, 2001)](image)

IT continuance models have been successfully tested with a variety of different technologies including, mobile payment (Zhou, 2013), electronic medical records (Ayanso, Herath, & O'Brien, 2015), knowledge sharing in virtual environments (Bhattacherjee et al., 2007), ERP systems ((Chou & Chen, 2009) and customer management software (Bhattacherjee & Lin, 2015) as well as contexts,
including insurance (Bhattacherjee & Lin, 2015) and government (Bhattacherjee et al., 2007).

2.2.3 Habits, routines and information system use

Intention based models - including continuance models - have been criticized considering the use of IS is primarily a conscious and rational decision-making process. DeGuinea-Ortiz and Lynne-Markus (2009) argue this to be problematic as it ignores several potentially critical factors, including emotions (Agarwal & Karahanna, 2000; Beaudry & Pinsonneault, 2010) and especially habits (Kim & Malhotra, 2005; Limayem et al., 2007; Polites & Karahanna, 2012).

Wood and Neal (2007), define habits as: “...learned dispositions to repeat past responses. They are triggered by features of the context that have covaried frequently with past performance, including performance locations, preceding actions in a sequence, and particular people.” (Wood & Neal, 2007, p. 843). Humans form habits because they reduce the mental workload required to come up with a response to a situation that has familiar features making cognitive capabilities available for other purposes (Verplanken & Orbell, 2003). This means that an individual can use his cognitive capabilities for other, more fruitful purposes. Following this, habits are a natural and crucial part of our daily life, as explained by Verplanken (2006): “In the absence of habits, choices and behaviour require awareness, thinking and a controlled mode of processing, neither of which are things that we can maintain for a long time. Only after repetition of behaviours that prove satisfactory do new habits evolve, and life feels normal again.” Thus, understanding habits are extremely critical when dealing with organizational development, because all efforts to change organization requires a change in accordant individual habits (Hodgson, 2007).

In IS research, habits have been defined in a variety of ways, representing different orientations toward habit. Polites & Karahanna (2012) take their definition from the field of psychology and follow the definition of Verplanken & Aarts (1999, p. 104) who define habits as: “learned sequences of acts that have become automatic responses to specific cues, and are functional in obtaining certain goals or end-states” (Verplanken & Aarts, 1999, p. 104). This definition underlines automaticity of habits, the fact that they are activated by specific cues, and that habits are tied to pursuits of specific end-states. In comparison, Limayem et al. (2007) have their own more IS centric definition: “we define habit in the context of IS usage as the extent to which people tend to perform behaviors (use IS) automatically because of learning.” This definition is more straight-forward and reflects how the authors conceptualize and operationalize habits. For them, the formation of habits is something that can drive continued use of new information systems and that are formed when users interact with the system and learn about its capabilities.

In contrast, Ortiz de Guinea and Markus (2009) define habits as ‘a well-learned action sequence, originally intentional, that may be repeated as it was learned without conscious intention, when triggered by environmental cues in a stable context’ (de Guinea & Markus, 2009, p. 437). This definition reflects a
position that habit construct is misunderstood by IS researchers. These misunderstandings stem from understanding habits as 1) mindless, even though research shows that habits start as intended behaviors (Verplanken & Aarts, 1999) and 2) goal-oriented, even though research shows that role of original goals might erode over time (Wood & Neal, 2007; Wood, Quinn, & Kashy, 2002). The present study agrees with the definition of Ortiz de Guinea and Markus (2009) as it takes a broad view of habits and recognizes the nuances of habits that have been recognized in more recent psychological research.

The role of habit in IS use has been examined with different intention-based IS use models, including TAM (Kim & Malhotra, 2005; Limayem, Hirt, & Chin, 2001; Polites & Karahanna, 2012), Triandis’ (1980) behavioral framework (Limayem & Hirt, 2003) as well as IS continuance models (Bhattacherjee & Lin, 2015; Limayem et al., 2007). The common denominator in the models is the aim to question the assumption that IS use is the result of conscious analysis and decision-making process, and thus attempt to illuminate the less conscious elements in IS use.

In terms of the exact nature of the relationship between habits and IS use, a variety of approaches and results can be observed in the extant literature. First, after the introduction of new information systems, users can start interacting with the new system habitually as they gain experience with it (Limayem et al., 2007, 2001). This means that even in cases where a user does not have explicit intention to use a system continuously, one still ends up using the system continuously due to habits that have already formed. How such emergent habits influence IS use has been debated. Some researchers argue that the effect of habit is indirect, i.e., habits moderate the strength of the impact of users’ intentions to use a specific IS continuously (Kim & Malhotra, 2005; Limayem & Hirt, 2003). Others studies posit that habits can also influence IS use directly (Bhattacherjee & Lin, 2015; Limayem et al., 2007)

Further, Polites and Karahanna (2012) argue that while most IS continuance research has primarily conceptualized habit through new emergent habits and thus as something that supports the use of new IS get rooted into an organization, incumbent IS habits related to for example legacy systems can create inertia against IS continuance behavior. In other words, habits can bypass the conscious thinking processes of users, so that even if one is planning to use a specific IS, one will not do so. In line with this, Murray and Häubl (2007) found that when individuals repeatedly use a certain product, they might form skill-based habits related to specific user interface logic that in turn can create cognitive switching costs vis-a-vis an alternative product. This, in turn, inhibits changes in behavior. Analogies related to the relationship between habits and organizational change can be made. As worded by Verplanken (2006, p. 654): “Old habits may form obstacles to change. However, the very features that make old habits obstacles to change are desirable when it comes to the new behavior that an intervention aims to promote.” Thus it is only a matter of time when emergent behavior that was habituated - potentially with significant effort - becomes an incumbent habit inducing inertia towards the development of the organization.
Of course, not all behaviors become habituated. Several antecedents are essential for a specific behavioral pattern to form into a habit. First, behavioral patterns that lead to satisfactory experiences, and occur often are more likely to form into habits (Aarts, Paulussen, & Schaalma, 1997). Second, when those patterns take place in a stable context where situational cues are similar across consecutive situations, the potential for habit formation is increased (Aarts et al., 1997; Ouellette & Wood, 1998). The crucial third antecedent is repetition. Behavior that is performed frequently and in a steady manner is more likely to turn into a habit (Ouellette & Wood, 1998). Fourth antecedent - comprehensiveness of IS usage - is more related explicitly to IS rather than general habits. Limaeym et al. (2007) found that people who utilize IS more broadly in terms of purposes and functionalities are more likely to form habits around the use of the system.

It is crucial also to understand that habits are not closed systems. Recent organizational studies have underlined the complex and intertwined relationships between different bundles recurring action (Bertels, Howard-Grenville, & Pek, 2016; Dönmez et al., 2016; Kremser, Pentland, & Brunswicker, 2019; Kremser & Schreyögg, 2016). For example, one’s hygiene and grooming habits tend to be connected with one’s morning habits, as both habits share the same context. Following this, Polites & Karahanna (2013, p. 243) have called for increased attention towards interrelationships of habits in the context of information use: “In order to properly understand IS habits and how they can be changed, we must study them within the context of the larger task sequences in which they are embedded.”

Following their suggestion, Polites & Karahanna (2013) developed a model on the relationships between individual habits and larger task sequences to which they are linked to. Polites & Karahanna (2013) argue that individual habits are formed when individual routines - task sequences performed by a single actor - become automatized. Thus what separates individual habits from routines is the fact that routines operate under conscious control with the actor being aware of the performance. Organizational routines, on the other hand, are seen as bundles of interdependent individual routines performed by multiple actors, following the definition of Cohen and Bacdayan (1994). The key argument of Polites and Karahanna (2013) is that fostering continued use of new IS rests on disrupting the larger work routine and its context. This can be done by rendering existing habits meaningless or inaccessible as well as by increasing actors’ awareness of their habits, thus interfering with the automaticity of the behavior and generating opportunities for rethinking and redesigning one’s behavior. (Polites & Karahanna, 2013). This suggests that continued use of information systems at the individual level is deeply intertwined with the dynamics of organizational routines and requires us to understand what drives the performance and change in organizational level routines. These themes will be discussed in more detail in the next section.

Figure 4 summarizes the current understanding of the dynamics between continuous IS use and repeated behavioral patterns, as discussed above. More specifically, visualizes the expected relationships between continuous IS use, individual habits, and organizational routines, as described by Limayem et al.
(2007), Polites and Karahanna (2013), Bhattacharjee and Lin (2015). The model posits that emergent habits forming around a newly introduced information system can moderate conscious intentions to use new IS continuously. The model further suggests that emergent habits that form around the newly introduced information systems increase the likelihood of continuance behavior. It also posits that incumbent habits formed around the information system to be replaced, moderate the relationship between intentions to continuously use the new IS and actual user behavior. Further, the model considers that emergent and incumbent habits are formed when users in their individual routines interact with the new or old information system frequently, in a stable context in a manner where the IS used comprehensively, and behavior leads to satisfactory results. Finally, these individual routines of users and their peers form larger bundles of repeated action patterns that make up the organizational routines of an organization.

The recognition of the critical role that habits and routines can play in the long term IS use represents new and exciting theoretical development in IS continuance research. However, it is essential to note that the conceptualizations of organizational routines in the IS continuance field seem somewhat misaligned with extant literature focused on organizational routines. The differences are examined in section 2.3.3. in more detail. However, in order to compare the two fields, previous studies on organizational routines need to be discussed first. Following this, in order to gain more understanding of the dynamics of repeated behavioral patterns on the organizational level, in the next section, I will discuss extant research on organizational routines. In this stream of literature, an interesting and lively debate on organizational change processes and the relationship between technological artifacts and bundles of recurring action has been ongoing for some time already.

![Diagram of Organizational Routines](image)

Figure 4. Summary of contemporary IS continuance models, including habit and routine constructs. Adapted from Limayem et al. (2007), Polites and Karahanna (2013), Bhattacharjee and Lin (2015).
2.3 Organizational routines

In recent years, research on organizational routines and their dynamics have enjoyed a surge of academic interest. However, studies of recurring action patterns have a long history, which contributed considerable heterogeneity in theoretical grounding and terminology around the topic. Following this, before delving deeper into the subject, some clarifications regarding the viewpoint towards routines and selection of terminology in the present work should be made.

Research on routines can be divided into two primary schools of thought (Becker, 2004; Parmigiani & Howard-Grenville, 2011). The first school is the interpretive practice perspective. It has its roots in organizational studies and has a close relationship with practice theory (Feldman & Orlikowski, 2011) and process research (Howard-Grenville & Rerup, 2016). The other school is the realist capabilities perspective that has its roots in economics (Parmigiani & Howard-Grenville, 2011). The present study approaches routines from practice perspective because it focuses on the emergence and development of routines rather than their implications to competitive advantage and financial performance - key focus areas in the capabilities perspective (Parmigiani & Howard-Grenville, 2011). Thus, the following summary on organizational routine studies is summary is primarily building research following the practice perspective, rather than the whole body of literature on organizational routines.

As the term routine has strong everyday connotations, it is important to address some traditional misconceptions about routines. According to Cohen (2007), there are four common misunderstandings regarding routines: being “rigid in terms of execution, mundane in content, isolated from thought and feeling and explicitly stored”. These misunderstandings are strongly linked to how the term routine tends to be understood in layman discussion, which leads to some scholars inside the practice perspective to prefer the term disposition over routines to avoid terminological confusion (Birnholtz, Cohen, & Hoch, 2007; Cohen, 2007). A variety of other terms have been used to refer to what could be classified as routines. Another prevalent concept with similar connotations is “practice” (Feldman & Orlikowski, 2011; Orlikowski, 2000), evident in it giving the name even to a key school of thought in organizational routine studies. Without going deeper into the conceptual differences between routines and practices, in the present work, I use the term routine for two main reasons. First, the term “practice” suffers from similar problems as routine in the sense that it is quite widely used in both information systems and management literature to denote quite different things (Feldman & Orlikowski, 2011; Kahn, Barczak, & Moss, 2006; Lurey & Raisinghani, 2001). As such, it does not really provide a solution to the problems of laymen’s connotations in the term routine. Second, the fact that routines, as well as habits, are prevalent concepts also in IS continuance literature (Bhattacherjee & Lin, 2015; de Guinea & Markus, 2009; Polites & Karahanna, 2012, 2013) forms important terminological common ground and facilitates building bridges between information systems and organization research on recurring action patterns. This is also the reason why I selected to use the term routine rather than “disposition”, as suggested by Cohen (2007).
2.3.1 Characteristics of organizational routines

Feldman and Pentland (2003, p. 96) define organizational routine as “repetitive, recognizable pattern of interdependent actions, involving multiple actors”. However, according to Hodgson (2007), organizational routines are not merely habits shared by a group of people but rather “meta-habits, existing on a substrate of habituated individuals in a social structure”. Following this, habits are ontologically a step above routines (Hodgson, 2007). The difference between organizational and individual routines is that organizational routines include interdependencies between several participants and their performances (Pentland & Feldman, 2005). Further, organizational routines should include the possibility to be recognizable and thus available for discussions for those participating in it (Pentland & Feldman, 2005). However, as routines are distributed in nature both in time and space, routine performers might understand routines differently as they perform different activities in it (Salvato & Rerup, 2011).

Routines can be perceived to consist of three elements. The first aspect is ostensive, denoting the “abstract, generalized idea of the routine” and “are invoked as resources for guiding and accounting for action” (Feldman, 2000, p. 101). This abstract idea allows organizational actors to understand expectations and ideals related to performing the routine and discuss it with others (Pentland & Feldman, 2005). The second aspect is performative, referring to the routine in practice how it is performed. It is the performative aspect that is the routine in practice, referring to the routine as “specific actions, by specific people, in specific places and times” (Feldman, 2000, p. 101). This multidimensional character of routines is always present, and neither aspect can exist separately from the other (Parmigiani & Howard-Grenville, 2011).

This distinction is also important in understanding intentionality in routines. Objectives of routines can be divided similarly into two types: The ends-in-view that are “purpose specific to a particular performance” and goals that correspond with “purpose that is associated with the pattern of the routine in general” (Dittrich & Seidl, 2018, p. 118). Therefore, while routines can always be considered intentional in the sense that at least some goal is pursued, the goal can be specific to a particular performance of the routine instead of being stable across all routine performances. Thus, routine performances can exhibit great variation (Pentland & Feldman, 2005). Further, Dittrich & Seidl (2018, p. 134) observe that instead of routine participants bringing their intentions to the performance of some routine, new intentions can emerge during routine performance as actors “gain a sense for what they ought to do through acting—instead of through reflecting on and orienting toward a particular goal.”

The third aspect of routines relates to artifacts. Pentland and Feldman (2008) argue that organizational routines tend to be interlocked with a variety of artifacts in complex ways. Thus their role needs to be accounted for in theories of organizational routines. Relevant artifacts can be divided into two groups: those contributing to the routine but not produced for it - like meeting rooms - as well as those more directly tied to the routine - say CRM system in a sales routine (Cohen et al., 1996). Artifacts have been observed to contribute to changes in
terms of authority structures and division of labor, through enforcing or diminishing boundaries between authority and tasks (Barrett et al., 2012). If the affordances of artifacts related to a specific routine are very clear and direct, it can contribute to increased stability in the routine (Bapuji & Saeed, 2012).

The exact relationship between routines and artifacts has been under debate, however. While Pentland and Feldman (2005) consider that artifacts reflect and influence organizational routine, they are still conceptualized as separate from routines. Recently this view has been criticized by scholars, who argued that artifacts should be seen as the third dimension of routines (D’adderio, 2011; Iannacci, 2014). Iannacci (2014) claims that “especially IT artefacts, not only make organisational practices visible; they may also hide rules by black-boxing organisational procedures so much so that neglecting to include them in the study of routines dynamics can only, at best, provide a partial picture of the complex processes under investigation.” Considering that the present study is particularly focused on the emergent organizational routine that is formed around a newly introduced information system, I adopt the contemporary view of artifacts in routines, where they are seen as the third dimension of routines rather than the separate but crucial element in the constitution of routines.

2.3.2 Change and establishing new organizational routines

Since routines are traditionally seen as inflexible, automatic, and unreflective (Cohen, 2007), they tend to be associated with staticness and inertia towards organizational change (Feldman & Pentland, 2003). In this line of thinking, change in routines rests on external forces, such as the introduction of new technology (Barley, 1986; Edmondson et al., 2001). However, routines can also change from within (Feldman & Pentland, 2003). As actors reflect on the results of routine performances and the ideals embedded in the ostensive perception of the routine, routine change can be triggered (Feldman, 2000).

Similarly, conflicts can form between artifacts and ostensive or performative aspects of a routine. More specifically, new technology can among other things generate issues through disturbances to power structures embedded in incumbent work routines, short term efficiency of performances as well as the ability to utilize existing knowledge and know-how (M.-C. Boudreau & Robey, 2005; Edmondson et al., 2001; Orlikowski, 2000). These contradictions can then lead employees to ignore or resist the new technology, create workarounds, or initiate efforts to modify either routines or artifacts (Ferneley & Sobreperez, 2006; Leonardi, 2009, 2011). Leonardi (2011) argues that the choice between modifying artifacts or routines usually depends on how easy it is to modify the artifact.

In recent years, scholars have started to pay increasing attention to the role of interdependencies between different routines in routine dynamics1. Routines do not happen in isolation but next to other routines (Narduzzo, Rocco, & Warglien, 2000), and if interdependent, they can either compete or complement each other (Galunic & Weeks, 2002). Thus “patterns they [routines] establish

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1 Routine dynamics refer to change and evolution of organizational routines, see Kremser & Schreyögg, 2016; Dittrich and Seidl, 2018.
and sustain reflect other aspects of the organizational context” (Bertels et al., 2016, p. 575). This has important practical implications, especially related to organizational change and establishing new routines. Aspects of one routine might influence other routines, and interdependencies lead to a diminished propensity for the routine to change (Howard-Grenville, 2005). Whereas individual routines are generative in the sense that their performance varies, facilitating routine evolution, bundles of routines tend to restrict routine evolution (Kremser & Schreyögg, 2016). In other words, the dynamics of routine clusters are very different from those of individual routines. Individual routines can evolve through serendipitous events in almost an instant (Dittrich, Guérard, & Seidl, 2016), but the evolution of routine clusters takes years (Kremser & Schreyögg, 2016).

With this in mind, the success in introducing new routines to organizations rests on how well it fits into the larger cluster of routines around it (Kremser & Schreyögg, 2016). Bertels et al. (2016) found that managerial efforts to build links between the designed routine and important established routines - such as rewarding - led to particularly positive change results. This systemic perspective should also be considered in terms of artifacts relevant to the routine. Cacciatori (2012) underlines how designing systems of routines should take into careful consideration the interaction of the routine with systems of - rather than individual - artifacts. In a similar vein, Leonardi (2009) observed how, after initially being enthusiastic about a new information system, users experienced the new IS creating issues with other information systems and thus routines connected to them. As such, if routine clusters bring inertia into routine dynamics, it would seem that so do technological artifact clusters.

In the present work, I adopt the term routine cluster as used by Kremser and Schreyögg (2016) when referring to bundles of interdependent routines. Another option would have been to follow Galunic & Weeks, who use the term “routine ecologies” (2002). The rationale for the decision is that term ecology can be associated with a more macro-level systemic view, whereas the present work is more concerned with the micro-level interactions between a limited number of key routines. Following this, the term routine cluster seems more fitting in the context of the present study.

### 2.3.3 Contrasts between IS continuance and organizational routines perspectives

Recent ongoing developments in the IS continuance and organizational routine dynamics studies, seem to be bringing these two streams of literature together. Further, IS scholars have called for further examinations on the role work context and routines where IS use takes place (Polites & Karahanna, 2013). In contrast, routine scholars have emphasized the need for increased emphasis on the role of artifacts - including information systems - in research on organizing and routine dynamics (D’adderio, 2011). Still, quite distinct differences can be observed between the two.
First, IS continuance research seems to conceptualize routines as habit-based action patterns (Limayem et al., 2007; Polites & Karahanna, 2013). This corresponds closely to what organizational routine scholars would consider being the performative aspect of the routine (Feldman, 2000). However, the two other dimensions of routines: the ostensive and artifacts (Pentland & Feldman, 2005) are not present in the conceptualizations.

Second, IS continuance research seems to limit the study to single information systems and single tasks related to either incumbent habits formed around an information system that is presumed to be directly replaced (Polites & Karahanna, 2013) or emergent habits forming around a newly introduced IS (Bhattacherjee & Lin, 2015; Limayem et al., 2007). In contrast, organizational routine literature emphasizes the interconnected nature of routines and artifacts in technology introduction processes. Following this, organizational routine literature emphasizes the need to examine not only single routines and information systems but routine and information system clusters in order to properly understand the dynamics of technology introduction processes (Cacciatore, 2012; Kremser & Schreyögg, 2016; Leonardi, 2009). In the IS field, Polites and Karahanna (2013), in particular, have underlined the need to examine IS habits in the context of the larger task sequences. However, their research propositions are more focused on different strategies that can be used to disrupt and replace incumbent information system use habits. In this sense, the implications of the interconnected and clustered nature of repeated action patterns as underlined in routine dynamics literature remain somewhat overlooked. In recent years, IS continuance research has taken important steps to diminish reductionism in theoretical frameworks with the recognition of the role of habituated behavior and repeated action patterns in influencing long term IS use (Bhattacherjee & Lin, 2015; Limayem et al., 2007; Polites & Karahanna, 2013). However, considering the empirical results from studies on organizational routine dynamics, it seems like more nuanced conceptualizations of the interconnected nature of IS use, habits, and routines might be worth considering.

The third key difference concerns the characteristic of routines as individual or collective level phenomena or both. In the IS continuance field, Limayem et al. (2007) conceptualize routines as repeated individual-level behavioral patterns that are performed in a fixed and regular way. Polites and Karahanna (2013) extend this by separating between habits, individual routines, and organizational routines. They define individual routines as “specific goal-oriented task sequences performed by a single employee and are often embedded within larger organizational (or group) level routines.” (Polites & Karahanna, 2013, p. 227). Further, both studies imply while both habits and routines concretize in rigidly followed action patterns, routines are controlled by intention, unlike habits (Limayem et al., 2007; Polites & Karahanna, 2013). However, through repetition and successful performances, routines can become habits (Limayem et al., 2007; Polites & Karahanna, 2013).

Interestingly, while some scholars in the field of organizational routines acknowledge the concept of individual routines, in practice, the concept seems to be largely absent from the literature. Pentland and Feldman (2005) argue
that the difference between organizational and individual routines is that orga-
nizational routines include interdependencies between several participants and
their performances but refrain from further explicating the nature of individual
routines. Hodgson (2007, p. 111) rather explicitly foregoes the concept of indi-
vidual routines altogether: “Individuals have habits; groups have routines. Rou-
tines are the organizational analogue of habits”.

Thus, it seems that contemporary IS continuance research and organizational
routines studies differ in two key aspects when it comes to conceptualizing rou-
tines. IS continuance research sees routines as having a fixed character (Li-
mayem et al., 2007; Polites & Karahanna, 2013), whereas organizational routine
literature argues that routines are generative of change and their performances
exhibit considerable variance (Feldman & Pentland, 2003; Pentland & Feld-
man, 2005). Further, IS continuance research posits routines as both individual
and collective level phenomena, while in organizational routines research, indi-
vidual-level repeated action patterns tend to be associated with habits and indi-
vidual routines as the construct largely ignored or unspecified.

With these differences in mind, it is important to clarify the role of the two
distinct theoretical perspectives in the present study. The organizational routine
theory forms the primary theoretical foundation of the present study. The in-
sight gained through this orientation is utilized to reflect the conceptualizations
of routines and habits in IS continuance literature. Also, in an attempt to bridge
the two distinct research fields, the result summary section (4.4.) utilizes both
lenses to build a holistic picture of the main results of the study.
The essays included in the present study express some variance in research approaches as well as epistemological and ontological orientations. Since understanding these orientations are vital for adequately evaluating research endeavors (Silva, 2007), in this section, I discuss the epistemological and ontological foundations of the study as a whole. From there, I proceed to unpack the case-based research design that was adopted, including descriptions of each case and case selection rationale. Finally, research material and methods are presented.

### 3.1 Ontological and epistemological foundations

From the perspective of theoretical framing, the study builds on two literature streams - research on the continuous use of information systems and studies of organizational routines. The two can be argued to have somewhat opposing philosophical foundations. IS continuance research has primarily been utilizing positivistic epistemology with realist ontology and quantitative survey-based methodology (Dwivedi, Williams, Lal, & Schwarz, 2008; Silva, 2007; Straub, Boudreau, & Gefen, 2004). In contrast, research on organizational routines - at least in the form they are discussed in the present work - builds on the so-called practice perspective to organizations (Parmigiani & Howard-Grenville, 2011) and process studies (Feldman & Orlikowski, 2011; Langley, Smallman, Tsoukas, & Van de Ven, 2013). This research has traditionally utilized qualitative research approaches and built on practice theoretical orientation (Parmigiani & Howard-Grenville, 2011). From the perspective of philosophy of science, such research has traditionally been rather heterogeneous, with constructivist, pragmatic, and critical realist orientations all being employed (Iannacci & Hatzaras, 2012; Leonardi & Barley, 2010; Simpson, 2009).

Following the variation, both in the individual studies comprising the present study as well as theoretical frameworks utilized in this summary part, the present study as a whole follows the paradigm of pragmatism. Pragmatism emphasizes the usability of knowledge for influencing our perceived reality, i.e., solve actual problems people face in a meaningful manner (Martela, 2015). As such, it is particularly compatible with the use of different research methodologies and orientations simultaneously, presuming they help scholars produce useful insight (Feilzer, 2010). The aim of the present study is not to find out whether organizational routines or continuous IS use represent a better theoretical lens in explaining long term use dynamics of information systems, which would be
the goal if a critical realist approach would be taken (see Mingers & Standing, 2017). Nor is it to gather understanding about different interpretations and their implications concerning long term use dynamics of IS - the general goal if constructivist orientation was followed (see Mingers & Standing, 2017). Instead, the present study attempts to create a new understanding of how to manage issues that arise when organizational actors attempt to integrate a new information system to their work. In this pursuit, different but well established theoretical lenses are used to generate information about studied phenomena from different points of view. These lenses are not seen as competing but as complementing each other and thus enabling the generation of a holistic understanding of studied phenomena. This pursuit is also supported by the use of different research methodologies since such research designs have been argued to be more likely to create relevant knowledge (Moeini, Rahrovani, & Chan, 2019).

### 3.2 Case research approach

The studies that comprise the present work are all case studies. Case research has been recognized to be very suitable for challenging and sharpening existing theories (Siggelkow, 2007), also specifically in the context of information system research dealing with IS implementation and use (Darke, Shanks, & Broadbent, 1998), corresponding with the orientation of the present study.

At the core of a case study is the case, some sort of specified entity - an individual, community, incident, or a process - that is being studied (Langley & Royer, 2006). On a general level, both cases of the present study have been examined with similar orientations. First, the overall goal has been gaining a new understanding of how idea management tools are used and why. Second, both user and organizational perspectives have been examined to generate this understanding. Third, gathered data has consisted of interviews, observations, and digital trace data. This combination of different perspectives and data collection methods allows one to gain a deep contextual understanding of the studied cases that is highly beneficial to case-based theorizing (Welch, Piekkari, Plakoyiannaki, & Paavilainen-Mäntymäki, 2011). It should be noted that there were also differences in terms of, for example, emphasis on qualitative vs. quantitative data and epistemological orientations. However, in case research differences in research approaches between cases - including epistemological and methodological foundations - have been conceived acceptable (Dyer & Wilkins, 1991; Langley & Royer, 2006).

As a scientific approach, case research can be conducted in a variety of different ways (Langley & Royer, 2006). There has been considerable debate on the best approaches to do so, which has resulted in two leading schools of thought on how to conduct rigorous case research. The first school of thought is the approach described by Eisenhardt that emphasizes the importance of multi-case research designs and comparative examination as the foundation for generalizable theory building (Eisenhardt, 1991). The second school of thought is what Dyer and Wilkins (1991) label as “classical case research.” It recommends in-
tense immersion to only a limited amount of cases - usually one or two - to generate theory that also recognizes the more tacit and hidden aspects of the phenomena under study and research context (Dyer & Wilkins, 1991). According to some, this approach leads to less solid grounding for theoretical generalization and understanding boundary conditions for generated insights (Tsang, 2014). Others argue that the possibility to immerse deeply in specific contexts supports explanation and theorizing on the social world (Welch et al., 2011). In this sense, the approach helps mitigate the risk of gaining only limited insights on “deeper social dynamics” of the case (Dyer & Wilkins, 1991, p. 615).

Following this, compelling arguments for either approach can be made, and thus the question becomes which approach would be more fruitful considering the focus of the present study. The goal of the present study is to empirically reflect and contrast the tenets of the positivistic contemporary IS continuance models to those of extant, non-positivistic literature on organizational routines and their dynamics in the context of idea management tool implementation processes. According to Dyer and Wilkins (1991), a more intense focus on a more limited amount of cases is particularly suitable for research endeavors, where the goal is to understand how particular concepts are operating in an ever-moving social context. Thus this approach seems suitable for the present study. Further, IS research is characterized by complexity and intertwinedness in studied phenomena as well as a multitude of actors and viewpoints that encourages “thick descriptions” and in-depth examinations as fuel for generating insights (Walsham, 1995). Finally, the approach described by Dyer and Wilkins (1991) represents a well-established research strategy in the key literature streams the present study draws upon, including IS (M.-C. Boudreau & Robey, 2005; Cacciatori, 2012; Goh et al., 2011; Leonardi, 2009, 2011), organizational routines (Cacciatori, 2012; Dittrich et al., 2016; Dittrich & Seidl, 2018; Feldman, 2000) as well as idea management tools (Bailey & Horvitz, 2010; dos Santos & Spann, 2011; Hutter et al., 2011; Montoya-Weiss & O'Driscoll, 2000). For these reasons, the present research follows more closely the case research approach described by Dyer and Wilkins (1991), accepting the compromises that such an orientation also entails.

3.2.1 Case selection criteria

In the present study, a case corresponds to a process where a new idea management tool is introduced to an organization. The study as a whole examines two independent cases - case Finance and case ChemPlant - in both of which a company was introducing a new idea management tool to the organization. All individual essays represent single case studies, examining only one of the cases: Essays 1, 2, and 3 case Finance and Essay 4 case ChemPlant. The decision to follow the Dyer and Wilkins’ (1991) approach to case studies also influenced case selection. Here two distinct approaches could be taken: either minimize or maximize the contrasts between the cases and, as such, foster gaining a particularly deep understanding about a specific type of context or pursuing diversity and breadth in the variety of observations (Yin, 2009). The present study fol-
allows a pragmatic orientation and, as such, aims as generating practically relevant and useful new knowledge. With this in mind selecting two distinct cases seemed particularly suitable, as insights could be then expected to be less limited to a particular context (Yin, 2009). Of course, this does not mean that the aim was to generate particularly generalizable findings, as the Eisenhardtian (Eisenhardt, 1991) case approach would have then been a more suitable research strategy. Instead, the decision to include two distinct cases was driven by a desire to simultaneously immerse deeply into the phenomena in focus and maximize the potential to witness variance in it.

Case Finance was selected as it exemplified a “representative case” and such could shed light on the dynamics of IMT use in a typical professional service company (Yin, 2009). The initiative at Finance had support from top management, was driven by a desire to meet the demands of changing business environment, aimed at finding new business opportunities, strengthening innovation culture of the organization as well as engaging new employee groups to innovation activities, was orchestrated around a newly formed dedicated “innovation team”. These are all commonly observed characteristics in idea management tool implementations (dos Santos & Spann, 2011; Elerud-Tryde & Hooge, 2014; Ikävalko & Lempialä, 2019; Wendelken et al., 2014).

As such, case Finance could be expected to provide insights on common issues in the use of idea management tools in professional service organizations. Professional service organizations exhibit high variance in terms of their characteristics (Tuominen, 2013), but some usual features can be identified from previous literature. Employees in such companies tend to be highly educated (Løwendahl, Revang, & Fosstenlokk, 2001). Further, professional service organizations do not usually have separate R&D departments, insights for new ideas are often triggered in service delivery processes, and thus the role of “common employee” is particularly vital in innovation efforts (Toivonen & Tuominen, 2009; Tuominen, 2013). While rigorous managerial oversight in such organizations has been traditionally considered foreign, with considerable emphasis given to the professional autonomy of the staff, recently, professional service firms have been associated with increasing amounts of bureaucracy and control. (Brivot, 2011; Tuominen, 2013)

In contrast, the selection of case ChemPlant was driven by the highly distinctive features of the case. Previous research on idea management tools has illustrated the importance of well-thought-out incentive structures for fostering the use of these tools. It has been argued that a variety of different types of rewards should be employed to ensure that a broad spectrum of different kinds of user motivations from intrinsic creative urges to gaining extrinsic tangible compensation can be covered (Ebner et al., 2009; Wendelken et al., 2014). As a part of this, monetary rewards are quite commonly utilized to reward users who have shared the best ideas (Benbya & Leidner, 2017; K. J. Boudreau et al., 2011). However, far rarer are cases where a monetary reward would be offered to encourage commenting and discussions around ideas already shared. The author is not aware of any published studies where such a case would have been examined. Gaining insight on such an approach would however be highly intriguing
as previous studies have underlined both the importance of fostering commenting behavior inside the community (Hutter et al., 2011; Seeber et al., 2016) as well as the potential of monetary rewards (Bailey & Horvitz, 2010; Wendelken et al., 2014). Gaining insight on monetary rewarding is exactly what the ChemPlant case made possible: the company had decided to award commenting behavior financially. This fact made ChemPlant case a particularly interesting research context.

In the present study, three of the four essays that make up the foundations of the work are focused on case Finance and one on case ChemPlant. Further, while examining research questions 2 and 3 of the study build on both cases, research question 1 draws solely on case Finance. The choice of focus was based on certain limitations of the ChemPlant case related to addressing research question 1 in particular.

The first set of limitations relate directly to the tool itself. In case Finance, the organization did not specify specific use purposes for the idea management tool that was introduced to the organization, nor did it replace an existing tool. This characteristic was in stark contrast to case ChemPlant, where the studied idea management tool was explicitly aimed at gathering operational improvement ideas related to one specific production facility of the company. Further, rather than being a novel tool for the organization, at ChemPlant, the new tool replaced an earlier, less sophisticated tool that had been used in the company for years to collect ideas from the staff. In this sense, the change process occurring at ChemPlant could be argued to represent a modification process of an existing routine instead of a formation process of a more novel routine like in case Finance. When technological artifacts are replaced with a new one, organizational members draw from their experiences and perceptions of the replaced system when trying to understand the use purposes and usefulness of the new technology (Pentland & Feldman, 2008; e.g., Polites & Karahanna, 2012). Finally, the idea management tool used at case ChemPlant was also more limited in its functionalities. Specifically, the tool lacked the functionality to pledge support for other organizational members’ ideas in the form of a “vote” or “thumbs up”, which has been observed to represent the most common way of interacting with such tools (Bailey & Horvitz, 2010; Bullinger et al., 2010).

The second set of limitations relate to the implementation process of the new tool and the research design of the case study. When the majority of the research interviews at ChemPlant were conducted, the new tool had been in use for slightly over a year. However, the initial introduction of the new tool was not a particularly publicized event. Due to other more pressing change projects at the production site under study, implementation of the idea management tool went relatively unnoticed and many aspects of the change including internal communication efforts, providing training for staff as well as ramping up new idea processing routines were somewhat brushed off. It was not until a couple of months

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2 The specified use purposes and other details of each context are discussed further in sections 3.2.2 and 3.2.3 respectively.

3 Case timelines in relation to the data collection efforts are discussed in more detail in section 3.3.
before conducting the majority of the case interviews that strong priority to the
efforts mentioned above was given. Thus, at the time of the interviews, some of
the staff remained somewhat unfamiliar with the new tool, had limited experi-
ence in terms of using it personally, and were drawing on experiences from the
old tool that was replaced when discussing the use of the tool.

Taken together, the explicitly specified use purpose, the potential influence of
the previous tool, more limited technical functionality and unfamiliarity of some
of the staff with regards to the new tool at the time of data collection contributed
to more limited potential for providing fascinating insight with relation to re-
search question 1 and in the end, an imbalance between the treatment of the two
cases examined in the present study.

However, it is essential to note that the ChemPlant case’s limitations were less
relevant in terms of research questions 2 and 3. Examination of research ques-
tion 2 built mainly on the analysis of digital trace data. The analysis focused on
the use of the tool and its functionalities in general rather than the perceived
use purposes for the tool, as emphasized in research question 1. In this sense,
the data from ChemPlant did not seem particularly compromised despite the
timing of the interviews concerning the adoption process of the tool.

The same dynamic also applied to research question 3. While the analysis
draws from the interview data collected at ChemPlant, the examination focused
particularly on perceptions related to the tool’s rewarding practices. While some
informants were not particularly aware of the differences between the new and
replaced idea management tools, they were informed of the new reward policy
at the center of the examination of research question 3 and had formed views
related to it. Further, the examination of research question 3 also built on a more
significant number of informants. Here, views of those processing ideas, etc.
were considered, rather than the analysis focusing specifically on the percep-
tions of "common users" like in research question 1. Following this, the data
from ChemPlant did not seem limited in terms of addressing research question
3.

All in all, case ChemPlant was not entirely suitable for examining research
question 1 but could contribute exciting information to research questions 2 and
3. Further, due to the unique nature of the incentives implemented at the case
company, the ChemPlant case represented an "extreme case" that allowed gain-
ing an understanding of previously unknown but academically highly fascinat-
ing phenomena (Yin, 2009), namely unique managerial approaches to fostering
IMT use. With this rationale, case ChemPlant was also included in the present
study, even though its examination is not in some areas not as extensive as case
Finance.

3.2.2 Case Finance

Essays 1, 2, and 3 are based on data gathered from a financial service organi-
ization (hereafter referred to as Finance) operating both in consumer as well as
business-to-business markets. The service offering of Finance was quite broad,
ranging from real estate brokerage to banking and insurance. The study focused
on a specific part of Finance that was responsible for providing necessary infrastructure and backend services to separate end-customer-facing parts of the organization. As such, their customers were by and large internal clients, though the staff also worked in tight integration with other parts in the development of new offerings and operations as a whole. Finance was a large company, with over 10 000 members of staff, while the sub-organization in focus had approximately 2000 employees. The staff in the sub-organization was, in general, highly educated white-collar workers with business, finance, or technical backgrounds. When referring to Finance in this study, I specifically refer to this sub-part of the company. For referring to the company as a whole, the term Finance Group will be used. The working culture at Finance was described by informants as rather traditional, hierarchical, and intolerant towards uncertainty. Industry-wise, Finance was among the oldest and most established companies in the field that was characterized by rigid regulative frameworks.

Change Initiative

Finance did not consider itself a particularly innovative company, partly dictated by the fact that it was operating in an industry that is heavily regulated. Regardless, digitalization was actively disrupting its traditional areas of operation, and while in their home markets, the competitive situation was still relatively stable, one could already see significant disruptions take place in other markets. Thus it was perceived that unless Finance Group would be able to improve its capabilities to develop radical innovations and become more customer-centric, its current strong competitive position might start to crumble.

Following this, Finance decided to start a major change initiative that aimed to improve the innovation culture of the organization. This initiative consisted of several subparts, including new organizational roles, physical innovation spaces as well as inspirational events and methodologies for generating and developing new ideas. The flagship of this initiative was a new idea management tool that allowed all members of the organization to submit their ideas for innovations to be examined by a dedicated innovation team.

The main goal for the IMT and the initiative, in general, was to exploit better the innovative potential inherent in the personnel of the company that was currently seen under-utilized. The overarching theme for the initiative was communicated to be “democratization of innovating” inside the company. This specifically referred to involving organizational members that had been more disconnected from innovation activities to partake in such efforts on a larger scale than before. Another key aim was increasing the speed of developing innovations, allowing Finance to react more proactively to new development opportunities. In terms of focus of innovating, all sorts of suggestions and ideas were welcomed. However, development of innovations that would serve Finances customers better and be visible to them were especially desired. In this sense, rather than making innovating more systematic or formalizing processes related to it - a common aim in idea management tool implementations (e.g. Montoya-Weiss & O’Driscoll, 2000) - the goal of the initiative was rather to challenge the way innovating was undertaken in the company and foster new ways to innovate.
Idea management tool implemented in the organization

The idea management tool that was introduced to the organization was, in essence, a virtual suggestion box with collaboration functionalities accessible for the staff through the company intranet. The tool had been acquired from an external software development company and was specifically designed to support companies in collecting, developing, and processing ideas that their staff had. In terms of functionalities the tool allowed users to post their ideas, browse the ideas of others, comment on the ideas and respond to comments as well as pledge their support for an idea by giving it a thumbs up style vote. The user interface of the tool was designed in the style of consumer social media solutions to support and encourage active discussions in the tool. The user interface steered users towards relatively concise and straightforward descriptions of their ideas. Adding attachment files such as pictures, videos, calculations, etc. was not possible. Neither was it possible to format the text by bolding, italics, use of color, or other visual adjustments. The tool was available to all members of the organization.

There was a standard form that was used for all ideas posted to the tool. This form required users to first describe the problem their idea would solve, then describe the solution for the problem and finally evaluate the idea on four dimensions, i.e., newness, savings/growth potential, competitiveness, and readiness for market. Each measure was evaluated on a 5-point Likert scale. Also, users were required to select a business domain under which the idea would belong. These business domains corresponded with the different organizational units of the company. Finally, if the user so wished, s/he could define “tags” for an idea. Tags were freely definable by the user but were intended to help understand and describe the key themes the idea dealt with (for example, information security). In addition, all users could also post-development challenges to the tool, meaning problem areas for which they thought creating solutions would be highly beneficial from the company perspective. Other users could then post their ideas to these challenges. However, this functionality was not really used, so it was left outside examination during the study.

Formal idea process

A formal model for processing the ideas was defined for the idea management tool. This model was a sequential, stage-gate like process model, with 5 phases. The first phase was sharing an idea, and this activity could be undertaken by anyone in the organization. After an idea was shared, it entered the comments & refinement phase. Here other employees, innovation coaches, and management of the organization could give feedback, development suggestions, etc. to the author via the commenting feature of the system. Each idea was expected to stay in this phase for several weeks, in order to ensure that necessary viewpoints and development suggestions related to the idea would be aired. When it was perceived that no more relevant comments could be expected, the idea would enter the evaluation and screening phase. Here innovation coaches examined the idea and the amount of interest it raised in the organization. Ideas that did not seem to gather traction or were not possible to implement for other reasons
(for example, technical feasibility) were archived. Those ideas that were perceived to have business potential and could be realized then entered the decision-making phase. Here managers from the idea’s business domain, together with the innovation manager and coaches, made a more thorough analysis of whether the idea should be implemented. Those ideas that got a positive decision were then turned into development projects or integrated into ongoing projects. Those that were rejected were archived. It should be noted that while innovation coaches and manager were expected to participate in the final evaluation, in the end, the funding decision rested solely on the shoulders of business line management. The process as a whole is described in more detail in essay 1.

**Rewarding**

Finance had several different rewards available for personnel to encourage participation in the use of the tool. Every month, the innovation team would select “innovator of the month” based on showing commemorable activeness, enthusiasm, or success in terms of innovation in the confinements of the innovation program. During the time of the study, the reward had been awarded for a variety of achievements that reflected innovativeness ranging from proposing high-quality ideas, actively taking part in discussions inside the idea management tool as well as helping innovation team with the initiative. The reward consisted of a small placate, a prime parking spot in the company garage, and a mention in the company newsletter. Further, the innovation team also had the possibility to give out financial rewards for good ideas that were implemented. However, during the time of the study, this reward was not used in practice, nor was it known by the personnel when queried during interviews. Thus, from the perspective of the present study, this “dead” reward was not considered to exist, and thus the non-monetary innovator award was the sole tangible incentive provided by the organization in relation to the idea management tool.

### 3.2.3 Case ChemPlant

Essay 4 builds upon data gathered from a global petrochemical processing company ChemPlant that employs approximately 5000 people. Operations of ChemPlant include production and marketing of a variety of petrochemical products, in some of which it is the leading provider worldwide. In addition, ChemPlant also engages in engineering services technology licensing related to the field. While ChemPlant does operate worldwide, the present study was focused on a specific production facility based in Northern Europe. The facility is one of the oldest production facilities of the company and still plays a very prominent role in its operations. The total workforce at the site is around 2000 employees. When referring to ChemPlant in this study, I specifically refer to this sub-part of the company. The working culture at ChemPlant was described by informants as collectivistic and result-focused, but old fashioned, particularly in terms of respecting the clearly defined hierarchies prevalent in the organization. As an industry, petrochemical business is rather strictly regulated, similar to case Finance.
Change initiative

Approximately a year before the start of the study, ChemPlant had decided to renew the tools they used for gathering operational improvement ideas from personnel. The main reason behind this decision was that support for the previous IT solution was being phased off by its provider. Following this, the company decided to implement a new idea management tool that unlike the previous tool, enabled the whole personnel to browse development suggestions and give feedback to others’ ideas, features that did not exist in the previous tool.

Management thought that this was a good opportunity also to reconsider how ideas were being processed, including role division, rewards for different parties for participating, etc. Previously, the processing of development suggestions was relatively slow, which had also created the perception among the personnel that proposing ideas is not a worthy undertaking. Evaluating and advancing ideas had been assigned as the responsibility of the supervisor of the person or group who had made the suggestion. This task was not seen as particularly important compared to other jobs supervisors had, which tended to lead to situations where the processing of ideas took a long time or was forgotten. This was perceived problematic not only from the perspective of seizing development opportunities, but also motivating employees to propose ideas in the first place. Thus, a key goal of the change project was revising the roles and responsibilities around the tool in order to speed up idea processing, increase the perceived organizational respect towards employee ideas, and thus ultimately increase employee motivation to make suggestions. Since a formal process for managing and processing ideas originating from staff had existed in the organization for years already, adding regularity or systematicity in the way innovation efforts were undertaken in the organization was not seen as a particular priority. Instead, the focus of the initiative was rather to challenge and improve existing ways of innovating and foster organizational culture more supportive of innovation in general.

The main user group for the tool was the shop floor employees, i.e., production facility operators and maintenance personnel. The majority of this staff had graduated from a vocational school or a polytechnic university. Work was done in shifts, and while the shifts were rotated, the teams where people worked had little turnover. This meant that people tended to form strong bonds with their shift-mates, who were the most important peer group in terms of collaboration at work.

The work itself could be divided into two general types. The first type of work was fieldwork at the production facility, which included making rounds at the premises to ensure that everything was in order in terms of production infrastructure, maintaining equipment, making adjustments to the process that could not be done from the control room, etc. The second type of work was control room work, which included monitoring production processes, making parameter adjustments, and responding to detected issues. Work was described to consist of either sitting in front of the screen with nothing happening if everything was going smoothly or extremely intensive and stressful if something went wrong. The volatile materials, high temperatures, etc. used in the production
process meant that equipment malfunctions and other potential issues could escalate and form serious safety hazards to field workers, especially.

Physically, the work environment was command center-like, with computers and monitors placed next to each other into enclosed arch-like areas. Each production line at the facility had its own control area. All areas were situated next to each other in a larger open space. Some of the workers did both types of work, whereas others focused only on-field or control room work.

Following the profile of the user group, the majority of the suggestions made dealt with highly practical aspects of production facility operations, such as ideas to improve the stability and reliability of the production process, issues dealing with workplace safety and ergonomics, etc. Little to no ideas dealing with new products or services were proposed. This was also in part because the company had a separate tool for suggesting new product innovations. This “innovation tool” had been in use for some time before the launch of the present initiative and was directed more towards white-collar workers of the organization. The new tool for shop floor employees could use the same software solution as the “innovation tool”, based on the positive experiences with the platform. Thus the organization was already familiar with the software, and there were established collaboration practices with the software vendor already in place.

However, despite the fact that suggestions were coming mainly from shop floor employees, supervisors, experts, and management were also using the tool, mainly to give feedback and comments related to posted ideas. These users were slightly more educated, most possessing a university or polytechnic degree. While it would have been possible for them also to post their ideas to the tool, the established practice for these actors was to post their ideas to the innovation tool or advance them in other ways. However, they were active in terms of commenting on the ideas of personnel, as officially, it was expected that expert evaluations and viewpoints on all ideas were mainly collected through the tool instead of f2f meetings, independent e-mails, or such.

*Idea management tool implemented in the organization*

The actual idea management tool was in basic functionally very similar to the tool used by Finance. The tool could be described as a virtual suggestion box with collaboration functionalities and was accessible for the whole staff through the company intranet. The tool was acquired from an external software development company and was specifically designed to support innovating, sharing, developing, and processing ideas. In terms of functionalities, the tool allowed users to post, comment on, and browse ideas. All posted ideas were browsable and commentable by everyone in the company. Visually the tool took cues from popular consumer social media platforms, encouraging active participation and collaboration within the community.

Posting an idea took place by filling a virtual standardized form. The form required the user to:

1. Provide a concise title for the idea
2. Provide a short description of the problem idea concerned
3. Provide a short description of how the idea would solve the problem
4. Name the person(s) who came up with the idea.
5. Indicate to which business area the idea was related to. The business areas corresponded with the production lines at the facility supplemented with some support functions that were treated like production lines, including maintenance.

In addition to the obligatory information described above, users could also provide additional voluntary information. This included:

1. Type of the idea, which corresponded with what kind of benefits the idea could provide, including increased productivity, safety, energy savings, etc.

2. The time window for the idea, which corresponded with whether the idea would provide short or long term benefits

3. Specific wishes regarding the processing of the idea. This included two aspects. First, if the user so wished, it was possible to restrict the visibility of the idea only to the manager responsible for idea processing at the plant as a whole, instead of it being public to everybody. This option was relevant for ideas that could lead to patents. However, due to the focus of the tool towards operational ideas, this option was practically never used. Second, it was possible to request that a union representative was present in the evaluation meeting where the idea was discussed. This option was also very seldom used.

4. Assigning tags to the idea if the ideators so wished. These tags were not mandatory but provided one way to help others find the idea, as tags could be utilized when searching the database for interesting ideas.

Unlike at Finance, users at ChemPlant could not vote or otherwise evaluate the ideas of others except by writing a comment. Further, the ChemPlant tool allowed ideas to be supplemented with various extra materials as attachments such as pictures, calculations, videos, etc. The review committees also strongly encouraged users to include such material so that understanding the crux of the idea was as easy as possible and also to encourage well thought out and prepared ideas that were easy to implement. Finally, it was also possible to post group ideas, i.e., instead of each idea having a single author like at Finance, one idea could have several authors. Despite these differences, at their core, the tools of Finance and ChemPlant were highly similar.

**Formal idea process**

Similar to Finance, a formal idea process was outlined to guide the processing of ideas posted to the tool. First, the user would post an idea to the tool. After this, peers and experts were expected to comment on the idea until there was enough understanding to evaluate whether the idea was worth pursuing. Ideators were expected to answer requests for clarifications and play an active role in getting comments from experts, though administrators of the tool facilitated this process.

Actual responsibility for evaluating ideas belonged to review committees. For each business area, there was a separate review committee. Each committee was free to organize as they wished in terms of group size and meeting frequency.
However, the practices of different committees were quite similar; each committee met face to face once a month and consisted of 5-10 people from the production line, each of which was an expert in an area relevant to the functions of the production line. The committee was lead by a team leader of the production line in question and thus possessed a wealth of information regarding its operations. In the meetings, the committee reviewed all new ideas posted to the tool. If the idea had already received feedback from key experts or experts were present in the meeting, it made the decision on whether or not to implement the idea and if the proposer(s) should be rewarded. Where there was still information lacking, the committee sent requests for feedback to relevant experts through the tool. If it seemed obvious that people were not interested in the idea, and comments were not materializing, the idea would be archived. Those ideas that received a positive implementation decision would then be passed over corresponding implementation processes. What this meant in practice depended highly on each idea. For some small improvements, it meant filing a maintenance request, whereas, for larger ideas, an official development project could be started. Regardless, after the evaluation decision had been made, responsibility for realizing the idea went outside the review committee and team responsible for administering the idea management tool and its use.

**Rewarding**

ChemPlant developed a rather elaborate incentive system to foster active use of the new tool. First, all ideas that were implemented and resulted in savings or profits were rewarded financially. The size of the reward depended on the amount of savings/profits generated but was capped to 20 000 euros. In some cases, rewards were given if the idea wasn’t implemented in the end. This could happen when the committee perceived that the idea was very good but just not possible or rational to implement. For example, it might be that the idea would concern updating a certain piece of production machinery, but it was known that the specific machine would be removed in three years’ time, and thus the long term effects of the improvement would remain small. In this kind of cases, management wanted to provide a reward still to ensure that recognition would be given to really good ideas, even if external factors made them infeasible. If the idea had several authors, they would all receive the reward. However, the size of the reward would be adjusted based on a certain formula. For example, if the idea had over four authors, each user would receive 60% of what the reward would be if it had only a single author.

Second, the committees could reward ideators simply for a great effort in describing their idea. This would be the case when the idea would be exceptionally well prepared, including clarifying design pictures, etc. supplementary material. The size of this reward was approximately 100 euros. The goal of this reward was to encourage employees to put effort into their suggestions in a way that made them easy to understand and process for the committees.

Third, the administrators of the tool would select “idea of the quarter” four times a year. This reward was awarded to an idea that was particularly interesting or had garnered a lot of user interest within the tool. The size of the reward
was 50 euros, and if the idea had several authors, each of them would get the same 50 euro reward.

The idea related rewards were contingent on the person(s) making the suggestion not having development activity as a part of their formal job role. This was the case for the majority of the regular shop floor employees, but not for supervisors and white-collar workers in the facility. Thus, while anyone in the organization could access the tool and propose ideas, some of the rewards were not available for everybody.

Finally, the company also paid 3 euros for each posted comment in the system, presuming that the comment could be perceived as “valuable”. The definition of "valuable" was not officially formalized. It was communicated that “it would be obvious” if a posting was made simply to get the 3 euro reward. This reward was introduced to the organization approximately a year after the launch of the idea management tool.

### 3.3 Research material and methods

Four types of data collection efforts were conducted during the course of the present study: semi-structured interviews, digital trace data, archival data, and observational data. These different but complementing datasets enabled acquiring a broad understanding of the use of the idea management tool in the studied organizations. In this section, I describe the research material and methods utilized in the present study starting from interviews and proceeding to digital trace data and finally, archival and observational data gathered during the research. A breakdown of all data collected in each case is also provided.

An overall timeline for the research conducted in each case is provided in figures 5, and 6 and an overview of the data is presented in table 2. As indicated in the figures, significant organizational changes took place in both companies during the course of the study. Finance underwent an organizational restructuring that included layoffs and introduced the idea management tool to new user groups. At Chemplant, rewarding policies related to the IMT were revised, and the studied production facility had a significant maintenance shutdown that impacted all operations at the location. These events are described in more detail in section 4.2.2.
Figure 5. Timeline for research conducted at Case Finance

Figure 6. Timeline for research conducted at Case ChemPlant
According to Walsham (1995, p. 78), in the context of information system studies, interviews are particularly suitable for understanding “the actions and events which have or are taking place, and the views and aspirations of themselves and other participants.” A semi-structured interview guide was prepared for interviews beforehand. Following Dougherty (1992), interviews were structured in the sense that each informant was asked the same questions, but unstructured in the sense that interviews focused particularly on topics each informant chose to emphasize.

The interviews were conducted with the aim of gaining a broad and in-depth understanding of each informant’s perceptions and experiences in relation to the use of the IS in focus as well as the context of use. On a more detailed level, main sub-themes of interviews were: 1) Informants role and responsibilities in the company in general and those related to innovation efforts in particular; 2) Views of work practices and culture of the organization, in particular from the point of view of innovation efforts; 3) Perceptions and experiences related to the
implementation of idea management tools in the organization and 4) Perceptions and experiences related to use of idea management tools from informant’s personal perspective.

Dougherty (1992) has noted that interviews that probe informants’ experiences regarding past events risk two sources of bias: memory failure and attribution bias. Following Dougherty’s (1992) suggestions to counter these issues, particular attention was paid to timelines during interviews. Further, archival, as well as digital trace data, was used to verify informants’ stories through data triangulation (Denzin, 1978). In addition, an adaptation of the critical incident technique (Flanagan, 1954) was utilized during the probing of previous experiences. In practice, this meant that informants were asked for specific stories about innovating that were explored deeper rather than general views. Further, studying organizational routines through interviews can lead to a lack of gained understanding of the performative aspects of routines (Pentland & Feldman, 2005). Critical incident techniques also mitigated these problems as it helped to tie informants’ experiences of routines to specific performances rather than more general impressions. Further discussion on this can be found in section 5.2.

In case Finance interviews were conducted with two key actor groups. The first group was those responsible for managing the idea management tool and resulting ideas. These actors could be divided into two sub-groups. First is the so-called innovation team, which consisted of an innovation manager, innovation head coach, and seven innovation coaches. The innovation team was responsible for the innovation program and its different sub-parts. Innovation coaches acted as administrators, and conversation facilitators in the idea management tool helped taking ideas forward by looking for funding parties, relevant experts, etc. that were important to turn ideas into reality. The innovation head coach was responsible for overseeing the work of coaches and managing the operational side of the innovation program. The innovation manager acted as a link to the top management of the organization and worked to ensure that the innovation program did not run into problems of authority and brought legitimacy to the program as a whole. The innovation manager, head coach, and coaches were all interviewed, bar one coach who was on leave at the time of data collection. As these people were closely involved in the planning and practical execution of the initiative, they were particularly suitable informants to gain understanding on reasons behind the innovation program and idea management tool, overview on the challenges and successes around the tool as well as how and why the company was motivating participation in the use of the tool. Another sub-group was business line management, who was in the end responsible for making final go/no-go decisions for ideas posted to the tool and organizing their implementation (as discussed in 3.2.2). Two business line managers were interviewed to gain further understanding of issues related to implementing ideas. The selected informants were desired to possess considerable experience in processing ideas that were posted to the tool and represent different business units of Finance. The profiles of desired informants were then discussed with the innovation head coach, who helped to find informants who fit the requirements.
The second group was employees of the organization, to whom the idea management tool was intended for. This included people who were currently active had previously been active or were not interested in the idea management tool. The purpose of these interviews was to understand different factors behind the decision to use or not to use the system, experiences from the use, the perceived impact of the idea management tool in terms of producing new products and services. The actual selection of informants for this second informant group had three phases. First, the desired profiles of informants as a group were mapped by the author and one other researcher. The selected informants were desired to represent:

1. different departments and business units of Finance, to get a holistic picture of the different viewpoints towards the tool and its use in the company
2. different attitudes towards the tool to gain insights not only from enthusiastic employees but also more skeptical ones
3. different roles vis-a-vis the tool, including not only people who were expected to post ideas to the tool but also those potentially responsible for screening or implementing the ideas, to understand different perspectives towards the tool.

The profiles of desired informants were then discussed with the innovation head coach of Finance, who, together with the innovation team, helped to find informants who fit the profile. These potential informants were then approached by the innovation team with an e-mail. An E-mail stated that the recipient had been suggested as a potential informant for an ongoing research effort and that participation in the study was voluntary. After this, the author and another researcher working in the case approached the informants. Out of the 12 approaches in total, 2 persons declined the interview invitation, while the rest agreed to take part in the study. It should also be noted that all informants had job descriptions that included development activities as part of their formal role.

All interviews at Finance were semi-structured and lasted from 30 mins to 3 hours. Interviews with the innovation team and intended users of the tool were conducted in May 2012, approximately six months after introducing the tool. At this point, the honeymoon period with the tool had passed. As such, the timing was right to gain an understanding of the continuous use of the tool, as already a considerable amount of time from the launch of the tool had passed. Interviews with the two business line managers were conducted a year later in May 2013. At this point, the tool had been used for approximately 1.5 years. Thus the informants had plenty of experience of the challenges related to implementing ideas emerging from the tool. An additional third round of interviews was conducted around May 2014. Seven new informants were interviewed at this point, including four potential users of the tool, as well as three innovation coaches who had joined the innovation team to replace other members. The goal of these interviews was to understand how the use of the idea management tool had developed further. However, it should be noted that this additional data was used only in essay 2.
In the case ChemPlant, interviews were also conducted with key stakeholders related to the newly implemented idea management tool. The tool itself and the processes related to it were administered and overseen by two persons (hereafter: innovation team). Being responsible for the development idea-collection, the innovation team had a wealth of information regarding design decisions related to the idea tool and processes and were thus interviewed.

In addition to this, interviews were also conducted with people taking part in the evaluation of the ideas. Here, informants were selected based on their role, with interviews directed at the leaders of the evaluation committees since they were the most knowledgeable people when it came to processing of ideas in each production line. All leaders of review committees were interviewed, resulting in 8 interviews.

Regular workers of the production facility were also interviewed to gain an understanding of the perspective of the people who were expected to use the tool to share and advance their ideas. The selection of these informants proceeded as follows. First, the author and two researchers working on the case outlined the desired informant profile, in a similar fashion as with case Finance. At ChemPlant, it was desired that informants would:

1. Represent different production lines at the facility to gain a holistic understanding of viewpoints towards tool in different parts of the organization
2. Represent different attitudes towards the tool, including both enthusiastic and passive users

Based on this requirement list, the author, two other researchers working on the case, and the innovation team discussed potential informants and selected a group of employees fitting the criteria to be contacted. Next, informants were contacted and asked if they wanted to participate in the study and informed that participation was voluntary. In total, 15 shop floor employees were interviewed in 10 one-to-one interviews and one 5 person group interview.

The first interview round occurred in spring 2016, a bit over a year after the introduction of the tool. The round consisted of interviews of 8 shop floor employees, both two innovation team members, and all eight leaders of the idea evaluation committees. The second interview round took place approximately six months later. It included two individual interviews and one five-person group interviews of shop floor workers. The decision for additional interviews was driven by a desire to gain more extensive data representing the employee perspective.

All interviews at ChemPlant were semi-structured and lasted from 30mins to 2 hours. Thematically they probed people’s experiences of developing ideas, using the tool and idea processing in general, views related to incentives and perceptions of how the implementation process was organized.

In terms of analysis of interviews, two closely related but still distinct approaches to qualitative data analysis were used. In all analysis work, qualitative analysis software Atlas.TI was used.
Essay 1 drew from a systematic combining approach of Dubois and Gadde (2002) in terms of a general approach to analysis. Systematic combining represents a mixture between inductive and deductive research approaches, where a pre-defined theoretical framework is used to guide the research and analysis work with readiness to change or adapt it if the framework is ill-fitting vis-a-vis the observed phenomena (Dubois & Gadde, 2002). Another critical characteristic of systematic combining is the constant iteration between theory and empirical data (Dubois & Gadde, 2002).

The analysis process itself had three main steps. During the first round, all the interviews were open coded. Open coding is a common approach as an initial step of the analysis and is used for two purposes: identifying initial, exciting concepts, and patterns in the data, as well as performing mundane categorical identification on different parts of data (Price, 2010). An example of the latter is denoting background information (age, professional role) about the informants to support interpretive analysis. On the first level, the application of open coding was inductive and performed on a sentence-level. The formed codes were in essentials terms or unique short sentences that represented interpretations of the researchers regarding the assumptions, perceptions, practices, etc. related to innovation activities in the case organization (for example: “performance measurement inhibiting innovating”; “lack of time for ‘By the way...’ conversations”). Open coding was also performed for categorical identification of personal, and professional information regarding the informants as suggested by Price (2010).

Simultaneously with the open coding, thematic coding was also performed during the first round of analysis. Thematic coding in an early part of a research process aims to segment the data, based on professional experience or existing theoretical frameworks (Ayres, 2008). Following these principles, a thematic coding scheme was formed deductively based on the used interview protocol that built on the innovation process framework of Van de Ven et al. (1999), as well as the professional experience of the participating researchers. This scheme consisted of 11 codes that represented different topics discussed in the interviews (for example, “definitions”: personal definitions of innovation-related terms and concepts; “innovation journey”: descriptions of recent innovation processes where the informant had had an active role). The thematic coding’s purpose was to tie the data to existing theories as recommended in the systematic combining approach (Dubois & Gadde, 2002), as well as divide the data into more manageable segments and facilitate the next phases of the process. This coding was done on paragraph-level. The second phase of the analysis consisted of examining the open codes and analyzing the relationships between them to recognize patterns and abstract categorizations from data. Such an axial coding approach is common in middle and late stages of analysis and is used to crystalize central phenomena in qualitative data and find new topics of interest (Simmons, 2017). Thematic codes were used to support the pattern-finding process. As the final phase of the analysis process, the initial categorization formed based on axial coding was used to comb through the interview data for the third time. Drawing from Simmons (2017), the emergent categorizations were re-iterated
and fine-tuned by re-examining the data against the emerging categories. This iterative process shaped the final categorization into three temporal dichotomies and three rhythmic tensions, as presented in the resulting essay.

In all phases of the process, research memos were written to capture observations and personal reflections regarding the findings. During the process, a variety of theoretical frames were examined and considered, as suggested by Dubois & Gadde (2002). In the end, the lens of temporal structuring (Orlikowski & Yates, 2002) was chosen to serve as the theoretical grounding of the study. Insights gained during the interview analysis process were contrasted to observations from examinations of other data sources (digital trace data, archival data) to facilitate finding new dimensions from the interview data, inspired by the recommendations of Dubois & Gadde (2002).

Essay 2 followed an inductive analysis process that drew from systematic combining (Dubois & Gadde, 2002) and grounded theory (Charmaz, 2000). The critical difference between systematic combining and grounded theory is the fact that in grounded theory, the data analysis process is striven to initially be disconnected from existing theories or subjective assumptions, resulting in inductive theory building (Charmaz, 2000). Essay 3 is based on the same data as essay 1. Thus, the design of the original interview protocol drew from Van de Ven et al. (1999). In this sense, the research approach was more in line with systematic combining than grounded theory, as existing theoretical framework driving data collection can be argued to make analysis work disconnected from existing theories impossible. However, the actual coding of the data followed an inductive process (Mintzberg, 1979), thus drawing more from grounded theory (Charmaz, 2000).

The analysis process started with reading through all of the interview data. During this process, open codes were generated inductively (Mintzberg, 1979), with the aim of gaining an in-depth understanding of the raw data and recognizing initial patterns and areas of interest (Price, 2010). The coding was conducted on a sentence level. The codes themselves consisted of short sentences that described researchers’ interpretation of informants’ views and perceptions regarding the use and usefulness of case organization’s idea management tool (for example: “interest decreased when wrong ideas were gaining traction”, “lack of free time inhibits use”). After this, thematic coding (Ayres, 2008) was conducted, in which the open codes were tied to specific organizational structures related to the tool (for example: “innovation team members”). At this point, relevant demographic and professional information regarding the informants was also coded. Next, inspired by Miles and Huberman (1994), the coding proceeded to axial coding: open and thematic codes were cross-examined and open codes grouped into broader abstract categories in an iterative manner. The resulting categorization and analytical observations made during the process of forming it were then used to select focus areas in analyzing the digital trace data, both qualitatively and quantitatively, as presented in the resulting essay.

Like Essay 2, Essay 3 followed an inductive analysis process that drew from systematic combining (Dubois & Gadde, 2002) and grounded theory (Charmaz,
2000) approaches. An existing theoretical framework influenced data collection, but actual coding of the data followed an inductive process (Mintzberg, 1979). In the first phase, all interview data was carefully read through to gain a general understanding of the data. During this process, four general thematic categories related to the study’s research questions were identified: non-use motive, use motive, encouraging factors, and discouraging factors. The data was then thematically coded (Ayres, 2008) at the sentence level with these four codes to segment specific areas of interest from the dataset as a whole. In the second phase, a round of open coding was conducted. Drawing from Price (2010), the purpose of this round was to gain a more nuanced understanding of the four themes identified during the first round by identifying specific, individual concepts and dimensions related to them. This coding was done on a sentence level. The codes spanned from individual terms to short sentences that described researchers’ interpretations of factors affecting and characterizing the use of the idea management tool introduced to the case organization (for example: “fun as use motive”, “disconnection from ‘real’ work”). The third phase of the analysis process consisted of grouping the individual codes into broader, abstract categories in an iterative manner, aiming to proceed from open to axial coding (Miles & Huberman, 1994; Simmons, 2017).

During the analysis process, findings were contrasted against existing literature on idea management tool use, inspired by systematic combining and grounded theory approaches (Charmaz, 2000; Dubois & Gadde, 2002). This reflection work together with the constant re-examination of the data against the emergent coding scheme resulted in the end into the formation of categorization of three themes that seemed novel in relation to extant literature: 1) use motives external to innovating, 2) innovation-centric extra-role use motives and 3) passiveness in idea advancement activities, as presented in the resulting essay.

Essay 4 followed an inductive analysis process (Mintzberg, 1979) that was mainly drawing from the principles of grounded theory (Charmaz, 2000). Following this, the formation of the interview protocol or initial phases of the analysis process aimed at being driven by the empirical data and disconnected from existing theoretical frameworks related to the phenomenon under study.

In the first phase of the analysis, all interview transcripts were read through to gain an overall understanding of the data. Observations regarding the phenomenon under study were documented in a research memo.

The second round of coding consisted of open coding all interviews. Similar to other essays, open coding was done on a sentence level. The codes represented short sentences or individual terms that described the author’s interpretations of informants’ perceptions regarding the new idea management tool under study and its reward policies (for example: “use needs to be easier than sharing the idea face-to-face”, “calculating rewards is problematic”). Following Price (2010), open coding aimed to identify intriguing individual aspects and patterns related to the essay’s research questions.

In the third round of analysis, all open codes co-occurring with each specified thematic code and data points related to them were examined, proceeding from open to axial coding (Miles & Huberman, 1994). In this process of generating
broad, abstract categories, the axial codes are further refined by reflecting them against the data in an iterative process, resulting in 17 categories (for example: “value of commenting”, “criteria for monetary compensation”). Final re-examination of the data through these codes and reflecting the observations against extant literature resulted into recognizing three themes that seemed central to the perceived influence of monetary compensation to idea management tool use: support to innovation processes, influence to use motivation and team discipline that are discussed in the resulting essay.

3.3.2 Digital trace data

Both cases and all essays included in the present study utilize digital trace data from the idea management tool as a source of data. For essays 1&3, trace data represented secondary data, whereas in essays 2&4, trace data were used as primary data together with semi-structured interviews.

For both cases, the digital trace data comprised of a full replica of the studied idea management tool’s database. This included all content posted to the tool, including ideas, idea evaluations, comments ideas’ received, private messages, decision information, etc. as well as all relevant metadata, including timestamps, authors, message recipients, etc. With the database replica, it was possible to reconstruct the whole system as it was at the point when database replica was generated except for the exact user interface as it was available to the company personnel. These unique datasets allowed one to browse ideas posted to the tool, comments made related to the idea, and as such, gain in-depth understanding of the actual innovation activity taking place in the idea management tool. In both cases, the dataset included information on all activities that had taken place in the IT tool, starting from its initial introduction to approximately two years after the implementation.

The digital trace data was provided for analysis by the case companies as a so-called “database dump”. In case Finance, the dataset was provided three times. In each time, the data included the full activity logs and all content related to tool’s use from the introduction of the IMT to the organization to the day when the data set was compiled. The third and final dataset from case Finance spanned from October 2011 when the tool was introduced to the organization to Mid-January 2014. This full dataset was used in the analysis work of essays 2 and 3. However, the analysis work of essay 1 precedes the receiving of the full dataset. Instead, in essay 1, an earlier dataset spanning from October 2011 - November 2012 was utilized. This dataset was the second dataset provided, the most up-to-date version available at that specific time of the study. In case ChemPlant, the dataset was provided two times. Like in case Finance, for both versions of the dataset, the included data consisted of the full activity logs and all content related to tool use from the introduction of the IMT to the organization to the day when the data set was compiled. In essay 4, the second and final dataset spanning from November 2014 (launch of the tool) to January 2017 was examined.

A simplified version of the user interface was created using the Python-based Django web framework (see Django Software Foundation, n.d.), to support data
analysis. The user interface enabled one to examine each idea and all comments posted for the idea as a coherent discussion thread, including information on who had posted what and when. The purpose of the user interface was to simplify the qualitative analysis of posted content by making it easy to browse through. It also provided a simple way to export posted content to Atlas.TI software, which was used to support qualitative data analysis work.

In the four essays, different analysis approaches were used on the digital trace data. In Essay 1, digital trace data was used as secondary data. All ideas posted by the informants who were interviewed and comment threads related to those ideas were read through in addition to those of the 20 most commented ideas. Insights on discussion content and particularly rhythm of discussion were documented into research memos, after which notes on each idea were cross-examined. The purpose of this was to obtain further information on communication practices emerging in the tool and provide data triangulation (Denzin, 1978) on interview insights.

In essay 2, digital trace data was used as primary data. Necessary use statistics of the tool including the amount of posted ideas or comments, amount of different users posting content, amount of new users, etc. were examined on monthly, quarterly and yearly basis in order to gain understanding on trends in the intensity of tool's use and diffusion inside the organization. Further, a random sample of 80 ideas from different points of time after the introduction of the tool and the comments that those ideas had received were examined qualitatively (thorough description of the sampling logic can be found from essay 2). Ideas and their comments were first studied and insights documented on research memos. Based on the insights and an extant typology of computer-mediated social interaction (Burnett, 2000), a coding scheme examining the thoroughness of idea descriptions on 11 factors (for example, problem defined, the solution defined, development challenges identified) was developed. Ideas were then coded with the coding scheme and coding used to study how idea descriptions evolved after the initial introduction of the tool. The coding was done in two dimensions. First, each idea description was examined to see which of the 11 factors were present in the description. As a second step, descriptions that included a specific factor were cross-examined to gain qualitative understanding regarding differences in how extensively each factor was discussed in each idea description. While doing this, early samples were contrasted against later samples in order to identify how idea descriptions evolved over time on each factor.

A similar approach to a random sampling of ideas and comment threads from different points of time was also used in Essay 3. However, instead of focusing on the idea descriptions, the examination was more oriented on idea content and commenting behavior surrounding the tool rather than the evolution of use. The purpose of this was to gain an understanding of collaboration behavior taking place in the tool, as the separate interview analysis of essay 3 highlighted collaboration practices as a vital issue in relation to use motivations - the topic of the study in essay 3. Also, as in essay 3, digital trace data was used as secondary data, rather than primary data. The exact dataset included the same random sample of 80 ideas that were examined in essay 2 supplemented with all ideas
that interview informants had posted to the tool. For analysis, each idea and its corresponding comments were read through and insights documented into research memos. These notes were then cross-examined in order to gain an understanding of how the discussion on posted ideas unfolded in the tool. Similar to essay 1, the purpose of the analysis was to provide data triangulation (Denzin, 1978) on interview insights.

In essay four, digital trace data was used as primary data together with interview data. For trace data, two different analytical approaches employed. Similar to essays 1-3, use statistics of the tool were examined to understand how its use developed and diffused in the organization. Further, to gain an understanding of changes in content in the tool, a Latent Dirichlet Allocation based text mining approach was employed. The analysis work was done utilizing cloud-based text mining application Minemytext.com (MineMyText Trust, n.d.) following the principles outlined by Debortoli et al. (2016). With the help of text mining results, it was possible to contrast the prevalence of different topics of discussion during the first and second year of use and, through this, obtain insight on how discussion evolved thematically both on the level of commenting as well as idea content.

3.3.3 Archival Data

In case Finance, which forms the base for essays 1-3, a wide variety of archival data was also collected. This data consisted particularly of 1) documents related to planning the initiative in the form presentations used by the planning team and dealing with the focus of the initiative, selection of IS provider, intended timelines, etc. 2) internal marketing material used to communicate about the initiative to company staff and 3) articles appearing in the company newsletter, communicating the progress of the initiative, innovator of the month award recipients, etc. In total, the archival data spanned approximately 380 presentation slides and 22 A4 pages of text documents. This data allowed one to gain an understanding of the initially communicated expectations of the use and usefulness of the tool and how the company tried to motivate employees to take part in using the tool.

All archival material was read through, and insights were documented in research memos. The goal of the analysis was to gain additional context understanding of the initiative and company under study. As such, the data was utilized as secondary data and helped to supplement primary data and triangulate insights (Denzin, 1978).

3.3.4 Observational Data

In addition to the data mentioned above, in both cases, also non-participant observations were conducted. In Finance, this consisted of shadowing two organizational members who were actively involved in administering the use of the idea management tool. In ChemPlant, observations included two meetings of one of the six idea evaluation teams that were processing ideas posted to the tool. During the meetings, the team discussed ideas that were posted to the tool,
made decisions on whether to pursue them further or ask for clarifications from ideators and decided on rewards. Observations were also conducted on two three hour training sessions where the innovation team provided classroom-type training to shop floor employees on the use of the tool. While these observations were not systematically analyzed in any of the papers included in the present study, they provided an essential contextual understanding of cases and case companies.
4. Results

In this section, findings related to each research question will be discussed one research question at a time. The first part examines the characteristics of use that emerged around the newly introduced idea management tool, including its goals, relationships with other work routines, initial expectations, and perceived issues. The next part focuses on how the use of the tool developed over time from both user community and content perspectives. The impact of exogenous events and managerial interventions that unfolded during the study is examined as well. In the final part, relationships between the use of the IMT and other organizational routines are discussed. At the end of each part, a summary is provided.

4.1 What kind of use routines emerge around idea management tools?

In this section, I discuss the characteristics of the emergent routine that formed around the new IMT at Case Finance. I start by presenting findings on what users perceived the IMT useful for, in other words, to what kind of goals was the routine associated with. Then I discuss performative and ostensive aspects of the routine and particularly the contradictions between the two. This section draws on the findings of Essays 1-3.

4.1.1 IMT use fitting gaps outside work and innovation

Essays 2 and 3 discuss, in particular, the use purposes informants associated with the new IMT introduced at Case Finance. The results of the studies indicate that one principal purpose was non-surprisingly sharing one’s ideas to the organization and trying to take them forward that way. More interestingly, however, the tool was seen more relevant with regards to ideas that went beyond one’s formal role in the organization. The tool was perceived rather unsuitable for ideas that were directly related to one’s job duties. In essence, if one was working in cybersecurity, that person was unlikely to put cybersecurity-related ideas to the tool but rather those that went outside cybersecurity. Based on interviews, this was because well-functioning, established routines to advance the latter ideas existed already (for example, championing to integrate the idea to an already ongoing development project). Compared to these routines, the IS was seen only to bring additional work and redundant parties to play. However, for extra-role ideas, no such routines existed, and the IS provided a mechanism
to advance the ideas one did not know how to advance. Those informants that did not use the IMT argued that they did not see value in innovating outside their formal role. Instead, they preferred innovating inside already ongoing development projects as such projects were already formally approved and resourced, and thus there was no ambiguity regarding the business value of the development effort.

This use purpose of sharing extra-role ideas was rather distinct from the one initially envisioned by those responsible for implementing the tool. As discussed in essay 1, the organization expected the IMT to result in significant business benefits and improve customer experience in particular. While the two are not mutually exclusive per se, they represent different takes of the intended objectives for innovating, i.e., perceptions of the ostensive routine.

Findings of essay 3 highlight how the use of the IMT was also associated with efforts and desires that extended beyond innovating. For one, IMT use was associated with situations where one wanted to take a small break from regular work and refresh one's mind a bit. Also, browsing the tool created opportunities for serendipitous discovery of engaging content that might provide new insights. These could then be leveraged in regular work. Further, browsing the tool helped in gaining awareness about development work happening in those parts of the organization one had no direct connections to. As mentioned in essays 1 and 3, the organization was generally considered quite siloed. The public nature of posted content in the tool provided increased transparency that allowed employees to gain at least some understanding of the organization’s emergent future directions. In addition, browsing the tool also enabled one to get a heads-up on potential future projects that, if coming to life, would have an impact on one’s work (either due need to be involved or through effects of the output of the project to one’s work). Interestingly, also non-users reported performing this kind of use behavior.

Finally, for active users, using the IMT was perceived as a way to influence the future in the company. The perceived mechanism of this was not only through sharing and developing new ideas but merely using the tool. Implementation of the IMT was seen as an attempt from the organization to transform its operating culture to be more open and innovative by using the IMT one could both signal commitment and contribute to the transformation process. Thus as a whole, the gained information and being active in the tool was seen to help oneself and the organization to be better prepared for the future.

4.1.2 Serendipitous coffee break innovating and perceptions of broken promises with IMTs

While use purposes of browsing the tool had some links to one’s formal responsibilities, user accounts, and digital trace data as analyzed mainly in essays 1 and 2 suggested that use of the tool is practice seemed to be positioned outside the realm of “real work”. Users notably reported that interactions with the new IS were taking place mainly in pockets of limited idle or free time: coffee breaks, in between meetings, etc. Thus, from a temporal perspective, the use of the tool seemed to be tied with a suitable window for use appearing and grasping that
opportunity, rather than being systematic. The use of the tool was not planned but rather happened serendipitously. In other words, performing the routine was associated with situations where there was no imminent pressure from the incumbent and role-related work routines, with many informants reporting that during busier periods using the tool was unimaginable.

The fact that the use of the new tool was perceived as an extra role activity had apparent implications for the performance of the use routine. As mentioned, from a content perspective, shared ideas seemed to address topic areas that went outside the authors' direct responsibilities. As discussed in essay 2, especially initially, the descriptions of the ideas were rather brief. The results of essay 3 indicate that this same briefness also extended itself to commenting content. Both administrators and users of the tool had anticipated that ideas would be collectively refined through commenting inside the tool. However, the comments that most ideas received did little to achieve this. Instead of meaningful collaboration materializing in the tool, the short and vague comments that ideas received did not support to refine the ideas or motivate users to work on them themselves.

Curiously, while idea-sharing and commenting behavior were prevalent in the data, the emergent IMT use routine did not seem to include idea championing activities such as promoting the suggestion to others or eliciting feedback. Findings of essay 3 highlight how the authors of ideas were not taking part in discussions around their ideas and trying to foster further development of their ideas. Based on the results of essay 1, a critical contributing factor to this was again the fact that IMT use routine was subordinate to real work, and users were expressing their freedom to not interact with the tool and focus on more important priorities. Thus, IMT use routine seemed to revolve around idea-sharing and browsing and light commenting activities and did not extend itself to idea championing or other more immersive forms of innovation efforts.

This was also reflective of how users perceived the distribution of responsibilities in the innovation system. As discussed in essay 1, for them maintaining tempo in idea development and the innovation process as a whole fell on the administrators of the idea management tool. Users felt that they needed to prioritize "real work" tasks, and because of this, spending time on championing or other idea advancement activities was not possible. Following this, the results suggested users largely perceiving that it was up to the organization and those managing the utilization of the tool who should ensure that good ideas would not go to waste.

Users also perceived that some of the expectations concerning how the routine should be performed - the ostensive aspect of the routine - were not materializing in routine performances. As discussed in essays 1 and 2, both administrators and users of the tool expected that the processing of ideas would be done considerably faster than usual in the company. However, for a variety of reasons (discussed in detail in section 4.3.), the progression of ideas was plodding. For administrators, this created a sense of powerlessness as they felt obligated to support development but were unable to do so. For users, it created feelings of
that, in the end, the ideas did not progress anywhere and that the actors responsible for managing the utilization of the new idea management tool were not doing their jobs. They expected proactiveness from the organization in terms of helping take ideas forward, but the response times they experienced were high to the point of being considered disrespectful. Users also expected to stay informed about how their ideas were progressing in decision-making processes. However, little, if any, information about it was provided. Thus, many users were questioning the commitment of the organization to the IMT and initiative as a whole.

4.2 How does the use of idea management tools develop over time?

This section draws on the findings of essays 2 and 3 for results regarding case Finance and essay 4 for findings regarding case Chemplant. Both cases are discussed in equal depth.

4.2.1 From intense honeymoon to prevalent lurking

Examining the IMT use intensity at the level of utilization of key functionalities - idea sharing, commenting, voting, and browsing - use seems to be characterized first with an initial honeymoon period. Here user interest is high, with users exploring the tool, sharing ideas enthusiastically, and partaking in discussions around them. As the IMT has just been introduced, users are mostly first-timers who have just found the tool. As evident particularly in interview data discussed from case Finance in essays 2 and 3, users have high expectations for the tool and how it could help them and the company to innovate more.

However, in both studied cases, the intensity of use started decreasing a few months after the initial introduction of the tool. Examination of trace data, as presented in essays 2 and 4 shows how, in both cases, when successive months are compared, the drop is very considerable. This drop is visible regardless of which metric of use intensity is examined: the number of users performing idea sharing, commenting, or visits to the tool. If one examines how many different types of use are performed - idea sharing, commenting, and visits to the tool - rather than user amounts, the results suggest that the distribution of discontinuing use is in both cases quite equally divided in the user community. In other words, as commenting diminishes, so does the amount of users that post comments. This dynamic would suggest that rather than individual users reducing their commenting output, fewer people are commenting.

Interestingly at Finance, albeit the tool logs show a steady reduction of users who comment, ideate, and vote, the amount of people logging in to the tool remains rather stable after the initial drop. Further, the average amount of logins per user remains almost constant throughout the first year, including the first three honeymoon months. This would suggest that those who do continue to use the tool, visit it regularly but cease from contributing content to the tool, i.e.,

4 See appendix 1 in the essay.
lurk. Lurking refers to users that visit an online platform - which idea management tools also represent - but do not post content to the platform (Preece, Nonnecke, & Andrews, 2004). At Chemplant, users also seem to engage in lurking behavior continuously. Examination of trace data suggests that the amount of users who log in the tool is considerably higher than the number of users posting content, suggesting prevalent lurking behavior.

However, at ChemPlant, the prevalence of first-time users as contributors to posted content seems to diminish considerably. These results give indications of the formation of continuous contribution behavior in addition to lurking. In the second year, on average, every tenth login (12%), every fourth comment (26%), and every third idea (32%) is associated with users who have not before conducted that activity. This highlights that while the IMT use is attracting new performers steadily, a considerable majority of content is produced by long term users of the tool. At Finance, the situation looks different. There a steady influx of contributions can also be observed late in the examination period. However, this seems to largely be thanks to new organizational members finding the tool. Those users that have used the tool before for posting content seem to disappear since a significant portion of the contributions is made by first-time users.

### 4.2.2 External shocks and interventions driving IMT use intensity changes

Looking at findings of essay 4, it appears that at ChemPlant after the initial honeymoon phase and following dip in use, user activity starts to rise again 10 months after the introduction of the idea management tool. Interestingly, this coincides with the end of a significant maintenance shutdown at the company. This maintenance shutdown was reported to exert considerable burden for the whole employee base in terms of extra workload, requiring them to abandon some work priorities to complete shutdown related duties. Thus it would seem that when this additional burden is removed, use of the tool intensifies, and use metrics start rising. Up until the end of the first full year of use, the number of new users coming to the tool is increasing, as is the amount of new ideas and comments when successive months are compared.

However, some months later, use starts to diminish again when comparing successive months. This finding is surprising since timing-wise, it coincides with the second notable event that took place during the study. At month 13 of the examination period, the company started paying 3 euros for each posted comment. This was accompanied by increased communication efforts and employee training that lasted until month 15. Considering the strong incentivization and publicizing efforts, it is notable that steadily rising use intensity cannot be found in the data.

However, if use is examined by comparing corresponding months from the first and second full year of use, rather than successive months, use metrics show notable increases in use. Considerable rises in use activity of the different functionalities of the IMT, as well as increases in the size of the user base, can

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5 This corresponds with month 8 in the use statistics as presented in appendix 1 of essay 4
be observed. The effect was particularly considerable for commenting behavior and amount of unique commentators, which is consistent with the goal of the intervention of increased commenting. Notable increases can also be seen in visits to the tool and idea-sharing behavior as well.

Exogenous events and interventions also took place in Finance. In September 2012, the case company announced organizational changes that included layoffs. The effect of the announcement can be seen in the use of log data in Essay 2. Right after the announcement, a dip in use intensity, particularly in terms of contributing content, is visible. Further, one managerial intervention directly related to the idea management tool was also organized during the examination period. There the IMT was opened to a new user group, and a single idea competition was held in November 2013. This intervention can be observed from digital trace data as it created a clear rise in idea contributions, logins, and voting. Interestingly, for commenting activity, the intervention had no considerable effect. This is particularly surprising as, in interviews, the theme of the competition was suggested to be particularly conducive to commenting. After the intervention, when the competition was over use was reduced to levels seen before. As a whole, unlike in ChemPlant, where overall, the use of the tool was more intense during the second than the first year, all use metrics were notably lower in the second year of use. The only exception was the size of the user base. Considering, however, that the tool was opened to thousands of new users due to the idea competition, this discrepancy could be expected.

Thus, in both cases, it was observed that interventions or exogenous events could contribute to considerable changes in use levels. From the perspective of interventions, significant differences were seen in terms of the length of the effects. In Finance, a single spike for one month was created with the conduction of an idea competition for new users. At ChemPlant, rewarding scheme change based intervention was associated with long term effects; in the year following the intervention, all use metrics were exhibiting considerable increases. However, even with strong incentivization, marketing and training efforts use is very far from skyrocketing from one month to next and instead seems to slowly but steadily start to decrease again.

The results as a whole suggest that fostering continuous use of idea management tools might benefit from a systematic and continuous approach to organizing interventions that promote use. Also, differences were observed in terms of spillover effects of interventions. The intervention at Finance aimed at getting more ideas to the tool, in which the intervention succeeded. However, in terms of commenting behavior, no increases were observed. In contrast, the intervention at ChemPlant was associated with rises in all use metrics, also those that the intervention did not directly address with incentivization.

4.2.3 IMT community and content keep evolving

For both cases, changes in posted content were also studied. In essay 2, a qualitative analysis of the development of idea description content was conducted, which showed considerable change in the text users were producing. When early
and late\textsuperscript{6} samples of posted ideas were examined, descriptions of the problems and context related descriptions of ideas were more refined. Also, the solution descriptions became more finer-grained, and the average length of idea descriptions as a whole was increasing. Based on this, it could be argued that the quality of posted content - at last in terms of ideas - was increasing.

This is particularly interesting when the content analysis is contrasted with the analysis of the composition of the user community. Essay 2 shows that at Finance, the majority of the users contribute only for a short period and do not return after. In line with this, even in the second year of use, almost every third comment and idea is posted by a user who has not posted something before. This point has important implications. First, albeit the tool seems to manage to attract new contributors throughout the examination periods, it also seems that a large number of contributors are constantly abandoning the tool, as people do not return to the tool. Thus, a large number of contributions being by first-time contributors, and the number of contributions in general declines. Second, while inexperienced contributors post a large part of the content, the quality of the content still manages to improve. Thus it would seem that increased fidelity in idea descriptions posted to the tool is not necessarily tied to gaining experience at an individual level.

In Essay 4, changes in posted comments, as well as ideas, were examined based on topic modeling text mining methodology. Topic modeling results suggested that comments related to the work environment, safety and guidelines, etc. themes of working context increase together with comments on idea visualization. In contrast, comments asking for feedback or more details on the posted ideas are diminishing. Interestingly, a similar thematic increase in working context-related ideas is not visible on topic modeling results of posted ideas. This indicates that as the time from the introduction of the tool passes, less meta-communication about feedback to ideas or the idea process is needed, and it becomes more specific as exemplified by the prevalence of idea visualization related comments in later data. The content of ideas remains stable. For commenting content, 6 out of 15 topic categories exhibited statistically significant change. In contrast, for ideas, only 2 out of 15 topics showed statistically significant changes in terms of prevalence in the data.

The analysis also revealed that the changes in commenting content were not mirrored in idea content. In contrast, the prevalence of the working environment and safety-related content diminished in ideas but increased in comments. This would suggest that the evolution of the idea and commenting content do not go hand-in-hand. More specifically, if users increasingly end up discussing specific topics, these changes do not necessarily lead to the increased posting of ideas related to the same topics. Another interesting observation is that data from case Finance, as reported in essay 1, suggested that users are more interested in content that they can relate to. Reflective of this, many of the more popular and discussed ideas were related to issues in daily work and the

\textsuperscript{6} The early samples correspond with the first seven months of use. The later samples correspond to 12-25 months after the introduction of the tool.
surrounding environment. As such, the topic modeling results from case Chem-Plant are very much in line with these findings as it was precisely the work environment-related issues that seemed to become the most frequently discussed topics.

4.3 How are emergent IS use routines interdependent with incumbent organisational routines?

This section draws on the findings from both cases. Two sets of routines that seemed interdependent with emergent idea management tool use routine were observed in the data: routines related to development project planning and project implementation as well as routines related to performance measurement of staff. The characteristics of the interdependencies are discussed next. Findings in relation to idea implementation routines are linked in particular to case Finance and draw from essays 1 and 3. With regards to links between performance measurement and the emergent IS use routine, cases Finance and ChemPlant are both discussed, and findings draw particular from essays 1, 3, and 4.

4.3.1 No room for new ideas?

As discussed in essays 1, 2, and 3, users of the idea management tool mentioned the possibility of getting one’s ideas implemented as one of the key goals behind the use of the tool. The gatekeepers in the implementation process were business line managers. They were the ones who had the final call in project initiations and were also the ones who had to provide funding development efforts. Albeit Finance did seem to succeed in implementing ideas that were very easy to realize or could be integrated into already ongoing development projects, users that posted ideas, and the innovation team were struggling to persuade business line management to realize ideas. In other words, attempts to start up new development projects were, in general unsuccessful.

This created much frustration. The users posting ideas themselves were disappointed with the fact that their ideas did not progress further and considered it as a sign of a lack of real organizational commitment to the initiative. The innovation team was frustrated with the situation as they were well aware of the importance of being able to show implemented success cases to both company personnel as well as management.

Two key reasons seemed to contribute to the poorly functioning interface between idea development routine centered around the idea management tool and development project planning routines ongoing in business lines. First, some years before the launch of the tool, there had been a freeze in R&D spending that had resulted in a large backlog of vital development projects, and emptying of this backlog was still very much work-in-progress. Further, regulatory demands and obligations to existing plans made prioritizing new projects problematic. Thus, business lines were already struggling with executing projects included in current plans and were hesitant to add new projects to the already extensive backlog.
The second key issue was temporal mismatches between development project planning routines and the generation of new suggestions for development that was taking place in the idea management tool. For years the company had been following a standardized development project planning routine where at the start of the year each a grand plan would be made that detailed which projects would be undertaken, how would the projects be budgeted in terms of financial, human, etc. resources, who was responsible for the project, etc. However, the project ideas surfacing from the idea management tool were generated at random points of time throughout the year due to the continuous nature of idea collection there. The out-of-syncness with the planning process meant that trying to allocate resources for new projects was very difficult. Even though financial resources could be found, in practice, all the development personnel had already been tied to other projects in the start-of-the-year planning routine. Thus, in order to allocate human resources for projects stemming from the idea management tool, plans that had been carefully crafted earlier would have had to be redesigned.

All these issues were contributing to a situation where initiating new projects was slow and seldom. For users, this created a sense of non-progress surrounding the idea management tool and perception of very few ideas going forward. From the perspective of fostering continuous use of the tool, this was highly problematic as for users, the possibility of having good ideas turned into reality was a key motivational factor of use.

4.3.2 What you measure is what you get

Interesting dynamics could also be observed between IMT use and performance measurement routines. In the case of Finance, mismatches between performance measurement and use of the tool contributed to a lack of perceived legitimacy for using the tool and implementation problems for ideas shared in the tool. In contrast, at ChemPlant, rewarding was utilized as a vehicle to gain legitimacy and diffuse the emergent IMT routine.

In terms of attempting to start new development projects out of ideas coming to the tool, rewarding routines played a crucial role in deterring the start of new projects. As mentioned in the previous section, at Finance, resource allocation plans for development projects were devised at the beginning of each year. After the plan had been formed and agreed on, its successful competition is enforced with reward structures. More specifically, adhering to the plan was directly tied to the personal key performance indicators (KPI) of the business line management. This meant that accommodating ideas stemming from serendipitously from the tool into new development projects would have required business line management to not only put extra effort into redesigning the plans but also put reaching personal KPIs at risk. These KPIs were directly tied to yearly personal performance bonuses, meaning that the redesigning could have direct individual-level financial implications as well.

Further, for about half of the staff in Finance and thus potential users of the IMT, there was a billed hour reward policy in place. This meant that all the time spent working should be billed to a specific project or client. The percentage of
billed hours was then used as a KPI, with the employee receiving bonuses if a certain threshold percentage of billed hours was met. This meant that employees had to either refrain from using the tool or accept the fact that use in practice took place in their free time. Thus, the fact that performance measurement policies in the organization did not recognize spending time in the IMT as legitimate work was contributing to reduced attractiveness of using the tool.

In both cases, separate incentive structures designed to encourage the use of the newly introduced idea management tools had also been devised. At Finance, active users were incentivized with a non-monetary "innovator of the month" reward. This reward included getting one's name into the company's internal newsletter, a pdf diploma that the receiver could print at one's discretion, and a prime parking spot in the company garage. However, interviews suggested that the reward was not particularly successful in encouraging continuous use of the IMT. One person who had received the innovator of the month award was questioned by her colleagues on how she could have extra time to spend on such efforts. Thus, instead of being able to enjoy collective recognition of personal achievement, the meaningfulness of her efforts ended up being questioned. The second user complained that he had received a reward for an idea that he didn't consider particularly useful. This disappointment stemmed from the fact that he had posted ideas he considered to be better, but those did not receive any interest from the organization. This reflected the perceptions in the organization that using the tool was not real and serious development work, but rather a fun extra-curricular activity since the organization was lacking capabilities to recognize valuable ideas from less valuable ones.

In another case, a user reported that she had received a reward for something that hasn't really happened. Her idea had been touted as a success story in the company newsletter. However, to her understanding, the idea had not been implemented as of yet. This inconsistency was stemming from the fact that the formal process model devised to guide activities taking place in the idea management tool ended in an implementation decision. The actual implementations were supposed to be carried out in development projects that were guided by a separate process model. However, for the innovation team, since the idea had successfully gone through the formal IMT process, it could be labeled as a success story. For the user, this was not reflective of reality and how things should be.

Thus as a whole, incentive structures devised to encourage the use of the tool at Finance seemed to operate in a separate bubble. Instead of fostering the meaningfulness of innovating with the IMT and providing legitimacy around it, questions arose regarding the meaningfulness of innovating with the idea management tool than provide legitimacy around the tool. Specifically, the rewards ended up making visible the tensions between the ostensive and performative aspects of the routine, i.e., how people perceived the emergent idea management tool use routine was supposed to operate and how things played out in reality.

At ChemPlant, active users were incentivized with three types of rewards, including rewards for implemented ideas, excellent submissions, and posting
feedback to others’ ideas inside the tool. More thorough descriptions about the rewards can be found in section 3.2.3. However, the common denominator in all rewards was the fact that the rewards were monetary. As discussed in essay 4, users perceived themselves as partaking voluntarily in an activity that could greatly benefit the company in terms of profits or savings. Thus it was perceived as fair and logical that employees’ innovation efforts with the new idea management tool should be compensated financially.

From a rewarding perspective, particularly interesting was the commenting reward. This reward promised 3 euros for each comment that an employee posted to the tool, provided that they were valuable from the perspective of idea development. While the reward did draw criticisms, opinions regarding the incentive were mainly positive. From an idea evaluators’ perspective, the reward encouraged user behavior that made evaluators’ work more manageable. Evaluating ideas was more straightforward and faster when people were proactively airing out their own opinions regarding posted ideas since there was less need to try to get a hold of relevant experts.

Further, the fact that conversations were being conducted inside the IMT meant that a public digital trace was formed around the idea that helped to clear worries regarding fairness and transparency of the evaluation process. Thus, rewarding made performing the emergent innovation routine easier. Considering that idea evaluators’ formal work role consisted of a multitude of other tasks in addition to evaluating ideas, the reward also helped mitigate the burden emergent routine placed on performing critical incumbent work routines. Finally, through its contribution towards an efficient and fair innovation process, reward in practice was perceived as aligned with the expected goals of the routine as a whole: finding meaningful development opportunities that could be executed using the incumbent idea implementation routines.

For users, financial rewards felt fitting as well as they were doing things that their job descriptions did not require them to do. Also, through a practice of reward sharing, it allowed users to harness performing the emergent idea management tool use routine to fostering collegial spirit among their peers. Most users reported some form of sharing rewards the one’s close colleagues. For example, one team pooled all the rewards that any of them had received during the year and used it to finance some fun off-duty leisure activities for each other. Others included peers as co-authors of their ideas even if their role in developing the idea was not particularly significant. These practices were reported to curb jealousy or mistrust related to innovating with the tool and rewards gained from it. Since usually, the absolute rewards were not big enough to considerably change anyone’s life, one would get better "bang-for-the-buck" for the money if it was used for something that the team could enjoy collectively and thus foster team spirit.

Thus, performance measurement in relation to the new routine seemed to reflect universal values in the organization. In contrast to Finance, were rewarding in practice was perceived misaligned with the ostensive ideals of the routine, at ChemPlant, rewarding was contributing to achieving with expected goals of the
emergent routine while enabling users to leverage it in efforts to foster collegial spirit with their peers.

4.4 Summary of Findings

The main findings of the study are visualized in figure 7 below. The figure builds on work on routine clusters (Dönmez et al., 2016; Kremser & Schreyögg, 2016) and contemporary IS continuance models of Polites and Karahanna (2013), Limayem et al. (2007) and Bhattacharjee and Lin (2015) in particular. The figure explicates findings related to the use purposes of idea management tools, i.e., for what the tool was perceived as useful. It also explicates findings related to expectations towards IMT use and sources of dissatisfaction experienced during use. Finally, the figure outlines the general characteristics of IMT use at the organizational level and positions the IMT use to clusters of incumbent organizational routines that have their own effect on IMT use.

![ORGANIZATIONAL ROUTINES Diagram](image)

**Figure 8. Summary of findings**

It should be noted that the primary constructs of IS continuance theories were not explicitly measured in the present study, but rather the goal was to generate qualitative understanding regarding the constructs. With this in mind, from the IS continuance perspective, use purposes of the IMTs, the results showed four different purposes were identified in the data from case Finance. Use was linked to innovation efforts, more specifically the sharing and developing ideas that were not related to one’s official work role; in other words, "extra-role" ideas. Interestingly, users also jumped on other new opportunities that the IS provided that extended beyond innovating. More specifically seemed to be integrating the use of the tool as part of their routines for relaxing during the workday as the IS provided an elegant way to take a break in a manner that could also provide positive work-related insight. This included, for example, gaining inspiration for new ideas or hearing about potential future developments in the organization.
that might affect one's work. Further, users leveraged the openness and transparency instilled in the design of the IS artifact to create new means to gain information about the work done in previously inaccessible parts of the organization. Finally, users also perceived the tool to make it possible for individuals to contribute to the transformation of the company towards a more desired future, which provided another reason for use.

Many expectations related to IMT use were noted in the results from case Finance. Users expected idea processing to be fast and fair, and the best ideas to be implemented swiftly. There were also expectations of the user community engaging in constructive discussions on how to develop ideas further, as well as strong organizational support for active use of the IMT throughout the organization. However, the expectations were on some key dimensions not met, which created dissatisfaction towards the tool. In particular, users were disappointed with speed and transparency of idea processing, the extent of meaningful discussions taking place in the tool, and conflict between IMT use and one's key performance indicators used for performance measurement and calculating individual's yearly bonuses. These contradictions made users question the company's commitment to the IMT tool, respect towards its users, and in the end, the meaningfulness of using the tool altogether.

Regarding characteristics of the continued IMT use, the findings indicate that IMTs do not seem like information systems where one necessarily goes to contribute content. While long term use in terms of visiting the tool seemed to be achieved, this did not necessarily result in continuous contributing behavior, at least in case Finance. At ChemPlant, continuous contribution behavior was more prevalent in the data. However, in both cases, browsing the tool represented the primary mode of use for the idea management tool. Further, the use of the tool was perceived subordinate to other work and was attended to if the job situation allowed. Therefore, use tended to take place in serendipitous moments of idle time, rather than being more systematic.

From organizational routines perspective, the IMT use routine in Finance at its core could be argued to fall under two distinct clusters of routines depending on one’s viewpoint: innovation routines and relaxation routines. Results showed how, when faced with the new IS, the staff at Finance utilized the IMT as a base for a new routine that incumbent organizational structures did not support and for which they had not managed to form well-functioning routines: sharing and developing extra-role ideas. Kremser & Schreyögg (2016, p. 701) argue that routine clusters are "autonomous behavioral units" and aim to "exploit complementarities between interdependent routines". Following this, IMT use could be seen as one idea development routine within a more extensive cluster of innovation routines. To visualize this, IMT use continuance is directly tied to the emergent organizational routine of extra-role idea development in figure 7. In contrast, findings indicated that staff at Finance were reluctant to integrate it into their incumbent innovation routines. More specifically, innovating with the IMT seemed to be distinct ordinary day-to-day development work taking place in projects. Thus extra-role idea development is depicted to be disconnected from development project work in the figure.
In the Figure, IMT use is also embedded inside the relaxation routines cluster. This is because, among users at Finance, the use of the tool was seen as a refreshing leisure activity. It could be compared with, for example, lounging in the coffee room. While users did not make clear distinctions between the use purposes but rather considered them to be two sides of the same coin, understanding these dynamics is crucial as it describes well the multifaceted nature of IMT use.

IMT use also interacted with other routines. Some of these interactions took place within the routine clusters IMT belonged to, like interactions with other routines inside the innovation routines cluster. In the case Finance, it was observed how a temporal mismatch between idea development taking place in the tool and development project planning routines lead to a situation where finding resources to implement ideas was very challenging. This was problematic since users expected the best ideas to be implemented swiftly. Thus there was a tension between development project planning routine and the emergent extra-role idea development routine linked with continued IMT use. The tension is depicted in the figure with a yellow arrow.

A contributing factor to the situation was the interdependence between development project planning and performance measurement routines, more specifically, individual performance measurement. Considering that performance measurement activities in both companies extend well beyond innovation but take many different forms, performance measurement could be seen as a separate routine cluster. In case Finance results indicated that mismatches between performance measurement routines and IMT use seemed to discourage the implementation of the produced ideas. Business line management received bonuses based on well-executed project planning that the ideas coming from the IMT were disturbing. The balanced relationship between individual performance measurement and development project planning is denoted with the green arrow in the figure. In this sense, the IMT use routine was indirectly linked with a separate routine cluster of performance measurement.

Further, IMT use routine interacted with the same cluster directly as well. A large part of the staff at Finance was expected to bill all their hours to specific projects. The percentage of billed hours vs. all work hours were used to determine individual yearly bonuses. However, spending time using the IMT did not correspond with any specific projects, thus could not be billed. This meant that spending time using the tool negatively influenced the metric used to calculate bonuses, representing a tension between continued IMT use individual performance measurement. The tension is depicted again in the figure with a yellow arrow. However, at ChemPlant, alignment between rewarding schemes for the tool and general rewarding practices in the organization seemed to foster the use of the tool. This is in contrast to findings from case Finance. This dynamic is visualized in the figure with the green arrow overlapped with the yellow arrow between extra-role idea development and performance measurement.

If the study had employed a broader scope, likely, more interactions within innovation and relaxation routine clusters, as well as between IMT use and
other routine clusters would have been found. Thus the figure represents a visualization about the results of the present case rather than an exhaustive depiction of potential routine interdependencies related to IMT use. The figure is meant to work as exemplify one concrete alternative for linking the overlapping but so far disconnected theoretical frameworks of organization routines, and continuous IS use theories closer together. Another point to note is the fact that while in the figure, findings from cases Finance and ChemPlant are mixed, the aim was not to build a generalized model of the common features of continuous IMT use. Rather, the goal was to illuminate the different facets of IMT use as present in the analyzed data as a whole.
In this section, I will discuss the theoretical implications of the study and point out some potential avenues for future research. I end the section with a reflection of the limitations of the study and a proposal of a set of practical implications for those responsible for fostering continuous use of information systems in large companies and idea management tools in particular.

5. Discussion

5.1 Theoretical implications

The present study had three distinct research questions. In the following, I will briefly summarize the key findings regarding each question and, more importantly, reflect the findings to views prevalent in the existing scientific literature.

I start by discussing how idea management tools were used in case organizations. This is combined with a reflection of the findings against existing scholarly understanding on innovating as activity in general and innovating with IMTs. Then I proceed to discuss the challenges of fostering continuous use of IMTs and contrast the observed use patterns against literature on IS habit formation. Finally, I discuss the interdependencies between IMT use, and incumbent organization routines and reflect the findings against our current understanding of fostering continuous use of IMTs and information systems in general.

5.1.1 Idea management tool use as relaxation and a distinct form of innovating

The first research question of the study was: What kind of emergent use routines formed around the idea management tools? Based on existing literature, in order to foster active use of idea management tools, organizations need to carefully understand what kind of value the tool can bring to different stakeholders (Dahl et al., 2011). This is tied to the usefulness of the new tool, which in information system research is considered to be a key factor in determining users willingness to try out and continuously use new technologies. (Bhattacherjee, 2001; Davis et al., 1989). Another critical factor in determining the success of new technologies in an organization is how their use can be integrated into daily life in the organization (Pentland & Feldman, 2008). Following this, the present study aimed to understand the characteristics of the emerging use routines as well as the goals associated with idea management tool use. Next, I will discuss the observations on the use of the idea management tool from the
viewpoints of temporality and depth of engagement, legitimacy, and use purposes.

Findings from innovation process studies have shown that fluctuations in the intensity of development efforts, periods of cessation, and serendipitous rises in momentum are regular characteristics of innovation processes (Garud, Gehman, & Kumaraswamy, 2011; Van de Ven et al., 1999). Further, the periods of creative momentum are usually associated with a deep immersion into the creative activity and flow-like state where one forgets one’s direct surroundings and focuses on the task at hand (Amabile, 1988; Csikszentmihalyi, 1997; Shneiderman et al., 2006). The results of the present study suggest that innovating with IMTs is quite different from the traditional temporal characteristics of innovation activity, as outlined above. Idea management tool use, as examined in detail in essay 2, seemed to be comprised mainly of bursts of activity followed by stagnation. Further, rather than actively participating in the process, members of the user community were being passive observers rather than contributing content into the tool. These findings of extensive lurking behavior and limited time spent using the tool are in line with results of similar studies conducted in open innovation contexts (Ebner et al., 2009; Hutter et al., 2011; Majchrzak & Malhotra, 2013), suggesting that these results are rather characteristic in terms of the temporal dynamics of IMT use.

A notable concretization of the lack of immersion was the cursory engagement to innovation work being performed with the IMT. Ideas were described, and feedback provided to each other in a shallow way. Also, minimal championing activities could be observed from gathered data, suggesting that users were refraining from investing explicitly in the development of their ideas. Previous research on IMTs has broadly painted user communities of such tools as active and collaborative virtual groups, where users share their ideas, provide feedback for each other, cocreate improvements to suggestions, network with others and champion their ideas (dos Santos & Spann, 2011; Elerud-Tryde & Hooge, 2014; Hutter et al., 2011). In other words, users partake in a wide variety of different activities that are considered innovative behavior (see De Jong & Den Hartog, 2010). However, the findings from case Finance, as presented in essays 1-3, suggest that innovation work performed with idea management tools can quite distinct and narrow in character compared to traditional conceptualizations of innovating. The innovative behavior linked to the use of the new information system seemed limited mainly to idea generation, and users perceived the other aspects of innovating to be the responsibility of the organization rather than themselves. For example, ensuring that the idea advances in the organization and following up on how the process is unfolding was considered to be efforts that could not be expected from users as they should be primarily focused on doing their "real" jobs.

Rau et al. (2016) found that when actors that do not regularly partake in development activities are asked to engage in innovating, they tend to ignore the request and shift the responsibility to people in formal development roles. The authors suggest that to avoid problems related to this, management should carefully consider who to engage in innovation initiatives (Rau et al., 2016). Similar
viewpoints where lack of participation in innovation activities is tied to individual-level characteristics of actors have also been raised in IMT research. More specifically, uninterest has been linked to a lack of organizational commitment, creativity, innovation skills, sufficient hierarchical status as well as intrinsic motivation to learn and develop professionally (Elerud-Tryde & Hooge, 2014; Füller et al., 2011; Wendelken et al., 2014). In other words, the interest or uninterest towards participation is argued to be closely tied to individual-level desires to innovate and organizational commitment.

The findings of the present study extend this discussion by underlining the role of the perceived legitimacy of specific innovation activity among organizational members. At Finance, the perception of IMT use being disconnected from actual work was widely shared by both non-users and users of the idea management tool. Further, both users and non-users were regularly taking part in development projects. This suggests that explanations of non-participation focused on individual-level characteristics take a somewhat limited view on the phenomena, and the dynamics observed by Rau et al. (2016) can also occur among people who are formally required to innovate. Lack of commitment towards adoption or continuous use of IMTs can stem from the fact that the tool is seen as an only partly legitimate or completely non-legitimate arena for innovation or work, rather than general level disinterest towards development efforts or the organization. This has important theoretical implications. In terms of gaining legitimacy for IMT use and new forms of employee participation in innovation in general, previous research has underlined the importance of fostering an organizational culture that acknowledges the value of innovating (Kesting & Parm Ulhøi, 2010; van Dijk & van den Ende, 2002). The findings of the present study extend these views and suggest that, in addition to generating shared understanding of the value of innovating universally, it crucial to put effort into legitimizing innovating with the IMT specifically.

Further, while generating such understanding, it is also critical to note that IMTs do not necessarily operate as all-encompassing innovation arenas, but rather fulfill a specific niche purpose related to development efforts. At Finance, from the perspective of innovation, the tool was used to advance particularly ideas that went outside one’s work role. This conceptualization of usefulness appeared to be linked with the fact that for such ideas, no proper arenas or processes were perceived to exist. This underlines the tendency of users to adapt new IS to their specific needs or desires, which has also been observed in both general information system studies (Hayes & Walsham, 2001) as well as research on idea management tools (Bailey & Horvitz, 2010). Similarly, at Chemplant, the IMT was mainly used to address the development of production facility operations. However, in contrast to Finance, the use purpose mirrored that of the incumbent tool that was being replaced, rather than arising emergently through users adapting the tool to their needs.

Regardless, the narrow and distinct character of innovation related-use purposes tools is quite distinct to how IMTs tend to be described in previous research. Extant literature on IMTs suggests that they can be used for very differ-
ent types of innovating. This includes the development of both radical or incremental innovations, innovating inside an organization or with external partners, challenge-based innovation or innovating with an open problem space and generation of genuinely novel ideas or revitalizing old suggestions (Bailey & Horvitz, 2010; dos Santos & Spann, 2011; Elerud-Tryde & Hooge, 2014). This would suggest that IMTs can potentially support innovation very broadly.

The findings of this study draw attention to the fact that instead, IMTs are but one potential arena for innovation inside organizations. Potential other idea sources for innovation projects for companies can be numerous (Hansen & Birkinshaw, 2007). For example, ideas might surface during interactions with customers (Alam, 2002) through issues arising during daily routine performances (J. S. Brown & Duguid, 1991; Dittrich et al., 2016), meetings, and workshops sessions (Harvey, Cohendet, Simon, & Borzillo, 2015), etc. Based on the results of the study, potential users can struggle with understanding the use of the tool as a legitimate innovation activity. Thus it seems essential that shared understanding is generated about the role of the tool in a cluster of innovation and work routines. Those who did not consider using the tool as meaningful were struggling to understand the value of innovating in the tool in contrast to other innovation routines, in particular innovating in ongoing "normal" development projects. Extant research provides various suggestions on how the role of the tool can be clarified and designed to fit the organization. This includes following principles of participatory design when planning and implementing the initiative (Dahl et al., 2011) and creating a 20% time policy for using the tool (dos Santos & Spann, 2011). However, it is also important to note that users do this sensemaking by themselves also by making inferences on what kind of ideas are selected and implemented in the tool (Dahlander & Piezunka, 2014). The findings of the present study further suggest that the innovation-related needs influence the inferences that employees have. At Finance, users considered the new tool suitable for extra-role ideas since they did not yet have legitimate ways to advance them. For role-related ideas, known and legitimate structures for taking ideas forward did exist that seemed to render the new tool as irrelevant for advancing such ideas. These observations draw attention to the fact that while company management can take steps to influence perceptions regarding the role of the tool, employees’ sensemaking process also includes emergent features. More specifically, users contrast the affordances of the tool against the innovation-related needs they have rather than simply drawing on official communication surrounding the tool.

Broadening the perspective to include use purposes outside innovation, the emergent IMT use routine was associated with a wide variety of goals, including relaxation, gaining awareness of activities in the organization, and facilitating organizational transformation. Similar observations have also been made in previous studies. In particular, previous research has underlined enjoyment as one of the key reasons why people engage with IMTs (Wendelken et al., 2014). This enjoyment has been tied particularly to users considering innovating as a fun task in itself and personal tendencies to enjoy creative challenges (M. Antikainen, Mäkipää, & Ahonen, 2010; dos Santos & Spann, 2011; Füller et al., 2011;
Ikävalko & Lempiälä, 2019; Leimeister et al., 2009). In contrast, the present study finds that a crucial factor in the attractiveness of using the idea management tool relates to its potential for providing relaxation through a disconnect with users’ usual work routines. In short, interacting with the tool offers a way to gain distance to "real work" momentarily. However, while disconnect from "real work" is a crucial source of value for the user community, paradoxically, it simultaneously seems to contribute to legitimacy problems for participating and investing time in innovating with the tool. Ikävalko and Lempiälä (2019) found in their study that a sense of exceptionality is a critical element in shared understandings around innovation competitions organized with IMTs but at the same time generate tensions towards the ordinary. The findings of the present study contribute to this discussion on balancing perceptions of exceptionality in virtual innovation communities by pointing out its potential flip-sides related to fostering continuous use of idea management tools. The fact that the use of the tool is perceived distinct from regular day-to-day business can mean that employees strongly de-prioritize use in their work routines and lack a sense of ownership for driving their ideas forward as well as generate feelings of unmeaningfulness of the activity in terms of business objectives of the company.

5.1.2 Challenges in fostering continuous use of idea management tools

The second research question of the present study was: How does the use of idea management tools develop over time? Research on information system use has underlined that when it comes to new technologies introduced to organizations, initial adoption and continuous use of the new technology are significantly distinct phenomena (Bhattacherjee, 2001; Limayem et al., 2007). As initial adoption has received much more scholarly attention (S. Brown et al., 2012), requests for studies focusing on long term use patterns of information systems have been made (Jasperson et al., 2005). Similar calls have also been made in the field of idea management tools, with several scholars pointing out the need for increased understanding of the development of the use dynamics of such tools and their impacts over time (Bailey & Horvitz, 2010; Bayus, 2013). In this regard, extant research has examined development idea submission strategies among users (Bayus, 2013), post-adopter management behavior and responses to challenges encountered during the implementation process (Benbya & Leidner, 2018; Tierney & Drury, 2013) as well as the impact of idea management tool implementations to culture and entrepreneurial skills in the organization (dos Santos & Spann, 2011). The present work contributes to this discussion by drawing attention to the challenges of fostering continuous use of idea management tools in organizations and the dearth of habit inducing features in the nature of IMTs and their use.

Findings of essay 2 show how, in the case Finance, the majority of users contributed content only for a brief period, after which posting of ideas or comments tended to stop. However, the examination of login data did suggest that while contribution behavior ceased after initial interest, users did continue visiting and browsing the tool. While also having passive lurkers in the user community can have certain benefits to idea management tool use (Hutter et al.,

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the limited use of commenting and idea-sharing functionalities can be somewhat worrisome. More specifically, without active contribution behavior from the user base, the social dimension of use - which is considered a vital motivational factor to participate in virtual innovation communities (K. J. Bouldreau et al., 2011; Elerud-Tryde & Hooge, 2014; Leimeister et al., 2009) - can be jeopardized. These findings suggest that continuous use of idea management tools can be challenging to achieve.

Results from case Chemplant, as discussed in essay 4, indicate more explicit continuous use behavior. In comparison to case Finance, fewer ideas and comments are posted by first-timers, and only every tenth login is associated with someone who has not previously visited the tool. This would suggest that continuous use is forming around the tool and not only in terms of visiting the tool but contributing content as well. However, one should also note that significant interventions regarding incentivization, communication, and training were conducted during the examination period. Despite all these efforts, after initial spikes in the use activity, contribution behavior started steadily decreasing, which can be considered as a sign of decreasing beneficial impact from the information system to the organization (Delone & McLean, 2003).

The findings of the present study provide some indications of the potential reasons behind the challenges of sustaining continuous use of IMTsl. Continuous IS use theories posit that long term technology use rests on the tool being able to fulfill expectations that the user has regarding the tool (Bhattacherjee, 2001) and fosters the formation of habituated use behavior (Bhattacherjee & Lin, 2015; Limayem et al., 2007). Expectations and satisfaction regarding idea management tool use at case Finance were studied particularly in essays 1 and 2. The findings of these studies show how due to a lack of perceived support and commitment from the organization, organizational members' initial high expectations about the new tool were contradicted that created doubts regarding the meaningfulness of participation. This lack of support concretized particularly to a limited amount of co-creation and peer support among the user community of the tool, opaque and inefficient implementation process for posted ideas. In essence, ostensive expectations and actual performances of the IMT use routine were contradictory, which contributed to IMT use being unattractive. These findings are in line with the observations of previous studies conducted in open innovation context, which has underlined the importance of efficient idea implementation (Dahl et al., 2011; dos Santos & Spann, 2011; Elerud-Tryde & Hooge, 2014) and co-creation experience (Füller et al., 2011) to user motivations.

Further, when introducing new organizational arrangements for innovation activities, organizational members can form incorrect assumptions about each other's work practices, available resources, etc., which can lead to problems in the innovation process (Rau et al., 2016). In the present study, such problematic assumptions were particularly related to available resources and responsibilities related to advancing ideas posted to the tool. The present study extends this discussion on idea management tool governance by exploring further the nuances of transparency expectations in the idea development process. Previous
studies have linked the importance of transparency in IMT based innovation processes to fostering use motivations by providing clarity of idea selection (Elerud-Tryde & Hooge, 2014) and conceptual evolution of the idea (Majchrzak & Malhotra, 2013). The findings of the present study suggest that particular attention should also be paid to providing transparency towards the resourcing hurdles idea processing and implementation planning faces. If IMT use is considered to go outside of regular work, it seems plausible that such activities are bound to be deprioritized in the organization. Considering that the development processes are then likely to be challenging - as also observed in previous work (Elerud-Tryde & Hooge, 2014) - it might be beneficial to provide the user community with information on the practical resourcing issues that hamper idea implementation and development. This might help in managing what Rau et al. (2016) call unbalanced mental model boundaries between organizational members, which can hamper innovation processes.

Also, the findings of the present study suggest that IMTs are somewhat problematic in terms of potential for habit formation. Based on research in psychology, IS scholars have conceptualized key antecedents of IS habit formation as satisfaction with the IS behavior to be habituated: frequency, stability of context for the behavior, comprehensiveness of usage of the IS tied to the habit and satisfaction with the results of the behavior (Limayem et al., 2007; Polites & Karahanna, 2013).

While problems related to user satisfaction were already discussed above, examining the issues from the habit formation perspective provides some fascinating additional insight. In addition to problems with idea implementation, users were particularly disappointed with the lack of constructive discussions taking place on the platform. This underlines how IMTs exhibit strong interdependencies-in-use, i.e., the value provided by the tool rests on other people using it, too (Burton-Jones & Gallivan, 2007). This can create problematic dynamics around use behavior due to the potential for vicious cycles of participation: as one user is disappointed with the support he gets from the rest of the IMT user community, he will not contribute to others' ideas either and a vicious cycle around contributing forms. This, in turn, can be problematic from the perspective of habit formation as it makes one's satisfaction less dependent on one's own behavior or the technological artifact but rather of exogenous factors.

From the perspective of the frequency of IMT, use seemed to be associated with opportune moments and idle periods at work. Thus in terms of time allocation, instead of being a regularly performed activity, use was linked with the serendipitous discovery of opportune moments and randomness - as discussed in essays 1 and 3. Further, serendipity, non-linearity, and randomness are also rather characteristic features of innovation processes in general (Van de Ven et al., 1999). Taken together, the serendipitous nature of IMT use and innovation, in general, do not seem like a particularly fruitful combination for the formation of habituated use around IMTs.

In terms of the context of use, IMTs seem to have both habits inducing and deterring properties. As technological artifacts, IMTs could be argued to be rather stable. In neither of the two studied cases did the case organizations feel
the need to modify the user interface or functional logic of the IMT itself. This can be seen to contribute to a stable context of use that is helpful for the formation of habits around information systems (Limayem et al., 2007). However, from the perspective of fostering context stability through managerial interventions, IMTs seem problematic. According to Polites and Karahanna (2013), context stability can be increased by defining standard operating procedures or electronic monitoring of system use. Considering the voluntary and extra-role nature of the IMT, these approaches do not seem particularly relevant for an average user. Still, for the idea evaluators, or other stakeholders to whom the use of the tool is not an extra-role activity, the methods might be more applicable.

In terms of usage comprehensiveness, results of essays 2 and 4 indicated that the majority of IMT users tend to be lurkers. Thus instead of utilizing the different functionalities of idea sharing, discussion, etc., most users browse ideas and refrain from using the full array of functionalities IMTs consist of. Further, even among the more active contributors, the use of different functionalities did not seem that established. In essay 2 it was observed that people sharing ideas are unlikely to comment on their ideas themselves that seems to suggest that even those contributing content to the tool were doing so in a limited fashion and thus not taking advantage of all the potential affordances of the tool. As the breadth of use is considered to be a driver for habituated behavior to form (Limayem et al., 2007), IMT use again does not seem to exhibit particularly habit inducing properties.

The findings of the present study on continuous IMT use also suggest that despite the challenges observed regarding habit formation and fostering of long term use, the quality of posted content is improved (essay 2), less meta-discussion about innovating within the idea management tool is needed and prevalence of different discussion topics can change (essay 4). Thus, while the turnover among the user community can be significant, the use of idea management tools evolves and develops at the organizational level. Following this, while several scholars have underlined the importance of swiftly gaining quick wins with these tools (Dahl et al., 2011), it takes time for organizations to learn how to utilize IMTs (Di Gangi & Wasko, 2009). As such, implementation of an idea management tool should not be seen as a straightforward approach to improve the innovative culture of an organization but rather as a long term strategic initiative, which might take several iterations to fine-tune (Benbya & Leidner, 2018). Jasperson et al. (2005) have underlined the importance of organizing interventions to foster long term information system use. In the present study, it was observed that managerial interventions could be compelling in driving up the use of the tool in the short term but can lack stickiness in terms of results. This would suggest that a critical factor in the long term approach to managing idea management tool implementations could be systematically and continuously devising interventions that drive up the use of the tool among organizational members as it is unlikely to use habits to form among the user community naturally.
5.1.3 Interdependencies between IMT use and incumbent organizational routines

The third research question of the study was: How are emergent idea management tool use routines interdependent with incumbent organizational routines? Recent developments in both IS continuance and organizational routines literature emphasizing the need to examine action patterns not on the level of a single pattern but as parts of larger clusters (Kremser & Schreyögg, 2016; Ortmann & Sydow, 2018; Polites & Karahanna, 2013). Further, unlike individual routines that can be change-inducing in nature, the interdependence between several routines tends to create only inertia towards change (Kremser & Schreyögg, 2016). The findings of the present study extend this discussion on routine clusters by illuminating the challenges for fostering continuous IS use, interdependencies between emergent IMT use routine, and other organizational routines can create.

As the findings of particularly essay 1 show, the inability to optimize relationships between idea management tool use routine and development project planning routines can hamper users’ desires to perform the IMT use routine. This is particularly problematic as previous research has stressed the importance of well functioning idea selection and implementation processes as they not only influence use motivations (Dahl et al., 2011; Elerud-Tryde & Hooge, 2014) but also help users to understand what kind of ideas and suggestions the company is looking for, i.e., what is expected of them (Dahlander & Piezunka, 2014). Plenty of studies have examined the best ways to select the best ideas from suggestions received through idea management tools and who should do it (Blohm, Riedl, Füller, & Leimeister, 2016; M. Klein & Garcia, 2015; Riedl, Blohm, Leimeister, & Krcmar, 2013; Soukhoroukova et al., 2012). While this is undoubtedly an important topic because of the vast number of ideas these platforms can attract (Westerski et al., 2013), the present study highlights how the selection and resulting implementation decisions are interdependent on development project portfolio planning and execution routines to which well-functioning interfaces need to be designed and managed.

Strong interdependencies were also observed between emergent innovation routines of managerial control, including rewarding and work time/effort monitoring. At ChemPlant, the IMT implementation team was leveraging the established culture of monetary rewarding for extra-role efforts by ingraining matching rewarding logic into the IMT use routines through the monetary idea and commenting rewards. This, in turn, helped directly and indirectly through heightened transparency of the idea evaluation processes to increase the attractiveness of performing the routine and perception of fairness and recognition from the company side towards the users. In contrast, at Finance, work monitoring routines and rewarding related to performance were contradictory with performing the IMT routine, leading to a situation where users had to accept the negative consequences that the mismatch caused.

In previous research, rewarding related to the IMT routine has mostly been discussed as an intra-routine issue (Bailey & Horvitz, 2010; Wendelken et al., 2014), rather than as a being a single component in a more extensive system
where incentive structures need to be aligned properly to avoid potentially problematic contradictions. While this is understandable because much of the research has been conducted in an open innovation context where the same problems are not as relevant, in intraorganizational context, this understanding is crucial. As such, this study extends research on IMTs by highlighting the need to align reward systems, especially in intra-organizational contexts. This is particularly important because of the voluntary nature of IMT use, as even the use of mandatory information systems is often ignored (M.-C. Boudreau & Robey, 2005; Hayes & Walsham, 2001; Newell, Scarbrough, & Swan, 2001). This is well reflected in the dynamics observed in Finance. For a small amount of effort, it would have been possible for users to ensure that the use of the new IS did not have negative consequences to their personal bonuses. However, users did not grab this opportunity since they saw it too cumbersome. This is reflective of the motivational problems of making individual level sacrifices to perform an extra role routine to use a volitional information system.

There have been several calls on further studies on motivational dynamics and suitable incentive systems around idea management tools (Bailey & Horvitz, 2010; Wendelken et al., 2014). Following this, extant research has drawn attention upon designing reward systems that cater different user motivations (Ebner et al., 2009; Wendelken et al., 2014), balancing extrinsic and intrinsic motivations (van Dijk & van den Ende, 2002) and the benefits of tying idea management tool use to organizational members personal KPIs (Benbya & Leidner, 2018). The present study extends this discussion by suggesting that studies of incentivizing idea management tool use could benefit from broader conceptualizations of incentive structures that takes into account not only rewarding schemes designed to foster active use of these tools, but also the interplay between these schemes and general rewarding and performance monitoring practices in organizations. Gaining this understanding is crucial because of the vital role incentive systems have in fostering the use of idea management tools (K. J. Boudreau et al., 2011; Ebner et al., 2009). As a whole, the present study continues, particularly the work done by Langer and Seidel (2015), who were examining concrete practices for fostering user commitment and continuous use in virtual innovation communities. Langer and Seidel (2015) show how contribution behavior rests on the perception of shared values and interests as well as respect towards the firm. The present study illuminates how conflicts between interdependent emergent routine and incumbent routines create the perception of a lack of mutual organizational commitment and dynamics unfavorable to user motivation.

In this sense, findings of the present study are in line with studies on routine dynamics, which have underlined the need to synchronize emergent routine with incumbent routines in order to enable successful change processes (Kremser & Schreyögg, 2016). Reflecting these findings against research on continuous information system use and particularly the role of habituated behavior in it, the results of the present study highlight the complexity in determining which technologies and existing habits and routines newly introduced IS are competing with specifically. So far, contemporary IS continuance models have taken a
rather straightforward approach to this problem. Most studies tend to tie the inertia inducing habits into a single incumbent information system (Bhattacherjee & Lin, 2015; Limayem et al., 2007; Polites & Karahanna, 2012). While this can be appropriate in cases where the new IS is a direct replacement to an incumbent IS and use of the tool is mandatory, the findings of the present study suggest that if the IS is voluntary and can serve a wide variety of purposes, a highly complex situation emerges. As suggested by Santos and Spann (2011) and the results of the present study, idea management tools are just one arena for innovation for organizations. Based on the findings of the present study, this is true from an individual perspective as well. Following this, incumbent habits and routines creating inertia for the formation of continuous habituated use of idea management tools can take a variety of forms including innovating in ongoing development projects, suggesting ideas directly to one’s supervisor, interacting with customers as all these provide alternative arenas for innovation and thus outlets for creative desires of organizational members.

Further, the inertia to the continuous information system use formation process can also be generated by routines peripheral to idea management use, which influence the satisfaction users to gain from use. In the present case, negative influences on continuance intentions were caused by interdependence issues between idea management tool utilization routines and rewarding as well as development project planning routines. Against this backdrop, the current conceptualizations and operationalization of the effects incumbent recurring action patterns on continuous IS use seem overly simplified. Some necessary steps have already been taken, as Polites and Karahanna (2013) have drawn attention to the relationships between IS use, individual habits, individual routines, and organizational routines. With this in mind, the present study contributes the discussion on the relationship between recurring action patterns and information system use (Bhattacherjee & Lin, 2015; Limayem et al., 2007; 2012, 2013) by highlighting how continuous information system use success rests not only on fostering the emergence and continuance of new organizational and individual routines but also their compatibility and successful coexistence with interdependent incumbent organizational routines.

5.2 Limitations of the study

This study has several limitations that need to be recognized when the implications of the presented results are being considered. Next, I will discuss notable limitations related to data collection methods employed, potential effects of managerial interventions that took place in the case organizations during the study period, and limitations related to the selected cases.

Organizational routines have traditionally been studied through in-depth case studies that utilize participant or non-participant observations combined with interviews and archival documents as crucial sources of data (Parmigiani & Howard-Grenville, 2011). Pentland and Feldman (2005) note that the use of interviews or surveys solely can lead to limited understanding of the routines fo-
cused mainly on the general idea (ostensive aspect) of the routine as the performance of the routine tends to represent tacit knowledge. It thus is not very easy to reflect upon or communicate by routine participants. Following this, as direct observations were not employed as a primary research approach in this work, several cautionary steps were taken to ensure that understanding of the performative aspects of the examined routines would also be gained. First, critical incident technique (Flanagan, 1954) was employed during interviews to enable tapping into specific performances of the routine rather than discussing the routine in general. Second, in all the essays, digital trace data was also examined. Digital traces essentially store a complete history of activity performed inside the studied idea management tool, and as such, allow the researcher to study not only what individual actors did in the tool - but also thanks to timestamps included for each trace - how the events unfolded. As such, they provide highly detailed data on each specific use performance related to the IMT. Following this, digital trace data provided an opportunity to both verify use related stories told by informants in their interviews as well as to gain an understanding of use events that not come up in interviews or were performed by organizational members of the interview sample.

Further, questions could be raised whether direct observations are a particularly suitable data collection method when studying the use of IMTs. As highlighted by the present study, the use of these tools tends to be infrequent, non-immersive in character, highly subordinate to other work tasks, and occurring serendipitously. Thus examining the use of IMTs through direct observations is likely to be particularly inefficient, raising questions on the meaningfulness of such an approach in the present study’s context. For these reasons, I argue that the research design of the present study is adequately suitable for the study of IMT use routines and their dynamics.

In both cases, organizational interventions took place during the study period. In Finance, organizational restructuring efforts were announced and carried through approximately ten months after the introduction of the tool. This process included considerable layoffs among the whole staff, which lead to changes in the composition of the innovation team administrating and facilitating the IMT as well. Discussions with the members of the innovation team suggested that this event might have harmed the use of the tool, as the staff was mainly concerned with doing good work on their primary responsibilities rather than focus on extra-role activities to mitigate the possibility of being laid off. However, use statistics from the idea management tool indicate (see Essay 2) that while a small dip, particularly in the number of active users, can be observed, the general trend of diminishing use interest remained constant before and after the event. Further, when the restructuring was completed 13 months after, a small increase in use intensity can be observed, but the general trend of discontinuity of use on longer-term persists.

In addition to the restructuring, the innovation team conducted a small intervention directly related to the use of the tool, where it was opened to a new group of users. Further, these users were asked to contribute ideas related to a very
clearly defined development challenge in a specific time frame. This was in con-
trast to how the tool had been used before: idea topics were not outlined, and
there were no time limits when ideas should be posted. The effects of the inter-
vention - which took place 25 months after the introduction of the tool - are
visible in the data (see Essay 2). The effects of the intervention are discussed in
more detail in section 4.2.2. However, as the intervention took place at the very
end of the examination period and was isolated to a single month, the inter-
vention did not affect the general trend of diminishing use observed.

In ChemPlant, changes were made to the rewarding schemes related to the use
of the tool and a variety of communication and training efforts undertaken in
the middle of the study period. According to the interview and digital trace data,
differences in use activity could be observed pre- and post-intervention, though
it is impossible to establish exact causality between different interventions and
usage behavior. However, extant research has recommended the use of varying
and repeated managerial interventions to foster the continuous use of infor-
mation systems in organizations (Jasperson et al., 2005; Polites & Karahanna,
2013). In this sense, the studied organization was merely following the best
practices in the field. Thus when considering the findings from particularly case
ChemPlant, the amount of effort that the company put into fostering the use of
the tool should be recognized. Still, one could ask if the significant interventions
render the results tainted. This is a potential interpretation, especially if the
theme is approached from the ideals of positivist approaches where replicability
and clear causal relationships are valued (Myers & Avison, 2002). However,
considering the pragmatic approach of the present study, it could be argued that
in real life, exogenous surprises happen, and management addressing perceived
organizational problems are business-as-usual. This view is supported by extant
studies of IMTs, where numerous examples of continuous interventions to the
organization of idea collection of processing can be found (Bailey & Horvitz,
2010; Benbya & Leidner, 2018; dos Santos & Spann, 2011). Further, particularly
considering the length of the study period spanning at least two years in both
cases, lack of organizational changes or interventions could be argued to be un-
natural rather than natural. As underlined by process studies scholars, the only
stable thing in the universe is change (Langley et al., 2013), and it is merely this
that took place to a small extent in both studied cases.

In terms of evaluating the quality of a piece of research, a wide variety of dif-
f erent criteria have been developed, and the most fitting criteria depend on the
specific nature of the study (Patton, 2002). Following this, to discuss the quality
of the present study, I follow the criteria suggested by Miles et al. (2014). While
these criteria are based on critical realist assumptions, the framework has been
designed with the intent of bridging different approaches to evaluating qualita-
tive research and thus seems fitting for the present study as well.

Confirmability (or objectivity in positivist orientation) refers to efforts to con-
trol researcher biases from influencing the quality of findings (Lincoln & Guba,
1985). It is important to note that due to the interpretive nature of the present
study, researcher biases will always affect the study. However, this does not
mean they should not be controlled. Following the suggestions of Miles et al.
(2014) to enhance the confirmability of a study, all raw data of the research has been carefully stored to allow for reanalysis, and I have strived to document and describe the research process and procedures transparently. Competing explanations for the results have also been considered, as exemplified by the theoretical grounding of the present study to two distinct theoretical frameworks.

Dependability (or reliability in positivist orientation) refers to efforts to ensure that the study has been conducted systematically and coherently (Miles et al., 2014). Several efforts to enhance the dependability of the study were taken based on recommendations by Miles et al. (2014). Research questions were defined clearly, and their congruence with the research design considered. Data triangulation was extensive during the analysis process to confirm findings. Also, data used in both cases was collected by several researchers using comparable protocols, and in essays, 1-3 collective coding was conducted with intercoder agreement checks. Research findings were also regularly presented and discussed with other researchers to enable peer review of the study.

Credibility (or internal validity in positivist orientation) refers to whether the results and conclusions of a study represent an authentic take of the actual situation that was examined (Miles et al., 2014). Three approaches suggested by Miles et al. (2014) were followed to enhance the credibility of the study. First, when reporting the study, I aimed to generate and communicate context-rich and thick descriptions of the studies. Second, data and methodological triangulation were used to examine the phenomena under focus. Finally, findings and conclusions were presented and discussed with research subjects at several points of time in both case studies.

Application refers to a study's ability to provide practical value (Miles et al., 2014). This dimension is particularly relevant for studies adopting a pragmatic orientation (Martela, 2015). As suggested by Miles et al. (2014), the practical implications of conducted research have been discussed in each essay and this summary part of the study. Also, the results of the study were made widely available for informants and case companies in terms of presentations and reports to allow their learning. The practical relevance has also been taken into account when selecting the focus of the study. Attention was directed towards issues that seemed particularly relevant and critical to study subjects in terms of their work responsibilities and desires.

Transferability (or generalizability in positivist orientation) refers to the possibility to apply findings of the study to other contexts (Miles et al., 2014). The transferability of findings is often raised as a central concern in regards to case studies as the sample size in such research designs is limited (Tsang, 2014). This has to lead to some case research scholars to argue that in order to generate solid theory, multiple case studies of 4-10 cases and utilization of comparative logic and cross-case analysis should be employed (Eisenhardt, 1991). Since the present study has heeded from using this approach for reasons outlined in section 3.2 and follows a so-called classical case study research design (Dyer & Wilkins, 1991), it is particularly important to address to what extent are the results transferable. To enhance transferability, several steps suggested by Miles et al. (2014) have been taken. Description of study settings, informants, processes,
and results have been striven to be described extensively. Special care has also been put to connect findings to prior theory, in particular in this summary part of the present study, and the findings are congruent with extant literature. The results of the individual essays have been discussed with other researchers and case company representatives at multiple points of the study to examine their consistency with others’ experiences. As a final but crucial step, I shall next reflect the extent to which the results of the present study might be transferable to other contexts and why.

First, while organizations and employee groups studied were undoubtedly distinct, for example, in terms of the profile of work (white vs. blue-collar) and utilized rewarding structures (non-monetary vs. monetary), some commonalities should be taken into account when considering generalizability of the findings. Most importantly, both organizations were very established players operating in relatively highly regulated and well-matured industries and characterized by a somewhat hierarchical working culture. Following this, the studied phenomena might have unfolded differently if case companies would have been working in more nascent fields, associated with more flexible work practices and reliance on self-organized teams, such as the software development and information technology business in general (Dingsøyr, Nerur, Balijepally, & Moe, 2012; Lindvall et al., 2004). Both companies were also based in a societal context characterized by low power distance and close collaboration between staff and management. Such contexts have been suggested to be conducive to fostering new forms of employee participation in innovation (Kesting & Parm Ulhøi, 2010). Therefore it is plausible that in a different societal setting, results might look different.

Second of all, idea management tools represent a particular type of information systems: their use tends to be volitional and goes beyond organizational actors’ formal job roles as the findings of the present study and other researchers (Zuchowski et al., 2016) indicate. Further, while idea management tools can be associated with managerial efforts to increase systematicity and structure to the early phases of the innovation process (Bailey & Horvitz, 2010; dos Santos & Spann, 2011; Montoya-Weiss & O’Driscoll, 2000), the fact that their use is volitional means use behavior hinges more on proactiveness and non-enforced commitment of organizational members. Thus the dynamics of the usage behavior can be distinct from traditional information systems used in companies (Malhotra & Galletta, 2005). This would suggest that the results of the present study in particular related to the use routines are more likely to be transferable to a context where the information system in focus exhibits similar characteristics to enterprise social media systems and other similar open-ended collaboration tools (see Kügler, Smolnik, & Raeth, 2013; Stieglitz, Schallenmüller, & Meske, 2013). However, it should also be noted that the use of this kind of tool is more difficult to control and influence from a managerial perspective (Malhotra & Galletta, 2005). As such, introducing idea management tools organizations can be argued to be a particularly thorny endeavor, and thus key success factors in idea management tool implementation can be relevant also when dealing with more traditional information systems. Based on extant research,
this could particularly be the case in relation to findings on the importance of recognizing routine cluster dynamics, as similar observations have been made in studies dealing with new technologies directly related to one's job role (Kremser & Schreyögg, 2016; Leonard, 2009, 2011).

Finally, there were some common features in both studied cases in terms of how idea management tool use was organized, which might render the argued implications less applicable to certain contexts. Most importantly, the idea management tool was used intra-organizationally, which represents a notably different relationship between the user community and organization behind the tool in comparison to contexts where users are external to the organization, such as regular consumers (Simula & Ahola, 2014). Further, the collection of ideas was organized through a continuous open call. This is quite different from approaches where the "open call" (Zuchowski et al., 2016) is less open, and company management clearly defines and explicates desired topic areas for ideas or requirements related to proposed solutions. Thus, particular care should be exercised if the implications of the present study are applied to contexts where users are external to the focal organization or open calls narrowly defined. In addition, it is common for calls to be temporally limited (Adamczyk et al., 2012; Zuchowski et al., 2016), meaning that the possibility to submit ideas is open only for some predefined amount of time after which a new call with a new theme is issued. The repeating but always renewing dynamic has been argued to foster the continuous use of idea management tools (Ikävälskö & Lempiälä, 2019). Further, continuously changing calls can be seen as repeated managerial interventions, which in turn have been associated with effective approaches to fostering continuous use of information systems regardless of the context (Jasperson et al., 2005; Polites & Karahanna, 2013). As such, it could be argued that time unlimited open-call based approaches are more difficult to manage compared to ever repeating but thematically varying idea contest approaches favored in the field today (Benbya & Leidner, 2018; dos Santos & Spann, 2011; Elerud-Tryde & Hooge, 2014). Thus it is possible that while the problems of constant use discontinuity are not necessarily a relevant problem in all cases, the studied cases were particularly problematic in this sense, and some of the insights could prove to be fruitful in other challenging contexts too.

5.3 Future directions

The findings of this study draw attention to several exciting avenues for research that could be pursued in future studies. The present study found that idea management tools tend to be appropriated in organizations to serve rather specific innovation-related purposes, for example, sharing of ideas that are beyond one's immediate job description. This insight draws attention to the fact that idea management tools are just a single source of innovation inside organizations, among others, like interacting with customers (Alam, 2002), issues arising during daily routine performances (J. S. Brown & Duguid, 1991; Lempiälä, 2011). Following this, ideas developed with the tool compete with ideas from
Discussion

other sources for human resources and funding in development project portfolio management routines.

While the importance of ensuring efficient selection and implementation process for idea emerging from idea management tools has strongly emphasized existing research (Dahl et al., 2011; Elerud-Tryde & Hooge, 2014; Fairbank & Williams, 2001), the intricacies of how can this be achieved and what kind of challenges might be faced during the endeavor has received less attention. Previous research has highlighted the role of management skepticism (Oldham & Da Silva, 2015) and underestimation of required resources (Dahl et al., 2011) as potential issues that organizations might face in such endeavors. However, the results of the present study suggest a more complex dynamic where the inability to realize ideas is related to lack of proper interfaces to incumbent development project planning & execution routines. In other words, the critical challenge seems to be the inertia towards change caused by interdependence with incumbent routines, as conceptualized by Kremser and Schreyögg in their seminal work on routine clusters (2016) rather than cultural or resource-related issues.

Following this, we need more understanding of what kind of implications does the introduction of idea management tools to have on selection routines for innovation projects and development project portfolio management inside organizations. Further, such research endeavors could greatly benefit from applying the theoretical frame of routine cluster dynamics (Kremser & Schreyögg, 2016) and boundary objects (Carlile, 2002) as it seems it is particularly the interfaces between interdependent routines that contribute to issues in idea implementation. Leaving this aspect unorganized is particularly problematic because not only does it hamper organizations’ possibilities to reap benefits of idea management tools through new innovation projects, it also can affect motivation to participate in the virtual innovation community and helps users understand what kind of innovation the organization desires to be developed with the tool (Dahlander & Piezunka, 2014; Elerud-Tryde & Hooge, 2014).

The findings also underline the complex role of recurring action patterns in fostering continuous information system use. In particular, it was observed that while existing research models only recognize the role of habits that are formed around the new or incumbent information system (Bhattacherjee & Lin, 2015; Limayem et al., 2007; Polites & Karahanna, 2012), in reality, continuous use of the new information system is dependent on a much more extensive and complex array of habits and routines. This points us towards several exciting avenues for future research. First, the results suggest that more elaborate models delineating the relationships between continuous information system use, habituated behavior, and organizational routines should be developed. These efforts should take into account that inertia caused by incumbent information systems might be insignificant compared to other seemingly irrelevant individual habits. For example, the present study observed in line with previous work that enjoyment and relaxation seem to be a key driving factor for the use of idea management tools (Füller et al., 2011; Ikävalko & Lempiälä, 2019; Wendelken et al., 2014). This would suggest the use of idea management tools competes not
only with other innovation tools but also methods of relaxation and habits related to them. With this in mind, future research should pursue the creation of a more nuanced understanding of the dynamics that surround the continuous use of information systems that takes into account the complexity of the context where information system use is taking place.

With the discussion above in mind, we need more efficient ways to study the interdependent habits as well as routines that affect the formation of continuous IS use. If more elaborated models about IS use, habituated behavior, and organizational routines are developed, it also entails increased complexity in terms of research designs and data collection and analysis in particular. Following this, the provocative question is whether the traditional survey approach has reached its end and should be replaced with more advanced approaches. The need to operationalize variables and constructs in a way to fit survey-based designs steers scholars towards making simplifications in terms granularity used to study information system use, as well as incumbent and emergent IS habits, etc. As information systems are increasingly becoming more open-ended (Limayem et al., 2007) and control-oriented management of information system use decreasing (Malhotra & Galletta, 2005), it seems likely that the breadth of habits and routines interdependent with the use of a specific IS only increases.

To address this, we need to pursue new methodological possibilities in the study of IS use and examination of habits and routines in particular. Luckily a great variety of approaches are already successfully utilized including trace data analysis (Bayus, 2013), topic modeling (Székely & vom Brocke, 2017), experience sampling method (de Guinea & Webster, 2013) among others and new principles for theory development proposed (Berente, Seidel, & Safadi, 2019). For the past 30 years, IS use research has built on the conceptual and methodological legacy of the Technology Acceptance model, leading to the narrow conceptualization of the phenomena in question (Williams, Dwivedi, Lal, & Schwarz, 2009). At the moment, organization and information systems seem to be finding each other (Orlikowski & Scott, 2008). Further, digital transformation and increased ubiquity of information systems in our daily lives mean that we are leaving ever-growing digital traces of our activities, translating to novel and abundant sources of data for understanding human action patterns (Berente et al., 2019; Lazer, Brewer, Christakis, Fowler, & King, 2009) and possibilities to theorize on social systems on a larger scale than before (Robey & Abdalla Mikhaeil, 2016) Recent commentaries have highlighted worries related IS research and IS use research, in particular, are at the risk of stagnating (Davison, 2010; Williams et al., 2009), but with the trends and methodological advancements mentioned above perhaps time is finally ripe for a proper paradigm shift in the field. The right ingredients and an opportune moment are at least right at our fingertips.
5.4 Practical implications

This work has several implications for practice, particularly regarding how continuous use of idea management tools can be fostered and what kind of challenges one faces when introducing such tools to an organization.

Before implementing IMTs, managers should carefully consider what kind of role is the new tool supposed to play in the more extensive cluster of innovation routines that are already being performed in the organization. As such tools have been observed to strengthen innovative culture in companies (dos Santos & Spann, 2011; Elerud-Tryde & Hooge, 2014), it might be tempting to implement one in order to show visible commitment to values and norms where innovation and internal entrepreneurship is respected. This approach, however, is somewhat risky as it ignores the breadth of the change efforts required to ensure that the tool provides real value as well as the risks of failing with the initiative.

Regarding the breadth of the change process, it is crucial to understand that a successful implementation process of an IMT requires more than just selecting and deploying an information system for sharing and discussing ideas and defining how ideas are collected, screened, and finally selected for implementation. Because of the interdependencies between the use of the tool and other organizational routines, modifications might be required in areas that seem slightly disconnected from the tool itself. For example, ensuring that the best of the collected ideas can be implemented might require making modifications to the R&D project portfolio management routines. Similarly, changes in the rewarding or work performance monitoring policies might be needed to avoid the formation of perceptions that time spent in the tool is considered as valuable from the perspective of the organization. Following this, management should spend effort in trying to recognize interdependencies that form between the use of the IMT and incumbent routines. Further, when planning to implement IMTs, the management of potentially problematic interdependencies should be considered. As this might result in the need to modify routines that are otherwise working fine, a strong commitment to the initiative is needed throughout the organization.

It is also critical to recognize that the implementation of IMTs does entail some key risks. As discussed particularly in essays 1 and 2, employees were feeling disappointed in the amount of perceived effort that the case organization put into developing and implementing good ideas posted to the tool. In this sense, idea management tools can be particularly problematic. In essence, they act as a public repository of development suggestions paired with information on how each suggestion has been able to progress towards implementation. Thus issues like lengthy idea evaluation processes or users not gaining meaningful feedback for their posted ideas can become highly salient for members of the organization. Following this, management should consider the risk that disturbing aspects related to the tool and its use can create feelings that the company was not committed to fostering an innovative culture and thus have the opposite effect to the one desired. Since ensuring that the processes around IMT run smoothly can require changes to a variety of interdependent organizational
routines, as discussed previously, implementation of IMTs needs to be approached thoughtfully and as a complicated long term endeavor rather than as a quick solution to boosting innovative culture in an organization.

Finally, management should also be aware of the likelihood that the use of idea management tools is perceived as extra-role activity and thus deprioritized against other work. Thus if users are expected to be proactive in advancing and championing their ideas inside the organization, specific steps to foster such behavior should be considered. Management should clearly define who is accountable for which activities regarding the overall process. Such definitions should also take into account the fact that people will encounter pressure from other work responsibilities to deprioritize activities related to the idea management tool. Thus it is also essential to consider what kind of arrangements can be made to ensure that people have the necessary time available to fulfill their responsibilities, rather than having to bootleg time from other activities or free time.
6. References


